Vasantrao Naik Shikshan Prasarak Mandal, Aurangabad

Vasantrao Naik Mahavidyalaya

AIRPORT ROAD, AURANGABAD - 431 003.

NAAC Reaccredited 'B++' Grade

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President
Rajaramji Rathod

Secretary
Nitinji Rathod

Principal
Prof.(Dr.) Anand V. Chaudhary

Ref. No. / VNMA / 2022 - 23

Date : 02/03/2023

INTERNAL QUALITY ASSURANCE CELL

CRITERIA 2 – TEACHING – LEARNING EVALUATION

2.3. Teaching- Learning Process

2.3.1 Student Centric Methods, such as Experiential Learning, Participative Learning and Problem-Solving Methodologies are used for Enhancing Learning Experiences using ICT Tools

List of Links for Teachers ICT for Teaching Learning Process

PRINCIPAL
Vasantrao Naik Mahavidyalaya
Aurangabad

Vasantrao Naik Shikshan Prasarak Mandal's

Vasantrao Naik Mahavidyalaya, Aurangabad

List of Links for Teachers ICT for Teaching Learning Process

Year 2018-19

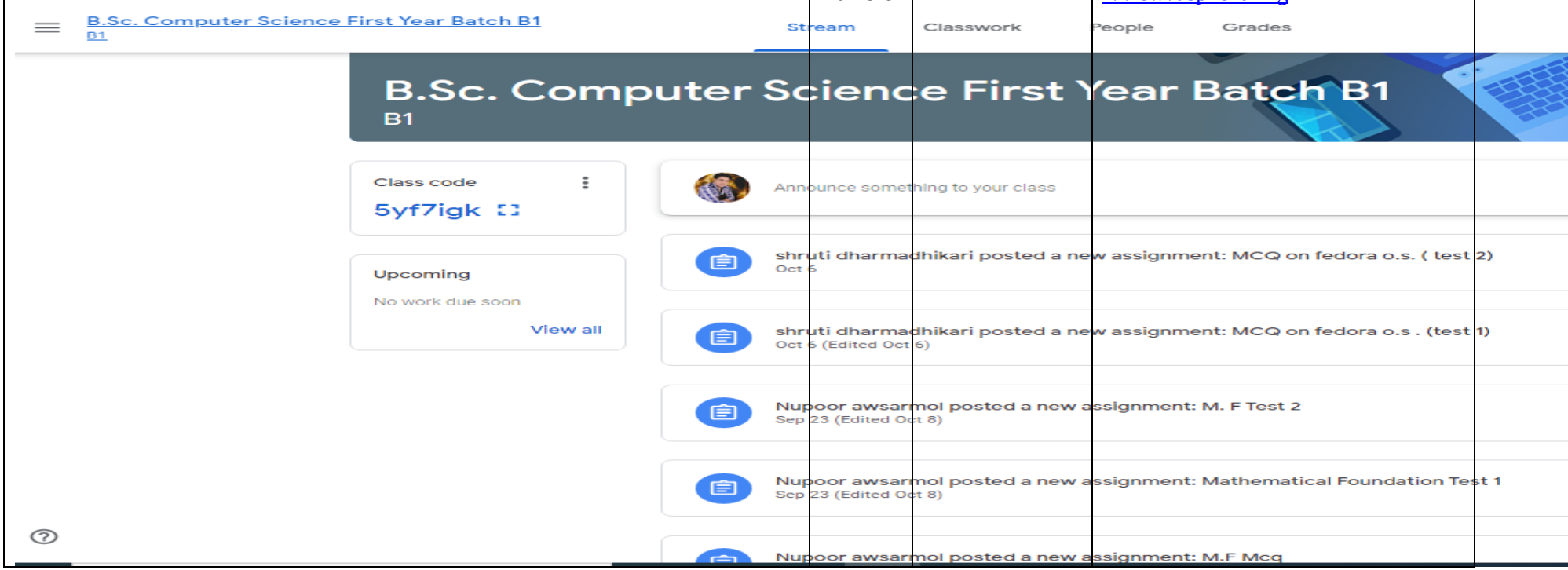
Department	Name of Teachers	E-content	Document link
Botany	Dr. Vikram Khillare	PPT Handouts	https://drive.google.com/file/d/1CdcKkvR7SKgS-LGEJXMxejqi5uDkhkDn/view?usp=sharing
	Dr. Mahesh Kulthe	PPT Handouts	https://drive.google.com/file/d/1N8pKgtqGmijCuoBAbCq9hmaYbDoAyQI-/view?usp=sharing
Zoology	Dr. Snehalata Ankaram	KRC e-resources	https://drive.google.com/file/d/1W93fbhbscbuRvXInX4xGLd8wagQmyQ3J/view?usp=sharing
		Moodle LMS	https://drive.google.com/file/d/14hsnbQI9GgzqZdX9Sa28tImyvvwQ7Dhf/view?usp=sharing
		You Tube Link	https://drive.google.com/drive/folders/1_KW6dAbS4W_oiEJr0-a-7pV14769k4O-?usp=sharing
		Zoology PPT	https://drive.google.com/drive/folders/1hdtQUFAHhF8_Go6i8lR90nyYJA2bBehR?usp=sharing
		zoowithme_blog	https://drive.google.com/drive/folders/1TiQaPdNDxOh2cfP7863oh2Q5a0T7b_r7?usp=sharing
Computer Science	Dr. Savita Lothe	ICT_Savita Lothe	https://drive.google.com/file/d/184ONsKOmktW0g3XfXmC781_NSdFXrXDc/view?usp=sharing
		Criteria_4.3_Dr Savita Lothe sem June-Nov	https://drive.google.com/file/d/1nQoBPqHqBHoLr7nGlcpNduALIGz2ZACy/view?usp=sharing
		Criteria_4.3_Dr Savita Lothe sem Dec - March	https://drive.google.com/file/d/1gW8R8jxLJfK-RTF1EhmcScL8iD_nn763/view?usp=sharing

		Criteria 4.3.3 I, III, V sem (e-content)	https://drive.google.com/drive/folders/18XITkzpfG_u-lgEbmJ4y6kbNeoX4968-?usp=sharing
		Criteria 4.3.3 II, IV, VI sem (e-content)	https://drive.google.com/drive/folders/1ybFQ-5pEgc6h-_vgb7CQw0tx6XAoVndh?usp=sharing
	Mr. Amol Chavan	ICT_Amol Chavan	https://drive.google.com/file/d/1hRcBHz5QHR773NHRmBJ-up8oZYJIOBwF/view?usp=sharing
		Criteria 4.3.3 I,III,V sem	https://drive.google.com/file/d/1dvTUAnzVU1tJkl2oTtLgI8yploSwmXaN/view?usp=sharing
		Criteria 4.3.3 II,IV,VI sem	https://drive.google.com/file/d/1wALsCR15LHpCH65NtXjoD02SgGk-RikU/view?usp=sharing
		Criteria 4.3.3 I, III, V sem (e-content)	https://drive.google.com/drive/folders/1sBotJTbZW3mYe2ITERbmrbeIrdEwFd6j?usp=sharing
		Criteria 4.3.3 II, IV, VI sem (e-content)	https://drive.google.com/drive/folders/1bQEQFp4pc3FoNhuqwamPTRm6pHMHJ0ah?usp=sharing
	Ms. Snehal Kulthe	ICT_Snehal Kulthe	https://drive.google.com/file/d/1LmrpGaW7rwiQO83ZtIX-ILA6o5zXyGYP/view?usp=sharing
		Criteria_Snehal KultheIII, V	https://drive.google.com/file/d/1I5D0DOn-DYZClo5psdLwtDDYRc8JZbhy/view?usp=sharing
		Criteria_Snehal KultheIV, VI	https://drive.google.com/file/d/1_K7jdkP5Bj5YLUk1U7hMqDsuUJlRBD_B/view?usp=sharing
		Criteria 4.3.3 Sem III,V	https://drive.google.com/drive/folders/1B5AfJGwtzNYwlojK5muKySpF1Yknhe0k?usp=sharing
		Criteria 4.3.3 Sem IV,VI	https://drive.google.com/drive/folders/18Fr_vvlugzoZlq2wd0y_gFDtR27sf1cx?usp=sharing
	Ms. Vaishali Chinchkhede	ICT_Vaishali Chinchkhede	https://drive.google.com/file/d/1vgIDs29X7HkgQFfS1OkxdG3Lg6_5eFM8/view?usp=sharing
		Criteria 4.3.3 I,	https://drive.google.com/drive/folders/

		III, V sem (e-content)	1OX-O5rCQGnkMPqtHtJs5qBP4mHtOdWwf?usp=sharing
		Criteria 4.3.3 II, IV, VI sem (e-content)	https://drive.google.com/drive/folders/1_mgLfS7Gf8OokR9qrLM8idM8eGonI07_?usp=sharing
	Ms. Varsha Gokhale	ICT_Varsha Gokhale	https://drive.google.com/file/d/1racNepIKHjflbwCDrHn4rPBoQni_j0y0/view?usp=sharing
		Criteria 4.3.3 I, III, V sem (e-content)	https://drive.google.com/drive/folders/1HkPd9Wocwp64oNkt74w8LGKFFZMEIIbu?usp=sharing
		Criteria 4.3.3 II, IV, VI sem (e-content)	https://drive.google.com/drive/folders/1ilYmfUdH1iUd665Aeo1GcudY4Ke-bD9Y?usp=sharing
Physics	Dr. Surekha Patankar	Baisc of Crytallography	https://drive.google.com/file/d/1wPQ9IR-bAsIzv8PsYqYXD3dXV6jiv4Zy/view?ts=5da9759f
		PPT	https://drive.google.com/drive/folders/1PHJE015gB-DJKaACDx6yyN0EYibnzDxn
	Ms. Manisha Ghogre	Types of Laser PPT	https://drive.google.com/file/d/1FVH_RoEhkBTu4B55d__Ghec0XAi9iUUs/view?usp=sharing
		Moodle	https://drive.google.com/file/d/1btPQ5DqNhi6gDw1uB-wbvtK-pFlDYrqy/view?usp=sharing
		Atomic Physics	https://drive.google.com/file/d/1IB-bH86zf3vw5VYK6SFhcTGb0JDal5c0/view?usp=sharing
Mathematics	Ms. Geeta Kawale	Bridge Course	https://drive.google.com/file/d/1qnz0tiBAiiu4d-xUoTM7m-PrODm-Vzyv/view?usp=sharing
	Dr. Jayshree Patil	PPT Handouts	https://drive.google.com/file/d/1MjTr28m2wTh6QO1qTbMIrDqGRsaYLNvu/view?usp=sharing
Chemistry	Dr. Jagdish Bharad	Chemistry PPT	https://drive.google.com/drive/folders/1VPQRsJKsYtlXIvhUhKJsWNZcDyL0sJOM?usp=sharing
		Nuclear Magnetic	https://drive.google.com/file/d/1psJVa1YGeNRAq-

		Resonance Spectroscopy	X3aeerQXcqg8ffF77a/view?usp=sharing
		Coordination Compounds	https://drive.google.com/file/d/1AbFSXhJOSDzcgC2wKDmdrK97fiacibrn/view?usp=sharing
	Dr. Balaji Madje	Chemistry PPT	https://drive.google.com/drive/folders/1blekscphdavsqf0XqY7uOrOdc32Ef3Ch?usp=sharing
		Aldehydes and Ketones	https://drive.google.com/file/d/1PgtCC5Cx8LVlJ2I1Fsvc7Qgl3G4dLjV5/view?usp=sharing
Sociology	Dr. Devraj Darade	Identity Crises among the Denotified Nomadic Tribes	https://drive.google.com/file/d/1bvN4vGfy5Ii5aqTkYgUpMC_PeSj4uFCQ/view?usp=sharing
		Research Methodology	https://drive.google.com/file/d/1VQiIbZ46pSfhhnYgmnRS7f5W4tisysA3/view?usp=sharing
		Research Project Work	https://drive.google.com/file/d/1t8lVn3z7ycXR5VyQHC7X-lphxuj8e0NM/view?usp=sharing
		Women Empowerment	https://drive.google.com/file/d/1RzHVQpI8GiqF23AYDi6ykE-MZqvid2jZ/view?usp=sharing
		Bridge Communication Skill	https://drive.google.com/file/d/19rkaHWeaaNo5ybsVQEza5E3AofDppoPQ/view?usp=sharing
Public Administration	Dr. Hanuman Wankar	Public Administration B.A. PPT	https://drive.google.com/drive/folders/1q872ZDAOolOJeId4ivNSmxT1_gTYHVsa?usp=sharing
Hindi	Dr. Balaji Jokre	Hindi	https://drive.google.com/file/d/1KDHwc9hGKYXPmatrx1sep9cHCSw02SD6/view?usp=sharing
		Hindi Video Link	https://drive.google.com/file/d/1wsIwjN4UoZhcuXLqO6ne-ZZkWVLjynEn/view?usp=sharing
	Dr. Sunita Rathod	Banjara Stree Lok Geet Aur Samaj	https://drive.google.com/file/d/1tPVzwbuAfkO9o-_U-76cTWUO_hzz5fDJ/view?usp=sharing
		Mahadevi	

		Varma ka hindi sahitya me yogda	
		Premchand Ke Kafan Kahani Me Arthik Aevam Samajik Vishamta	https://drive.google.com/file/d/1QbXS1ybvZhaWLlws1yKX6d-SJBGgYl0d/view?usp=sharing
Marathi	Dr. Shivchran Giri	Marathi Bhasha (Yolakh ani Etihas)	https://drive.google.com/file/d/1E-0mkxqS8vrvzOsFP0j5UH6k2sHWJ8Et/view?usp=sharing
Library	Dr. Veena Kamble	Digital Library	https://drive.google.com/file/d/1y8q8bhNU1P1UN7Qag6HtRgHYwOTIpsA4/view?usp=sharing



Year 2019-20

Name of Faculty	Link
Prin. Dr. Jagdish Bharad	https://drive.google.com/drive/folders/1zr5aVzJvqfNX960aAfkeiqPCnqxg25Hd?usp=sharing
Dr. Milind Ubale	https://drive.google.com/drive/folders/1ckD6JOtY2bobcy4VqL0WVvKuGI6Zn3PQ?usp=sharing
Smt Manisha Ghogare	https://drive.google.com/drive/folders/1Ic2x8WBo01_KQzR6NzcgIDEtDcN0CDty?usp=sharing
Dr. Jayashree Patil	https://drive.google.com/drive/folders/1cZzNaHmpQchqH7S5CF7l-8G1cSQHkP4f?usp=sharing
Dr. Vikram Khillare	https://drive.google.com/drive/folders/1tVBkE_jDXO5Wk6U1jrBs5qkq-OxD8e5_?usp=sharing
Dr. Balaji Madje	https://drive.google.com/drive/folders/18rU4tZoEKDGU5Ix5vYaQIqutrJA9pxib?usp=sharing
Dr. Jayashree Chamargore	https://drive.google.com/drive/folders/1xGv4S_jnI7e0xS5gl8nkT099hELSP-LX?usp=sharing
Dr. Mahesh Kulthe	https://drive.google.com/drive/folders/1PwL_Mvof_Ql20nYEfONC1nwRN8ZC4Dd1?usp=sharing
Dr.Veena Kamble	https://drive.google.com/drive/folders/1F5rklUihTc3KOXt-Kj0re0rkYp-LI7mP?usp=sharing
Dr. Vikas Choudhari	https://drive.google.com/drive/folders/1MtIz-tbNDFOQgLEYhF71GDp1YxLf3vRd?usp=sharing
Dr. Snehalata Ankaaram	https://drive.google.com/drive/folders/1csTzYhHaxjCR17xlGI4etB9WmMY9W4BC?usp=sharing
Hanuman Wankar	https://drive.google.com/drive/folders/1S-tRihY5iqjopZpBZAiKQbkwtvcjx-ue?usp=sharing
Dr. Savita Lothe	https://drive.google.com/drive/folders/15E-g3qkD8SDBqH2xNUB3M49tWGRhIufo?usp=sharing
Dr. Sunita Rathod	https://drive.google.com/drive/folders/1qABD5BMTpL6X2pIL2EGP4KBwuwGqqhgE?usp=sharing
Vasant Harkal	https://drive.google.com/drive/folders/1Z3kS25AzZiarmjycUly7hHYjBNwS-mJQ?usp=sharing
Mr. Amol Chavan	https://drive.google.com/drive/folders/1c8XQpM2vTUZAw9JFLigHr-VIeeUlmSsS?usp=sharing
Dr.Gajanan Hanvate	https://drive.google.com/drive/folders/1Boe32UVIsH5gMixefLj9kRwpxXXXkjoy?usp=sharing

2.3.2. *Teachers use ICT enabled tools for effective teaching-learning process*

E-Content Created by Teachers

Sr. No.	Name of the Dept.	Name of the Teacher	BSc I	BSc II	BSc III
01	Chemistry	Dr. Jagdish Bharad	https://drive.google.com/drive/folders/1QbKwC0dtjLT4t6EkX50hWKJYx44gXMBN?usp=sharing	----	https://drive.google.com/drive/folders/1dxxUHf2gm2OmLX6kTDf7cRe9kfbT829?usp=sharing
		Dr.Jayashree Chamargore	https://classroom.google.com/c/NDUxNzc0OTQ5NDYx?cjc=l3o5jad	https://classroom.google.com/c/NDUxNzU4NjA5MDMz?cjc=ii7hu2g	https://classroom.google.com/c/NDUxNzMxNDAyODg2?cjc=kc3uphv
02	Botany	Dr. Vikram Khilare	e https://classroom.google.com/c/MjMyMTEwMjk5Nzg5?cjc=mma6tzt	https://classroom.google.com/u/0/c/MTE5MjYyNTY4ODQ4?cjc=sk3rylu	https://classroom.google.com/u/0/c/MTE4OTgwMzAxNjkx?cjc=2vbp4vt
		Dr. Mahesh Kulthe	https://classroom.google.com/u/0/c/NDM1Mzc0NjYzNzY2?cjc=rxwi3pz	https://classroom.google.com/u/0/c/NDM1Mzc0NjYzNTQ1?cjc=vimhjq3	https://classroom.google.com/u/0/c/NDM1MzczNTU4Mjcz?cjc=vbvghge
		Mr. Bhushan Patil (C.H.B Teacher)	https://classroom.google.com/c/MzYwMDQzNDcxMzc4?cjc=6i34pbl	https://classroom.google.com/c/NDQ5NTMyODc1Njkx?cjc=xaxpwlf	-----
04	Physics	Mrs. Manisha Ghogre	https://drive.google.com/drive/folders/1wMdeZPtfyXTHvFb7Ao_LxzFQDpY-MNqX?usp=sharinghttps://classroom.google.com/c/NDQxMzM1NzA0MjI3?cjc=xmvffho	https://classroom.google.com/c/NDcwODI3ODc1OTkx?cjc=djmqstn	https://classroom.google.com/c/NDY5NzU0NTA3MTA1?cjc=iq7nmsu

05	Zoology	Dr. Snehalata Ankaram	https://classroom.google.com/c/MTEzNjAwMTk2MzUy?cjc=lsl4b2y https://classroom.google.com/c/NDgxOTQ4Mzc2NDMy?cjc=jsyez7f	https://classroom.google.com/c/NDgxOTQ4Mzc2NDMy?cjc=jsyez7f https://classroom.google.com/c/NDgxOTIyMjIyNTA0?cjc=4sbjvgv	https://classroom.google.com/c/NDA5MTI4NDUyODkw?cjc=3gqe3pr https://classroom.google.com/c/NDgxOTIxNTg1NDA3?cjc=mqgdu4i
			E- Content and Recorded Lectures https://drive.google.com/drive/folders/1ENBPFovkRUP3Gr2Fw2-nB_NkAsBLqYCb?usp=sharing		
06	Computer Science	Dr. Savita Lothe	BCS I https://classroom.google.com/c/MTQ1NTc3NjcwMDk5?cjc=5yf7igk	BCS II https://classroom.google.com/c/MTE0MzE2NTYzMjA5?cjc=i4xoaza	BCS III - https://classroom.google.com/c/MTA5MzczNzE3ODI3?cjc=rt6trbr
			B.Sc Opt https://classroom.google.com/c/NDQzNzc4Mzg1MTc4?cjc=ugbzeid	B.Sc Opt II - https://classroom.google.com/c/NDE1MDcyMDEzNDQy?cjc=ayecdkc https://drive.google.com/drive/folders/1F7qSLTraf61G6NTKoAx9s-pG2XsiIZUR?usp=sharing	B.Sc Opt III https://classroom.google.com/c/NDE1MDY4ODc5MDEx?cjc=n5m4xxa
			B.Sc Computer Science I- https://classroom.google.com/c/NDE1NDI5OTMwNzEx?cjc=g6h6aui https://drive.google.com/drive/folders/1zfN1GcyxnVPjwZFcAXZRRcLOqbulY3pj?usp=sharing	B.Sc Computer Science II- https://classroom.google.com/c/NDIxMjI1OTU2MjE3?cjc=edlkn5g https://drive.google.com/drive/folders/1kGYdCVGYyml6BVkGn2tIoGgwVQd1rbmj?usp=sharing	B.Sc Computer Science III- - https://classroom.google.com/c/NDIxMjI2OTQwNTc1?cjc=3x4jf3v https://drive.google.com/drive/folders/14TN5Qe1z2hh8eD_8htZZ9Obv8v1H2KWP?usp=sharing
			B.C.A I- https://classroom.google.com/c/NDE1NDI5OTMwODM0?cjc=o72bfxk https://drive.google.com/drive/folders/1dZ2eCdr_wlpRYW_iBSwtRQI6ldtbZ_xi?usp=sharing	B.C.A II- https://classroom.google.com/c/NDI5MTI4NjAyODk3?cjc=4mmghys	---

		Mr. Amol Chavan	B.Sc Computer Science I- https://drive.google.com/drive/folders/1U-gH8YWS-NI3eR6FiMG9WS7MeugpbwfZ?usp=sharing	B.Sc Computer Science II- https://drive.google.com/drive/folders/1O9UcoyseuKaIBuZ5C6BzFA6aq2u4zk9S?usp=sharing	B.Sc Computer Science III- https://drive.google.com/drive/folders/1mcwEkFPLxVAhemVF7wqx6PH4JwlbXae-?usp=sharing
		Miss Nupoor Awsarmol	B.Sc Computer Science I- https://drive.google.com/drive/folders/1aUtzN-QH_ifCeHmnXBqkgo2EKU_Fnv69?usp=sharing	B.Sc Computer Science II- https://drive.google.com/drive/folders/1O9UcoyseuKaIBuZ5C6BzFA6aq2u4zk9S?usp=sharing	B.C.A I- https://drive.google.com/drive/folders/1ZB0AbnPvon-fDPYClOs2pggokOaIxqEn?usp=sharing
		Miss. Vaishali Chinchkhede	B.Sc Computer Science I- https://drive.google.com/drive/folders/1TCSsoEpdQwMYzBE9lSw6iQm-2hgluA_V?usp=sharing	B.Sc Computer Science II- https://drive.google.com/drive/folders/1FobZ1XEWP07b46kRImVU3q7P-oGVXYJo?usp=sharing	B.Sc Computer Science III- https://drive.google.com/drive/folders/1vL2tTYDd2_7_bMVz32m4LmvRsnJ2RcOu?usp=sharing
			B.Sc Opt I https://drive.google.com/drive/folders/1ZOob3PMc9ZKMXJCcY_DuWNnrFDXs1VOZ?usp=sharing	B.Sc Opt II https://drive.google.com/drive/folders/1FgaTp2jszPo03VPaZYS_bP3ubgVSjYvg?usp=sharing	B.Sc Opt III https://drive.google.com/drive/folders/1yJHJsmQFEvSA6S2DigQEwca2Pq6UAY-E?usp=sharing
07	Marathi	Mr. Shivcharan Giri	BA BSC BCOM FY SL Marathi https://classroom.google.com/c/Mjk0OTU5NjkzMjAx?cjc=3ck7a4w BAFY OPT Marathi https://classroom.google.com/c/Mjk0OTcxNDMzMzU2?cjc=5esxxcw	BASY OPT Marathi https://classroom.google.com/c/Mjk0OTcxNTk5MjQw?cjc=sluyrk6 BA BSC SY SL Marathi https://classroom.google.com/c/Mjk0OTY3NDIzNDk1?cjc=35tweha	BATY OPT MARATHI https://classroom.google.com/c/MTY0MDU1MjE1NzEz?cjc=lerknhr
08	English	Dr. Kamlesh Mahajan	B com I https://classroom.google.com/c/Mjk2NTM0MDg0NDk0/p/Mjk2NTM0MDg0NTcy/details	B.com II https://classroom.google.com/c/Mjk2NTE1MTIwNjY4/p/Mjk2NTIxMjUxOTE3/details	BA III https://classroom.google.com/c/Mjk2NTM0MDg0NDk0/p/Mjk2NTM0MDg0NTcy/details

09	Public Administration	Mr. Hanuman Wankar	https://drive.google.com/drive/folders/1GqcggQ7K02PyK4N3jfbeVzR0EBF-1y2d?usp=sharing		
10	Commerce	Dr. Vikas Choudhary	https://classroom.google.com/c/MjIxNzM1MDE2Mzc1?cjc=k5v5m44	https://classroom.google.com/c/MjkxOTk5MjIwOTM0?cjc=gqhnrs2	https://classroom.google.com/c/MzkzMzUyMDA5OTIy?cjc=yxsemaz

PRINCIPAL
Yasantrao Naik Mahavidyalaya
Aurangabad

2.3.2. *Teachers use ICT enabled tools for effective teaching-learning process*

E-Content Created by Teachers

Sr. No.	Name of the Dept.	Name of the Teacher	BSc I	BSc II	BSc III
01	Chemistry	Dr. Jagdish Bharad	https://drive.google.com/drive/folders/1QbKwC0dtjLT4t6EkX50hWKJYx44gXMBN?usp=sharing	----	https://drive.google.com/drive/folders/1dxxUHf2gm2OmLX6kTDf7cRe9kfbT829?usp=sharing
		Dr.Jayashree Chamargore	https://classroom.google.com/c/NDUxNzc0OTQ5NDYx?cjc=l3o5jad	https://classroom.google.com/c/NDUxNzU4NjA5MDMz?cjc=ii7hu2g	https://classroom.google.com/c/NDUxNzMxNDAyODg2?cjc=kc3uphv
02	Botany	Dr. Vikram Khilare	e https://classroom.google.com/c/MjMyMTEwMjk5Nzg5?cjc=mma6tzt	https://classroom.google.com/u/0/c/MTE5MjYyNTY4ODQ4?cjc=sk3rylu	https://classroom.google.com/u/0/c/MTE4OTgwMzAxNjkx?cjc=2vbp4vt
		Dr. Mahesh Kulthe	https://classroom.google.com/u/0/c/NDM1Mzc0NjYzNzY2?cjc=rxwi3pz	https://classroom.google.com/u/0/c/NDM1Mzc0NjYzNTQ1?cjc=vimhjq3	https://classroom.google.com/u/0/c/NDM1MzczNTU4Mjcz?cjc=vbvghge
		Mr. Bhushan Patil (C.H.B Teacher)	https://classroom.google.com/c/MzYwMDQzNDcxMzc4?cjc=6i34pbl	https://classroom.google.com/c/NDQ5NTMyODc1Njkx?cjc=xaxpwlf	-----
04	Physics	Mrs. Manisha Ghogre	https://drive.google.com/drive/folders/1wMdeZPtfyXTHvFb7Ao_LxzFQDpY-MNqX?usp=sharinghttps://classroom.google.com/c/NDQxMzM1NzA0MjI3?cjc=xmvffho	https://classroom.google.com/c/NDcwODI3ODc1OTkx?cjc=djmqstn	https://classroom.google.com/c/NDY5NzU0NTA3MTA1?cjc=iq7nmsu

05	Zoology	Dr. Snehalata Ankaram	https://classroom.google.com/c/MTEzNjAwMTk2MzUy?cjc=lsl4b2y https://classroom.google.com/c/NDgxOTQ4Mzc2NDMy?cjc=jsyez7f	https://classroom.google.com/c/NDgxOTQ4Mzc2NDMy?cjc=jsyez7f https://classroom.google.com/c/NDgxOTIyMjIyNTA0?cjc=4sbjvgv	https://classroom.google.com/c/NDA5MTI4NDUyODkw?cjc=3gqe3pr https://classroom.google.com/c/NDgxOTIxNTg1NDA3?cjc=mqgdu4i
			E- Content and Recorded Lectures https://drive.google.com/drive/folders/1ENBPFovkRUP3Gr2Fw2-nB_NkAsBLqYCb?usp=sharing		
06	Computer Science	Dr. Savita Lothe	BCS I https://classroom.google.com/c/MTQ1NTc3NjcwMDk5?cjc=5yf7igk	BCS II https://classroom.google.com/c/MTE0MzE2NTYzMjA5?cjc=i4xoaza	BCS III - https://classroom.google.com/c/MTA5MzczNzE3ODI3?cjc=rt6trbr
			B.Sc Opt https://classroom.google.com/c/NDQzNzc4Mzg1MTc4?cjc=ugbzeid	B.Sc Opt II - https://classroom.google.com/c/NDE1MDcyMDEzNDQy?cjc=ayecdkc https://drive.google.com/drive/folders/1F7qSLTraf61G6NTKoAx9s-pG2XsiIZUR?usp=sharing	B.Sc Opt III https://classroom.google.com/c/NDE1MDY4ODc5MDEx?cjc=n5m4xxa
			B.Sc Computer Science I- https://classroom.google.com/c/NDE1NDI5OTMwNzEx?cjc=g6h6aui https://drive.google.com/drive/folders/1zfN1GcyxnVPjwZFcAXZRRcLOqbulY3pj?usp=sharing	B.Sc Computer Science II- https://classroom.google.com/c/NDIxMjI1OTU2MjE3?cjc=edlkn5g https://drive.google.com/drive/folders/1kGYdCVGYyml6BVkGn2tIoGgwVQd1rbmj?usp=sharing	B.Sc Computer Science III- - https://classroom.google.com/c/NDIxMjI2OTQwNTc1?cjc=3x4jf3v https://drive.google.com/drive/folders/14TN5Qe1z2hh8eD_8htZZ9Obv8v1H2KWP?usp=sharing
			B.C.A I- https://classroom.google.com/c/NDE1NDI5OTMwODM0?cjc=o72bfxk https://drive.google.com/drive/folders/1dZ2eCdr_wlpRYW_iBSwtRQI6ldtbZ_xi?usp=sharing	B.C.A II- https://classroom.google.com/c/NDI5MTI4NjAyODk3?cjc=4mmghys	---

		Mr. Amol Chavan	B.Sc Computer Science I- https://drive.google.com/drive/folders/1U-gH8YWS-NI3eR6FiMG9WS7MeugpbwfZ?usp=sharing	B.Sc Computer Science II- https://drive.google.com/drive/folders/1O9UcoyseuKaIBuZ5C6BzFA6aq2u4zk9S?usp=sharing	B.Sc Computer Science III- https://drive.google.com/drive/folders/1mcwEkFPLxVAhemVF7wqx6PH4JwlbXae-?usp=sharing
		Miss Nupoor Awsarmol	B.Sc Computer Science I- https://drive.google.com/drive/folders/1aUtzN-QH_ifCeHmnXBqkgo2EKU_Fnv69?usp=sharing	B.Sc Computer Science II- https://drive.google.com/drive/folders/1O9UcoyseuKaIBuZ5C6BzFA6aq2u4zk9S?usp=sharing	B.C.A I- https://drive.google.com/drive/folders/1ZB0AbnPvon-fDPYClOs2pggokOaIxqEn?usp=sharing
		Miss. Vaishali Chinchkhede	B.Sc Computer Science I- https://drive.google.com/drive/folders/1TCSsoEpdQwMYzBE9lSw6iQm-2hgluA_V?usp=sharing	B.Sc Computer Science II- https://drive.google.com/drive/folders/1FobZ1XEWP07b46kRImVU3q7P-oGVXYJo?usp=sharing	B.Sc Computer Science III- https://drive.google.com/drive/folders/1vL2tTYDd2_7_bMVz32m4LmvRsnJ2RcOu?usp=sharing
			B.Sc Opt I https://drive.google.com/drive/folders/1ZOob3PMc9ZKMXJCcY_DuWNnrFDXs1VOZ?usp=sharing	B.Sc Opt II https://drive.google.com/drive/folders/1FgaTp2jszPo03VPaZYS_bP3ubgVSjYvg?usp=sharing	B.Sc Opt III https://drive.google.com/drive/folders/1yJHJsmQFEvSA6S2DigQEwca2Pq6UAY-E?usp=sharing
07	Marathi	Mr. Shivcharan Giri	BA BSC BCOM FY SL Marathi https://classroom.google.com/c/Mjk0OTU5NjkzMjAx?cjc=3ck7a4w BAFY OPT Marathi https://classroom.google.com/c/Mjk0OTcxNDMzMzU2?cjc=5esxxcw	BASY OPT Marathi https://classroom.google.com/c/Mjk0OTcxNTk5MjQw?cjc=sluyrk6 BA BSC SY SL Marathi https://classroom.google.com/c/Mjk0OTY3NDIzNDk1?cjc=35tweha	BATY OPT MARATHI https://classroom.google.com/c/MTY0MDU1MjE1NzEz?cjc=lerknhr
08	English	Dr. Kamlesh Mahajan	B com I https://classroom.google.com/c/Mjk2NTM0MDg0NDk0/p/Mjk2NTM0MDg0NTcy/details	B.com II https://classroom.google.com/c/Mjk2NTE1MTIwNjY4/p/Mjk2NTIxMjUxOTE3/details	BA III https://classroom.google.com/c/Mjk2NTM0MDg0NDk0/p/Mjk2NTM0MDg0NTcy/details

09	Public Administration	Mr. Hanuman Wankar	https://drive.google.com/drive/folders/1GqcggQ7K02PyK4N3jfbeVzR0EBF-1y2d?usp=sharing		
10	Commerce	Dr. Vikas Choudhary	https://classroom.google.com/c/MjIxNzM1MDE2Mzc1?cjc=k5v5m44	https://classroom.google.com/c/MjkxOTk5MjIwOTM0?cjc=gqhnrs2	https://classroom.google.com/c/MzkzMzUyMDA5OTIy?cjc=yxsemaz

Year 2018-19

2.3 Teaching - Learning Process	
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Name of teacher using ICT *(LMS, e-Resources)*	E-resources and techniques used
Dr. Lothe Savita A.	**Appendix I** https://www.slideshare.net/search/slideshow?searchfrom=header&q=savitamhaske **Appendix II** Editor --- Turbo C **Appendix III** PPT – Powerpoint Presentation, PDF- MCQ, Question Bank **Appendix IV** LMS-MOODLE www.compscieducation.moodlecloud.com www.amolbcsfy.moodlecloud.com Online Videos 1) https://www.youtube.com/watch?v=Xi18hI1LqAALogic Gates Basics 2) https://www.youtube.com/watch?v=SW2Bwc17_wALogic Gates from Transistors: Transistors and Boolean Logic 3) https://www.youtube.com/watch?v=XQq_1yaVDpM How A CPU Works (Hardware + Software Parallelism)

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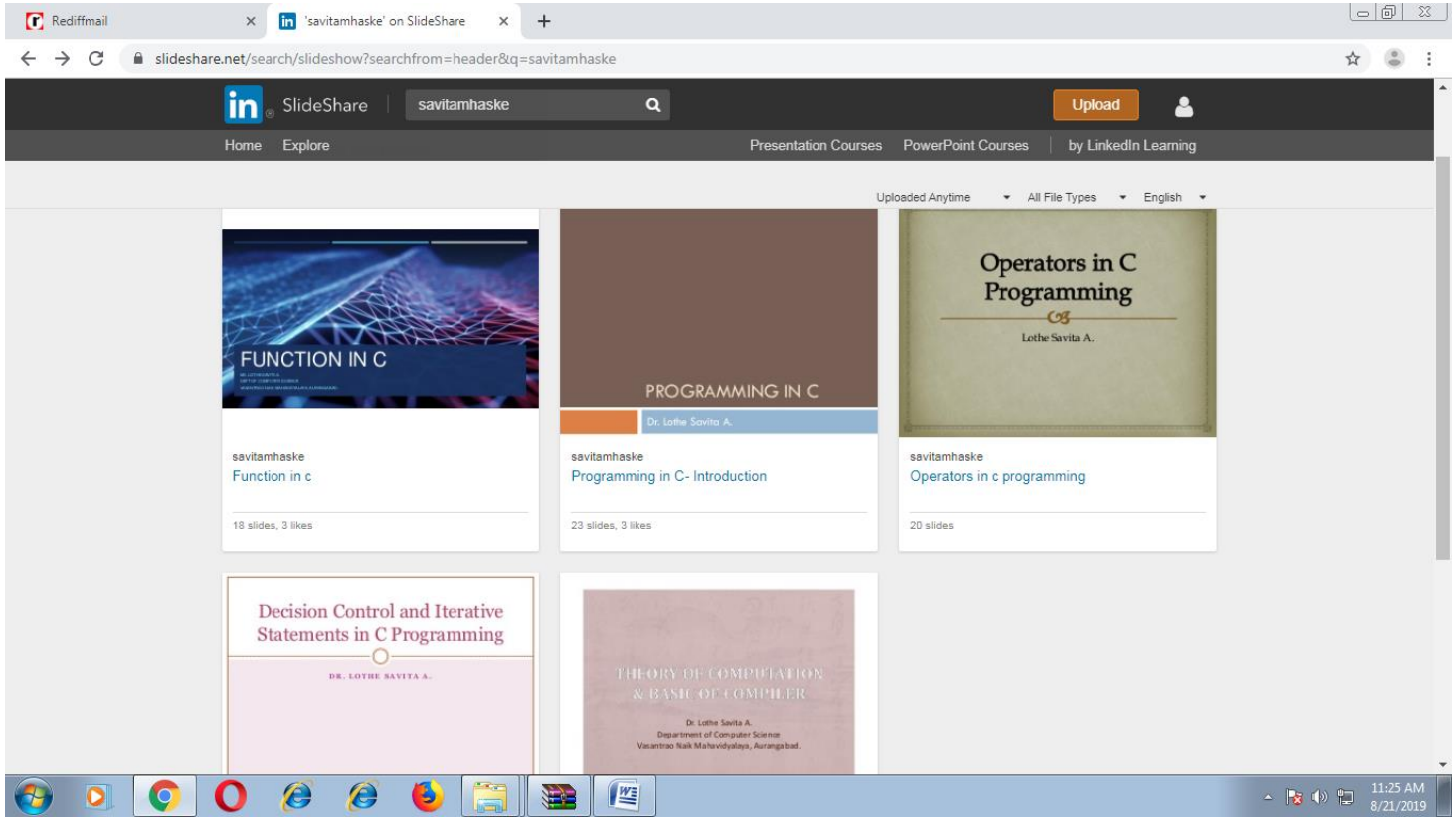
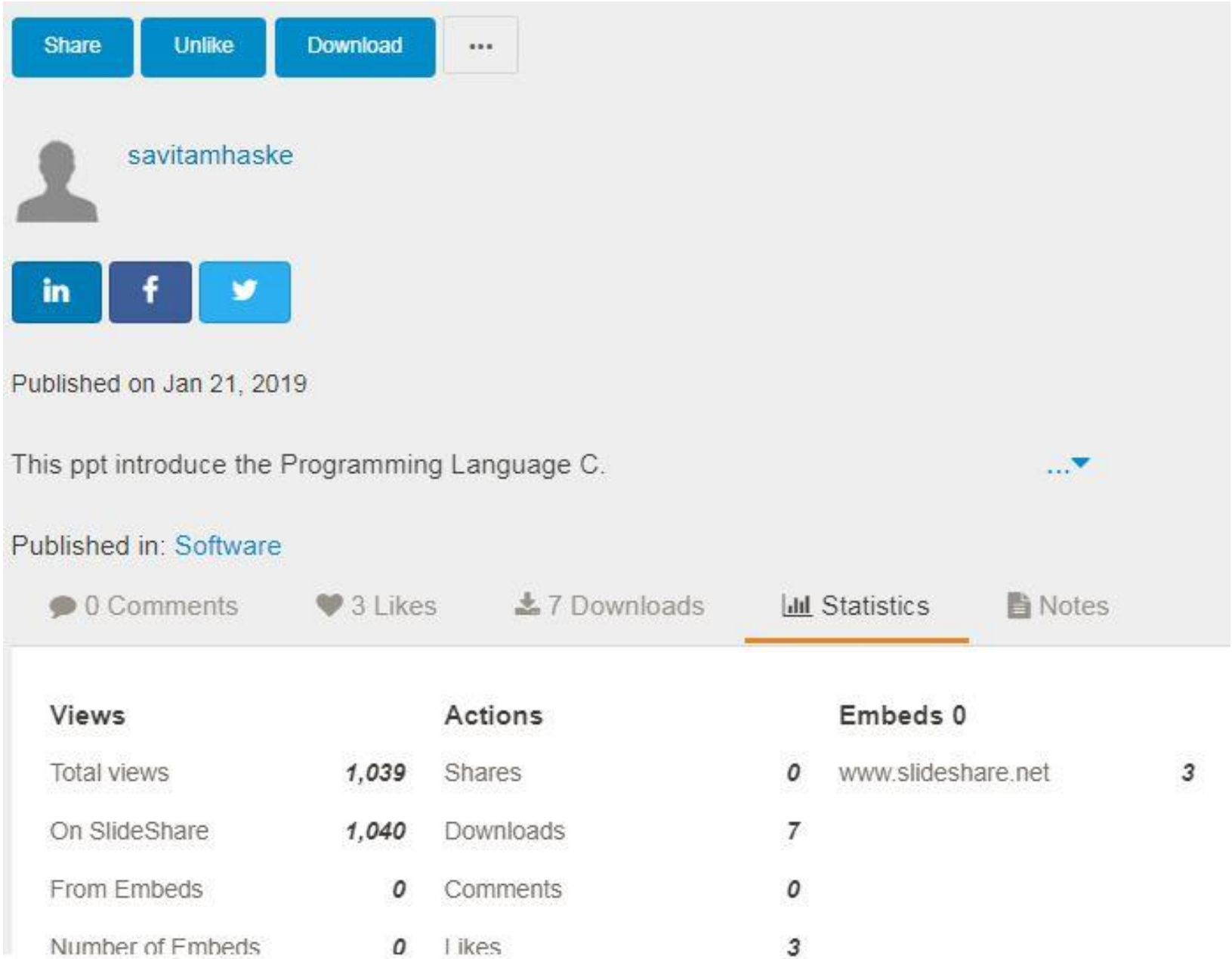
Dr. Lothe S.A.

PRINCIPAL
Vasantrao Naik Mahavidyalaya
Aurangabad

Appendix -- I

https://www.slideshare.net/search/slideshow?searchfrom=header&q=savitamhaske

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Published on Jan 21, 2019
This ppt introduce the Programming Language C.
Published in: Software
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Number of Embeds 0
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Downloads 7
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Likes 3
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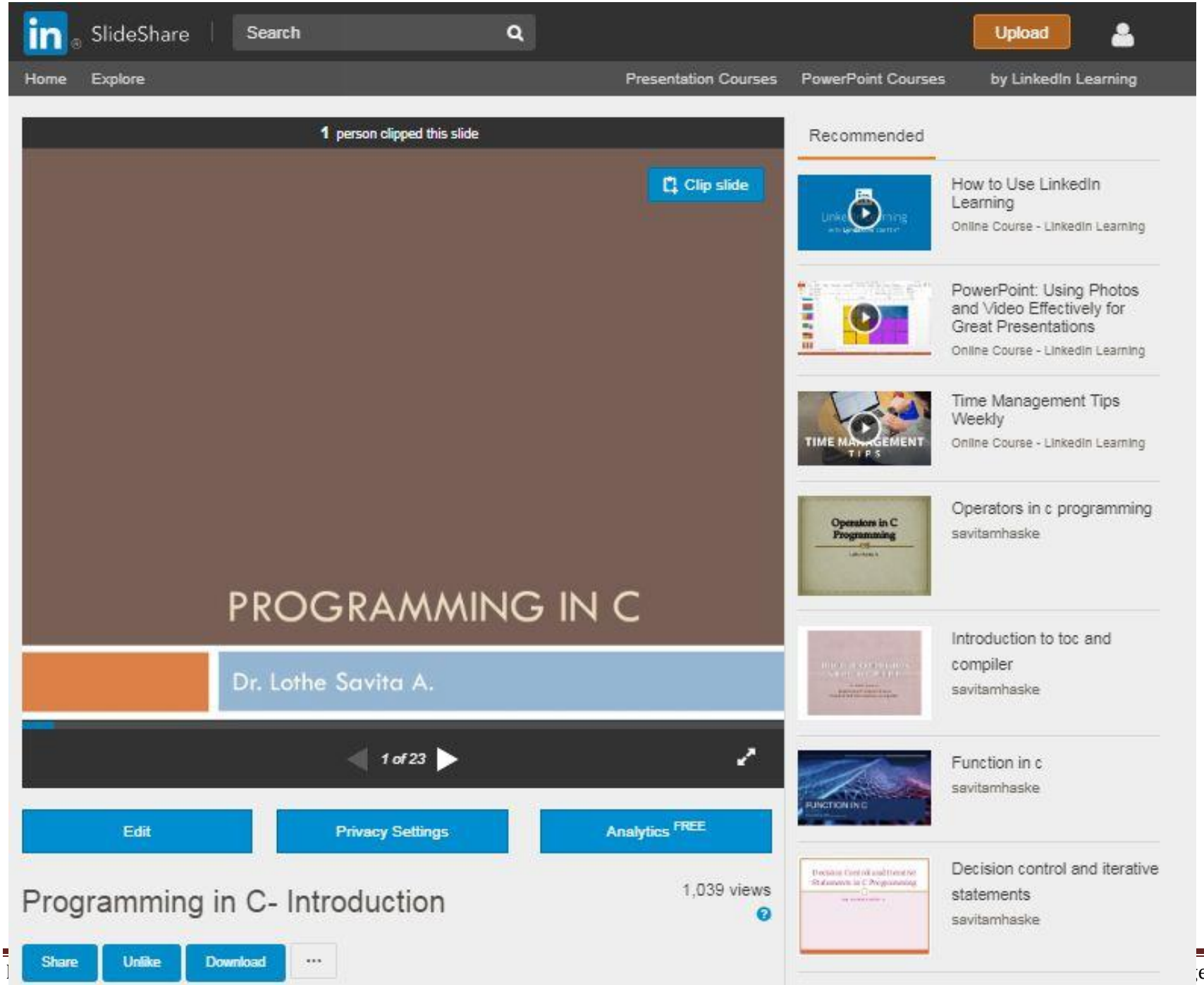
www.slideshare.net 3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PROGRAMMING IN C
Dr. Lothe Savita A.
1 of 23
Edit
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Analytics FREE
Programming in C- Introduction
1,039 views
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Unlike
Download
Recommended
How to Use LinkedIn Learning
Online Course - LinkedIn Learning
PowerPoint: Using Photos and Video Effectively for Great Presentations
Online Course - LinkedIn Learning
Time Management Tips Weekly
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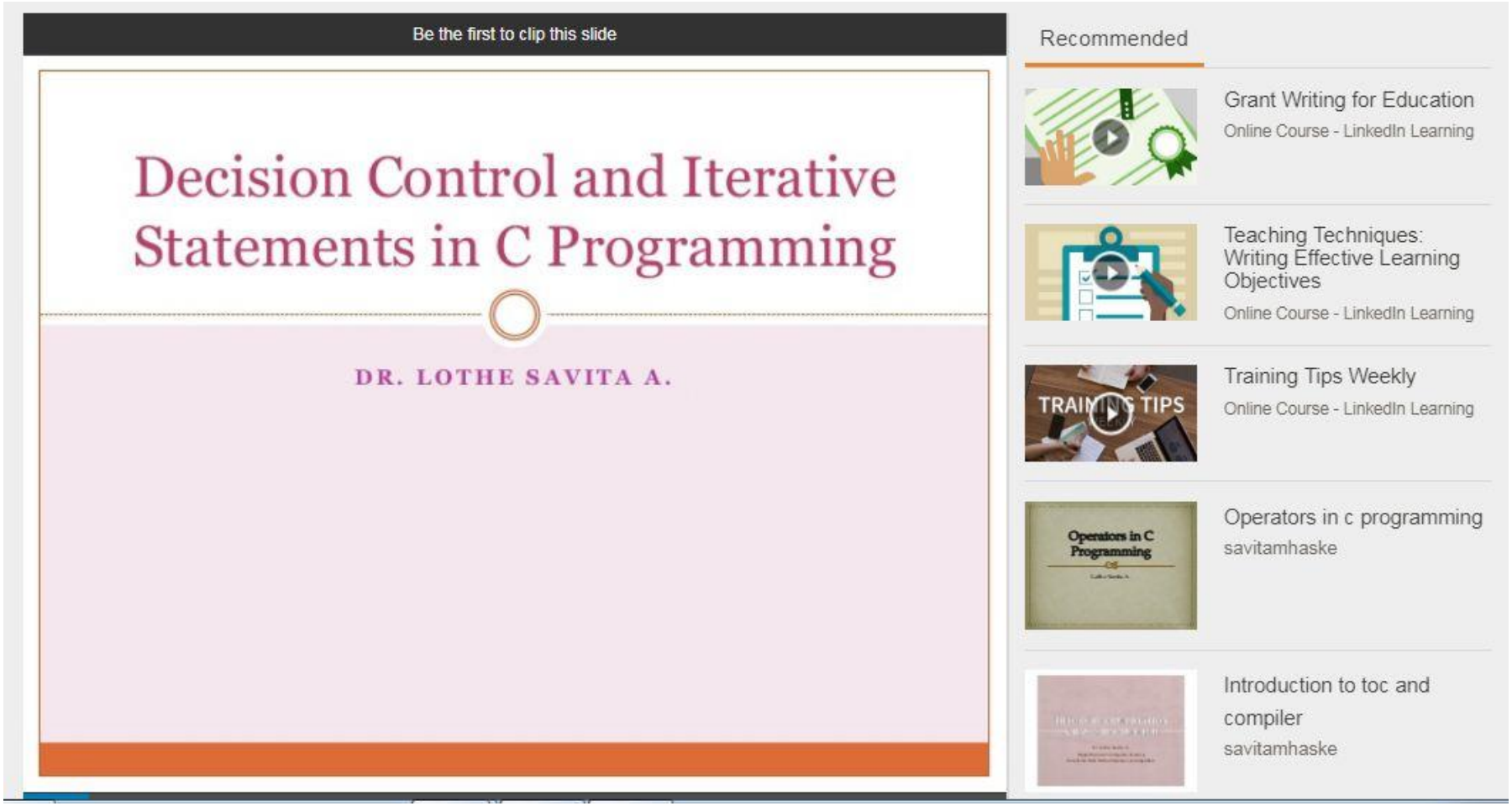
Operators in c programming
savitamhaske
Introduction to toc and compiler
savitamhaske
Function in c
savitamhaske
Decision control and iterative statements
savitamhaske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Decision Control and Iterative Statements in C Programming
DR. LOTHE SAVITA A.
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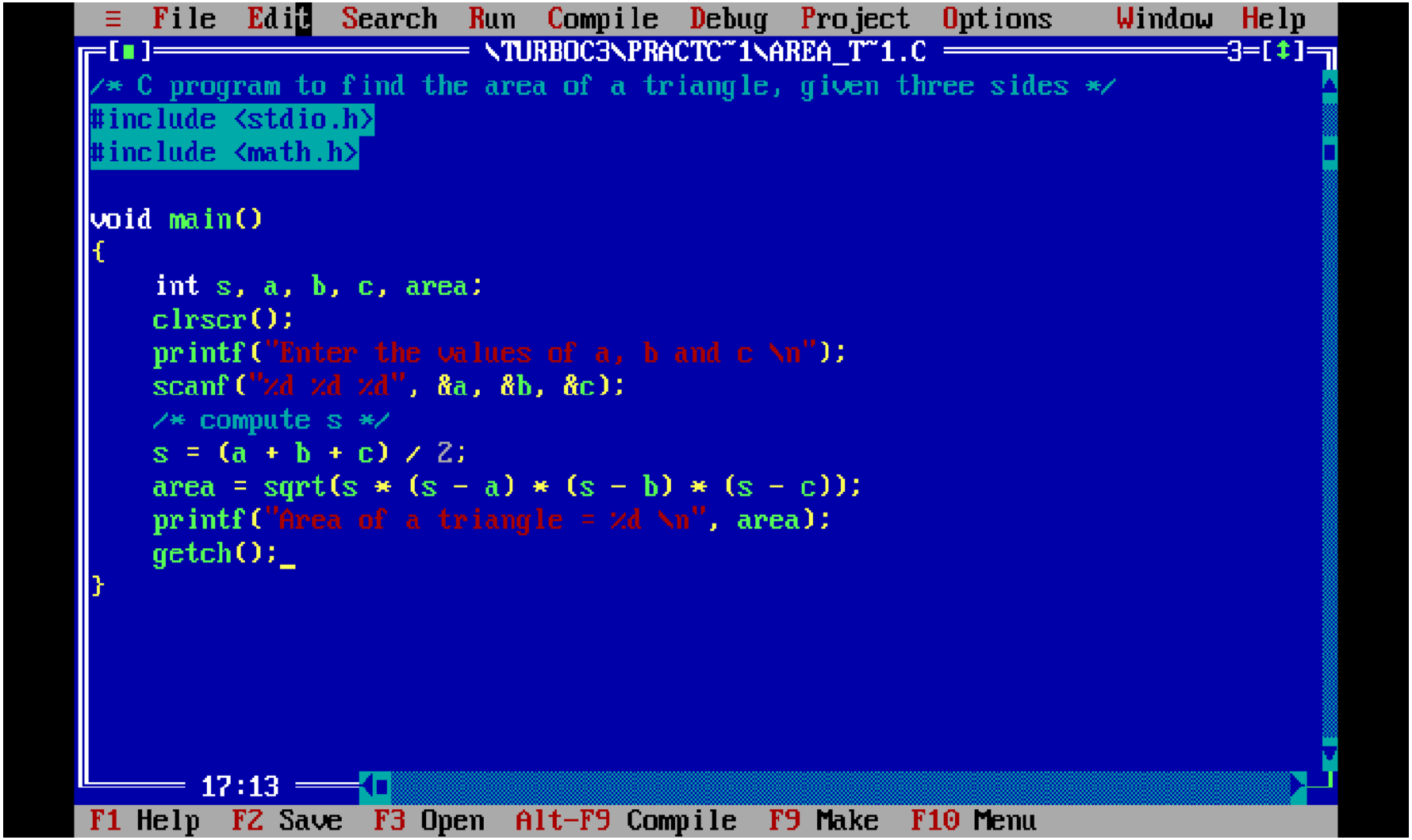
Online Course - LinkedIn Learning
Teaching Techniques: Writing Effective Learning Objectives
Online Course - LinkedIn Learning
Training Tips Weekly
Online Course - LinkedIn Learning
Operators in c programming
savitamhaske
Introduction to toc and compiler
savitamhaske

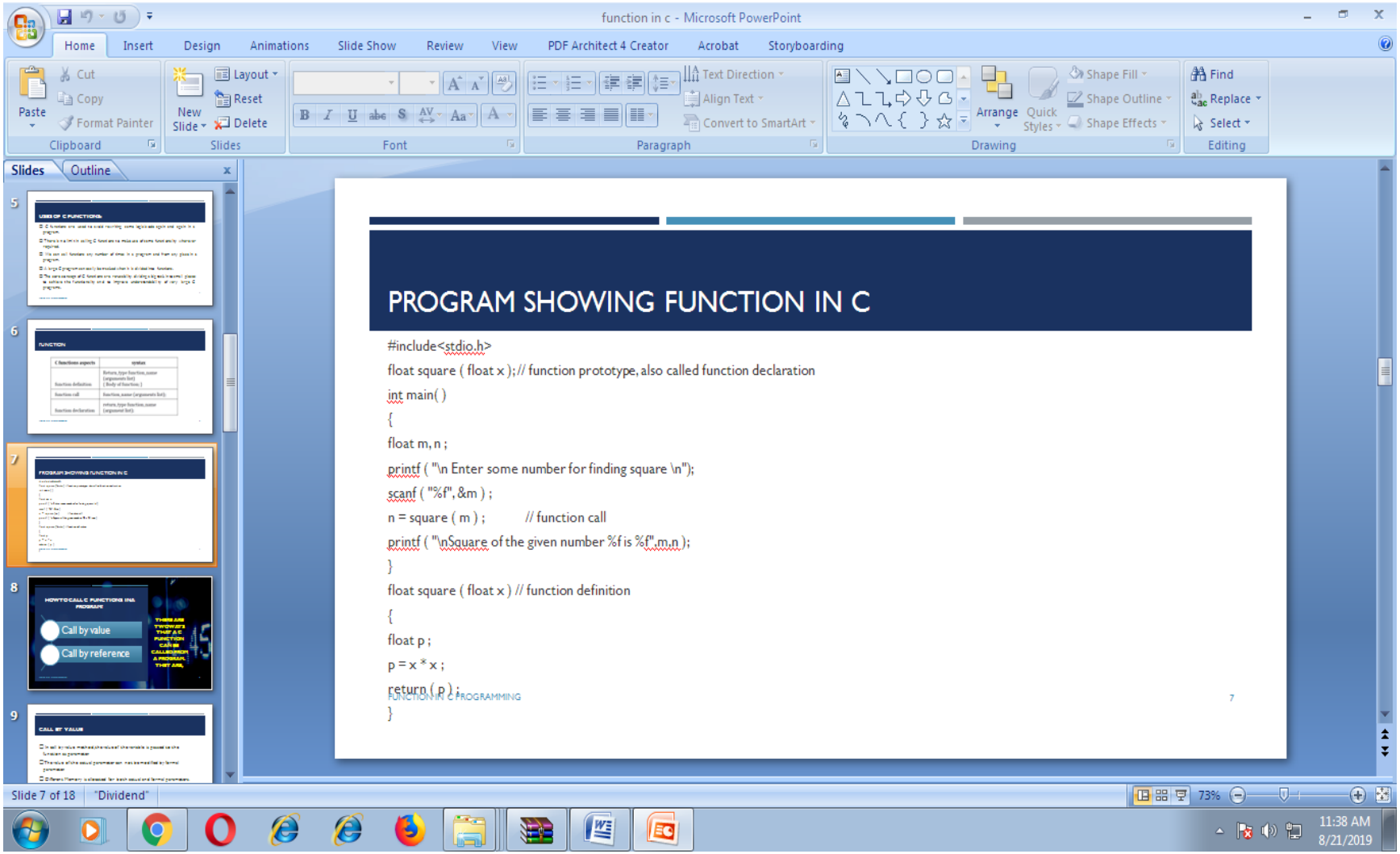
Appendix – II

For Practical – Turboc Editor



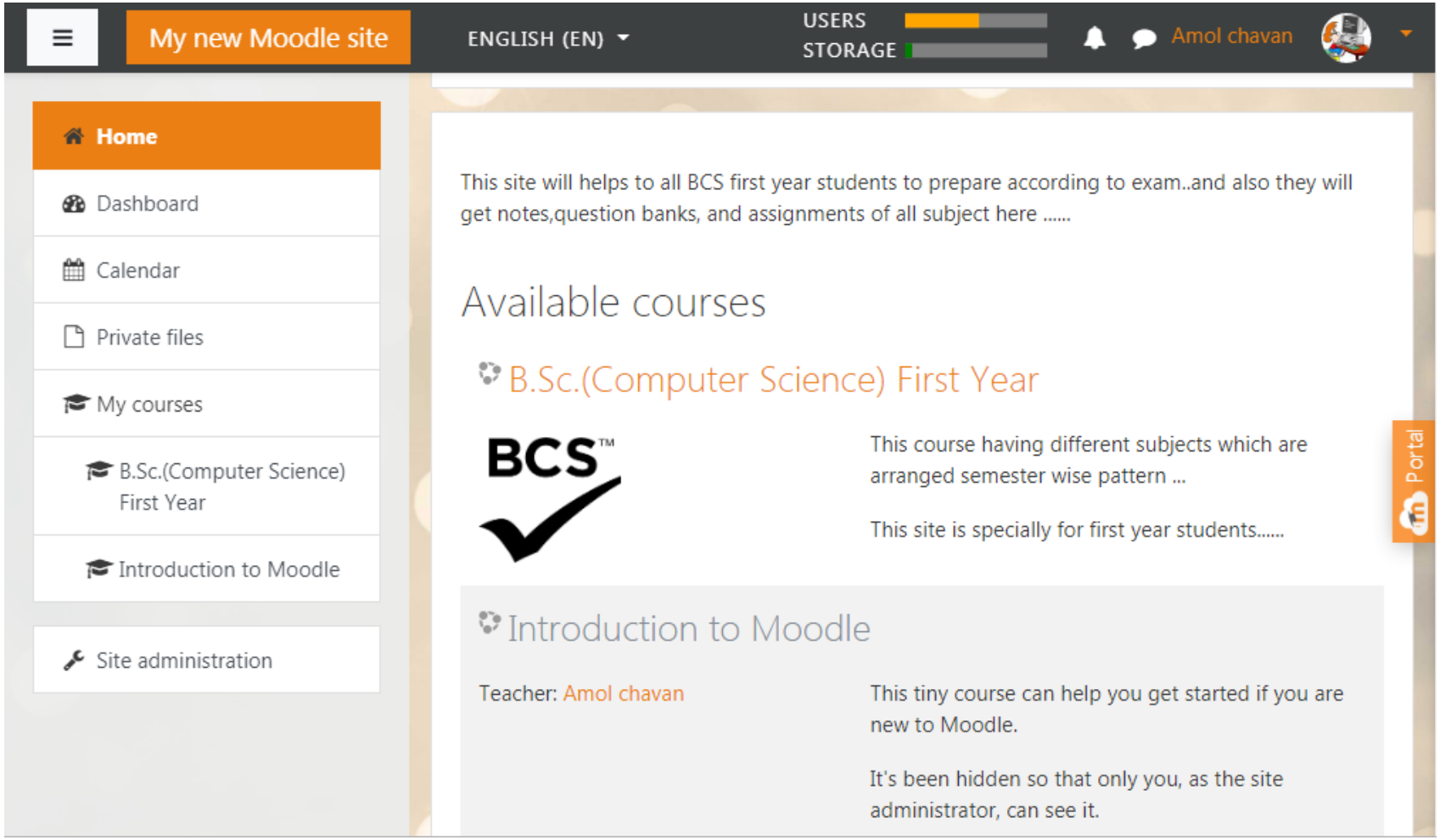
Appendix – III

PPT –PowerpointPrsentation

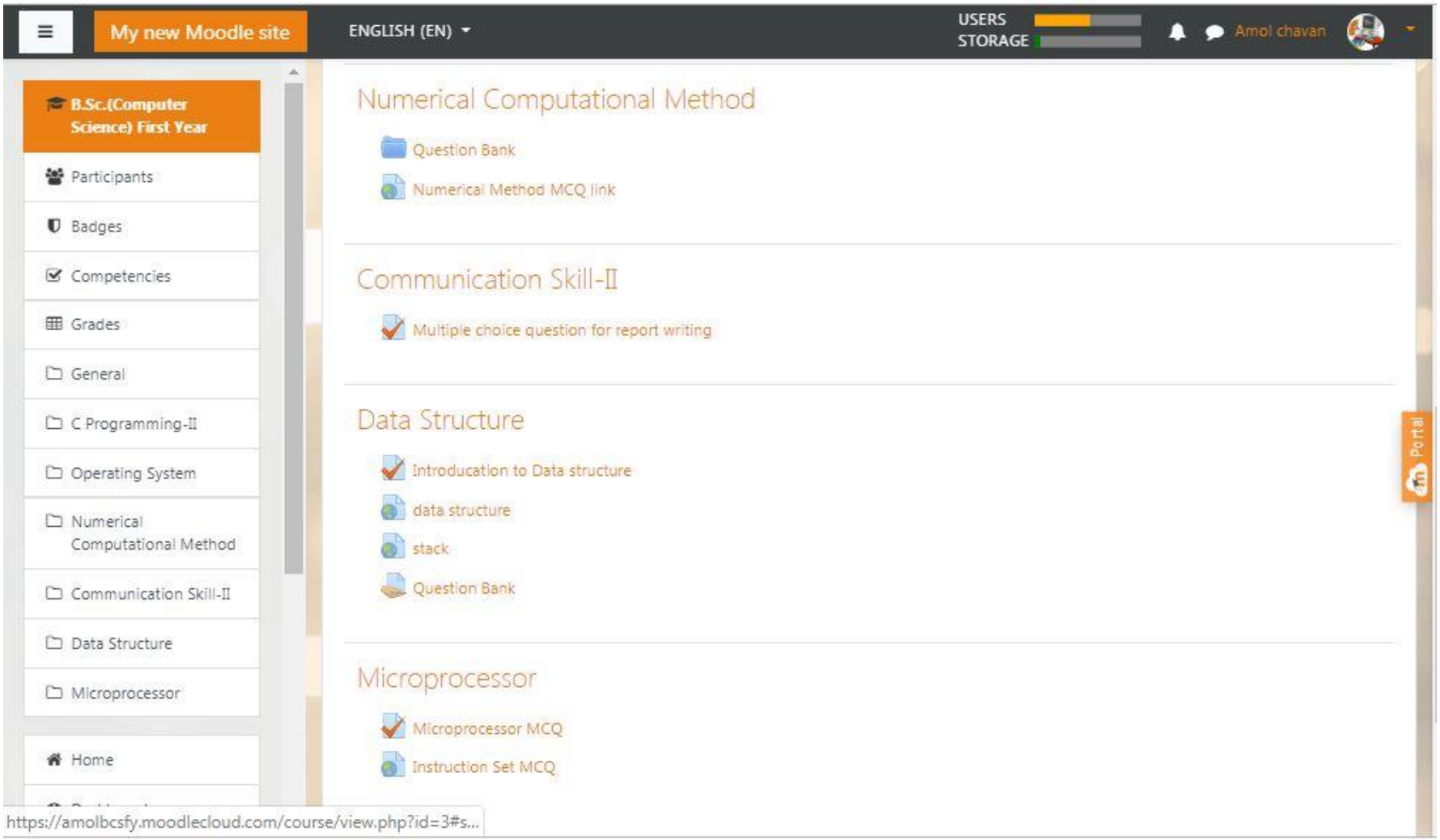


Appendix IV

LMS –Using Moodle




My new Moodle site
ENGLISH (EN)
USERS
STORAGE
Amol chavan
B.Sc.(Computer Science) First Year
Participants
Badges
Competencies
Grades
General
C Programming-II
Operating System
Numerical Computational Method
Communication Skill-II
Data Structure
Microprocessor
Home
B.Sc.(Computer Science) First Year
Home / My courses / B.Sc.(Computer Science) First Year
Announcements
C Programming-II
Notes
function quiz 1
function quiz 2
Function quiz 3
Function quiz 4
pointer quiz 1
pointer quiz 2
All quiz
MCQ's Test 1
Let us C EBook - Y.P.Kanetkar
https://amolbcsfy.moodlecloud.com/badges/view.php?type=...


My new Moodle site
ENGLISH (EN)
USERS
STORAGE
Amol chavan
B.Sc.(Computer Science) First Year
Participants
Badges
Competencies
Grades
General
C Programming-II
Operating System
Numerical Computational Method
Communication Skill-II
Data Structure
Microprocessor
Home
Numerical Computational Method
Question Bank
Numerical Method MCQ link
Communication Skill-II
Multiple choice question for report writing
Data Structure
Introducation to Data structure
data structure
stack
Question Bank
Microprocessor
Microprocessor MCQ
Instruction Set MCQ
Portal
https://amolbcsfy.moodlecloud.com/course/view.php?id=3#s...

(For the year 2018-19)

2.3 Teaching - Learning Process	
2.3.1 Percentage of teachers using ICT for effective teaching with Learning Management Systems (LMS), E-learning resources etc. (current year data)	
Name of teacher using ICT *(LMS, e-Resources)*	E-resources and techniques used
Ms .Vaishali Ashok Chinchkhede	**Appendix I** PPT- Communication Skill **Appendix II** www.amolbcsfy.moodlecloud.com **Appendix III** Editor-oracle database. **Appendix IV** Slide share PPT- Relational Data model **Appendix V** Online video link of Computer Fundamental.

Vaishali.
Vaishali A. Chinchkhede.
Dept. of computer Science.

Dept HEAD Comp Sci.
Department of Computer Science
Vasantrao Naik Mahavidyalaya,
Aurangabad-431 003.

(For the year 2018-19)

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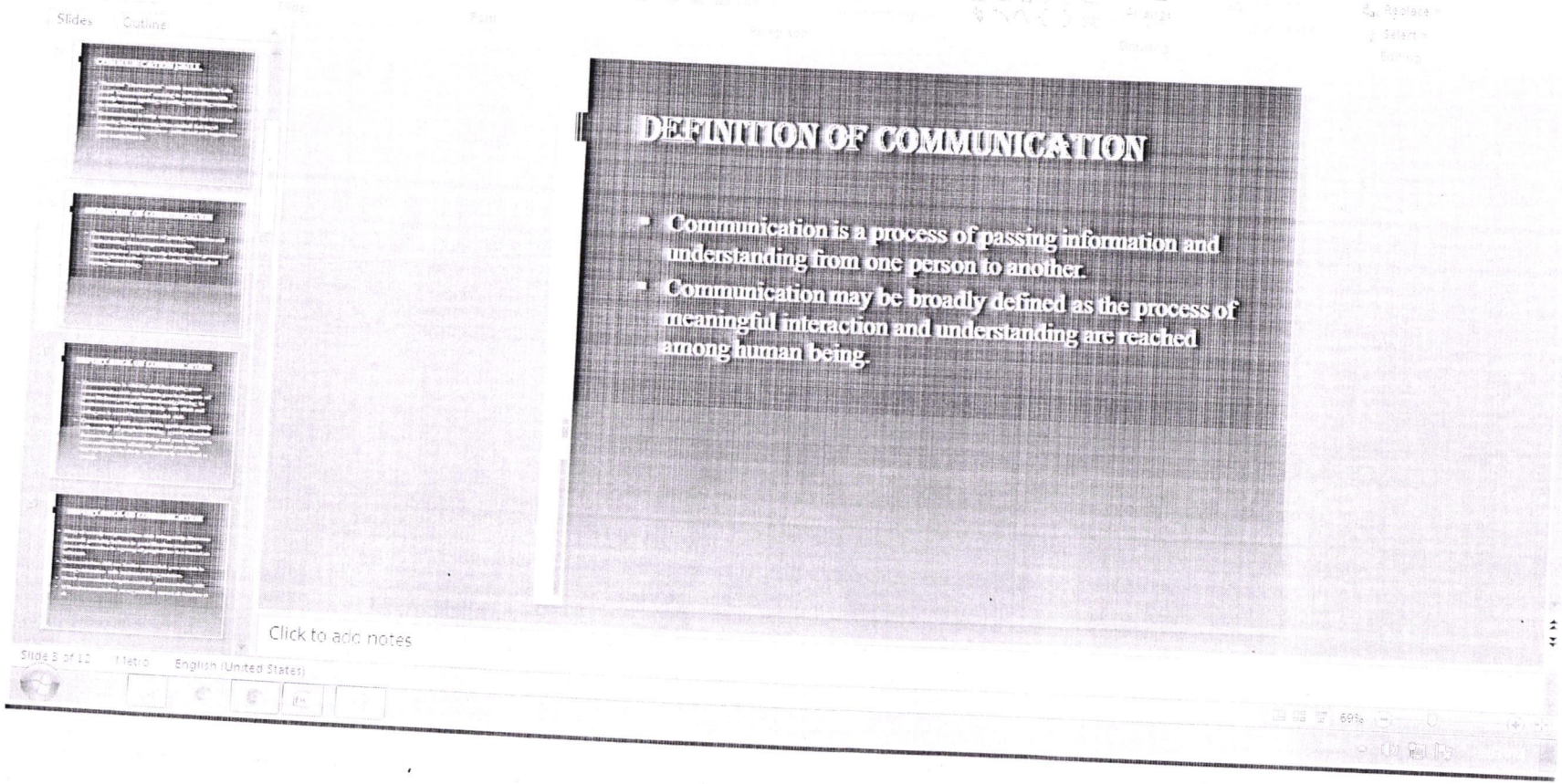
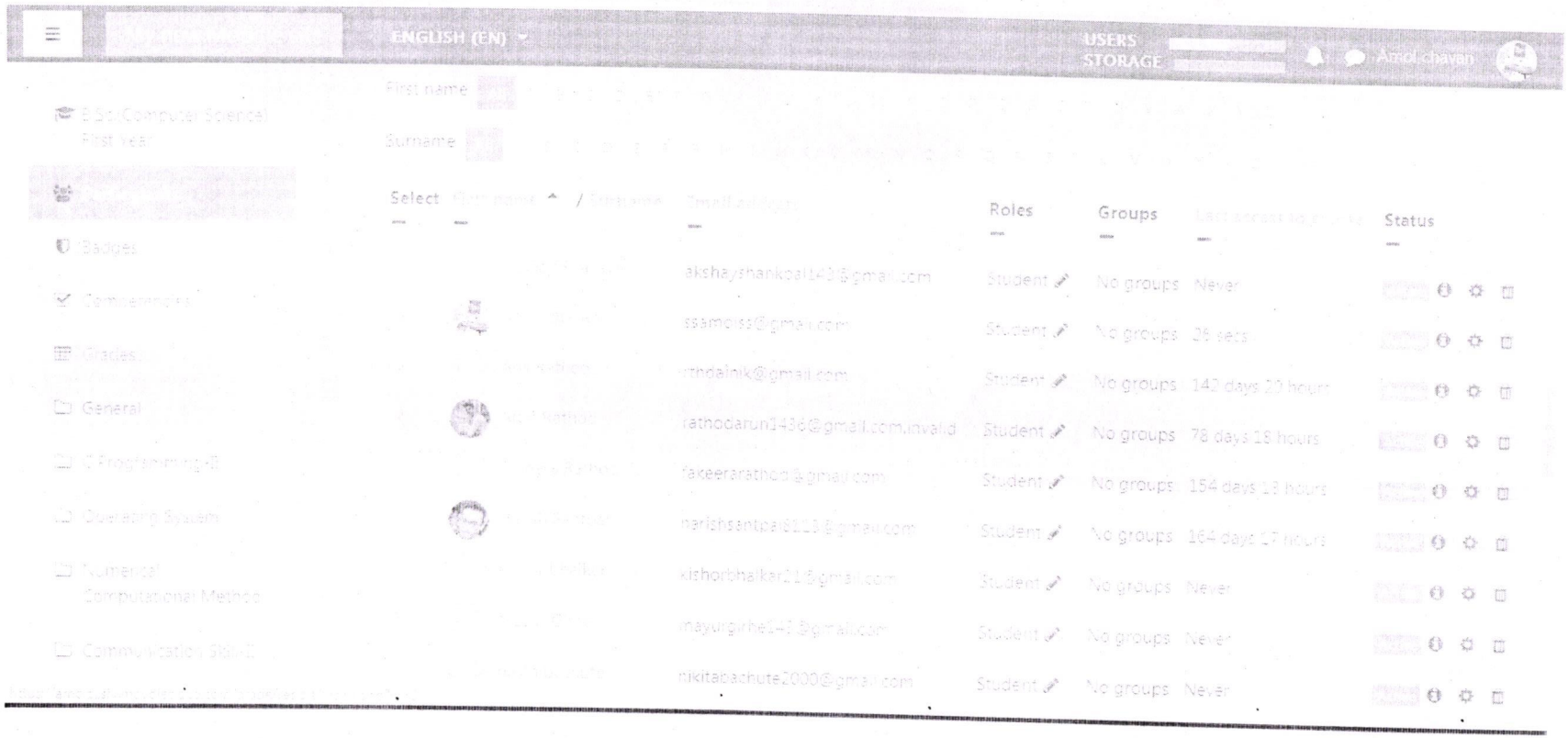
Appendix – I


Slides
Outline
DEFINITION OF COMMUNICATION
Communication is a process of passing information and understanding from one person to another.
Communication may be broadly defined as the process of meaningful interaction and understanding are reached among human being.
Click to add notes
Slide 3 of 10
English (United States)

Appendix – II


ENGLISH (EN)
USERS
STORAGE
Amol chavan
First name
Surname
Select
Roles
Groups
Status
Student
No groups
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No groups 26 secs
No groups 140 days 20 hours
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No groups Never
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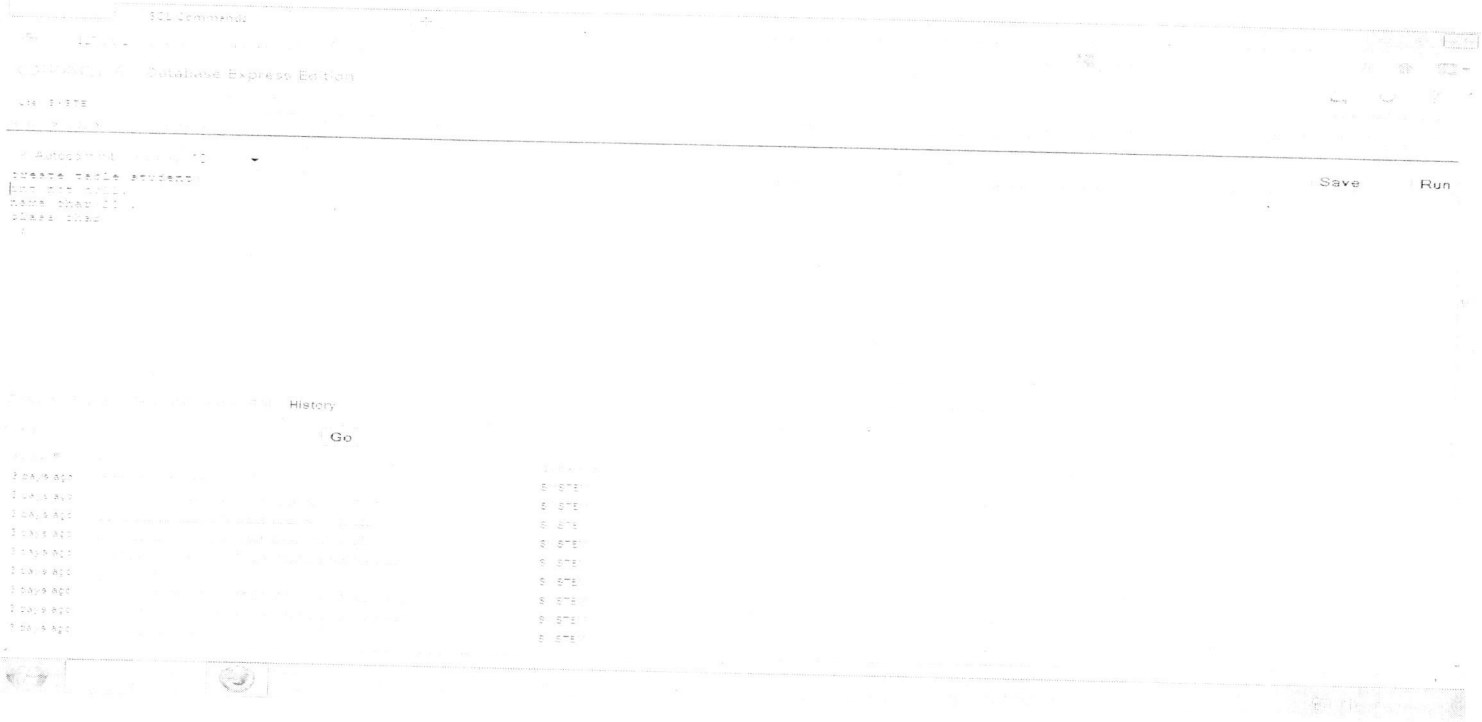
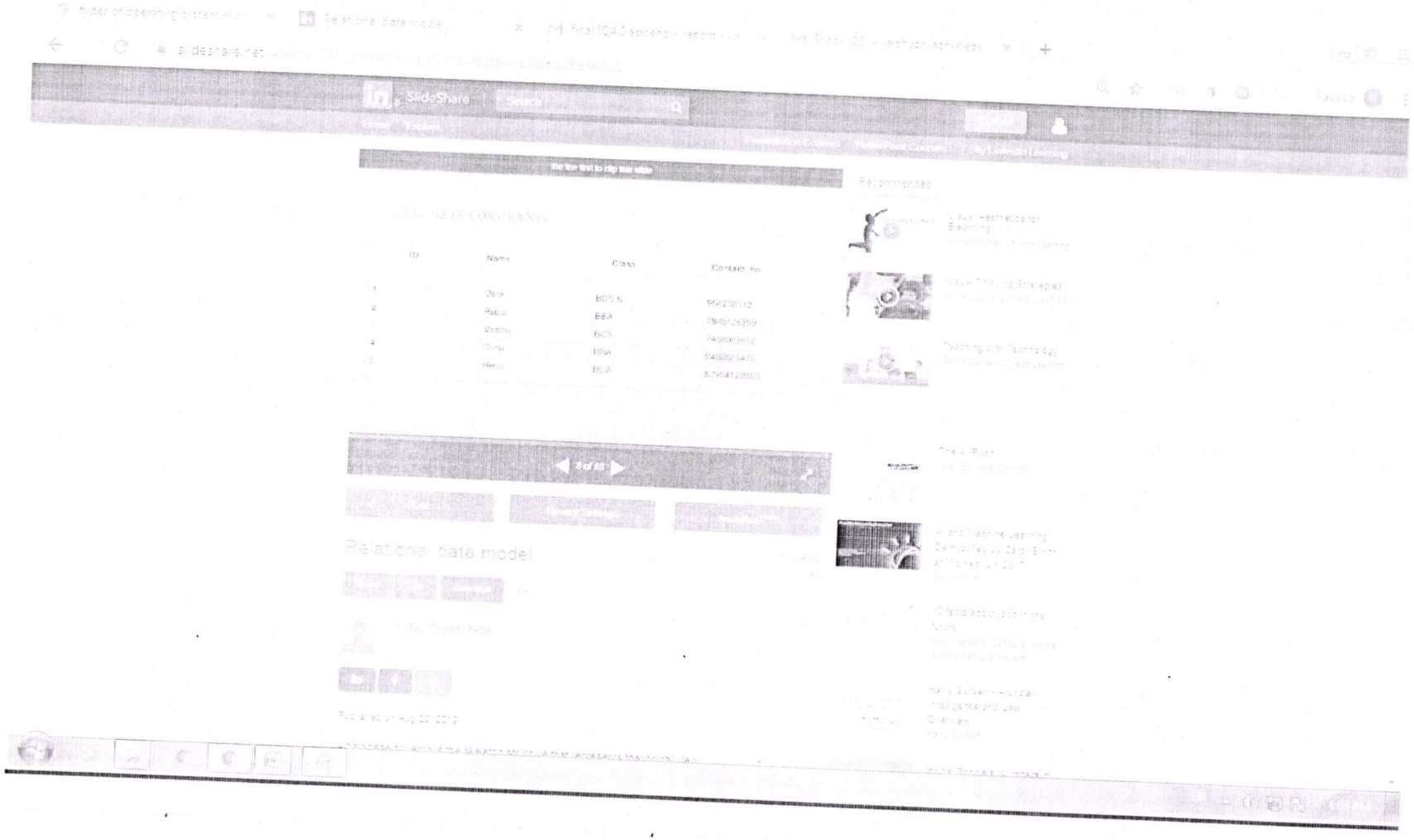
No groups Never
Badges
General

Appendix – III



Appendix – IV



Appendix – IV

1) **Computer Fundamental**

https://www.youtube.com/watch?v=NtPc0jI21i0

https://www.youtube.com/watch?v=cxhU0wXsKEM

2) **Database Management System**

https://www.slideshare.net/VaishaliChinchkhede/relational-data-model-165534508

(For the year 2018-19)

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(For the year 2018-19)

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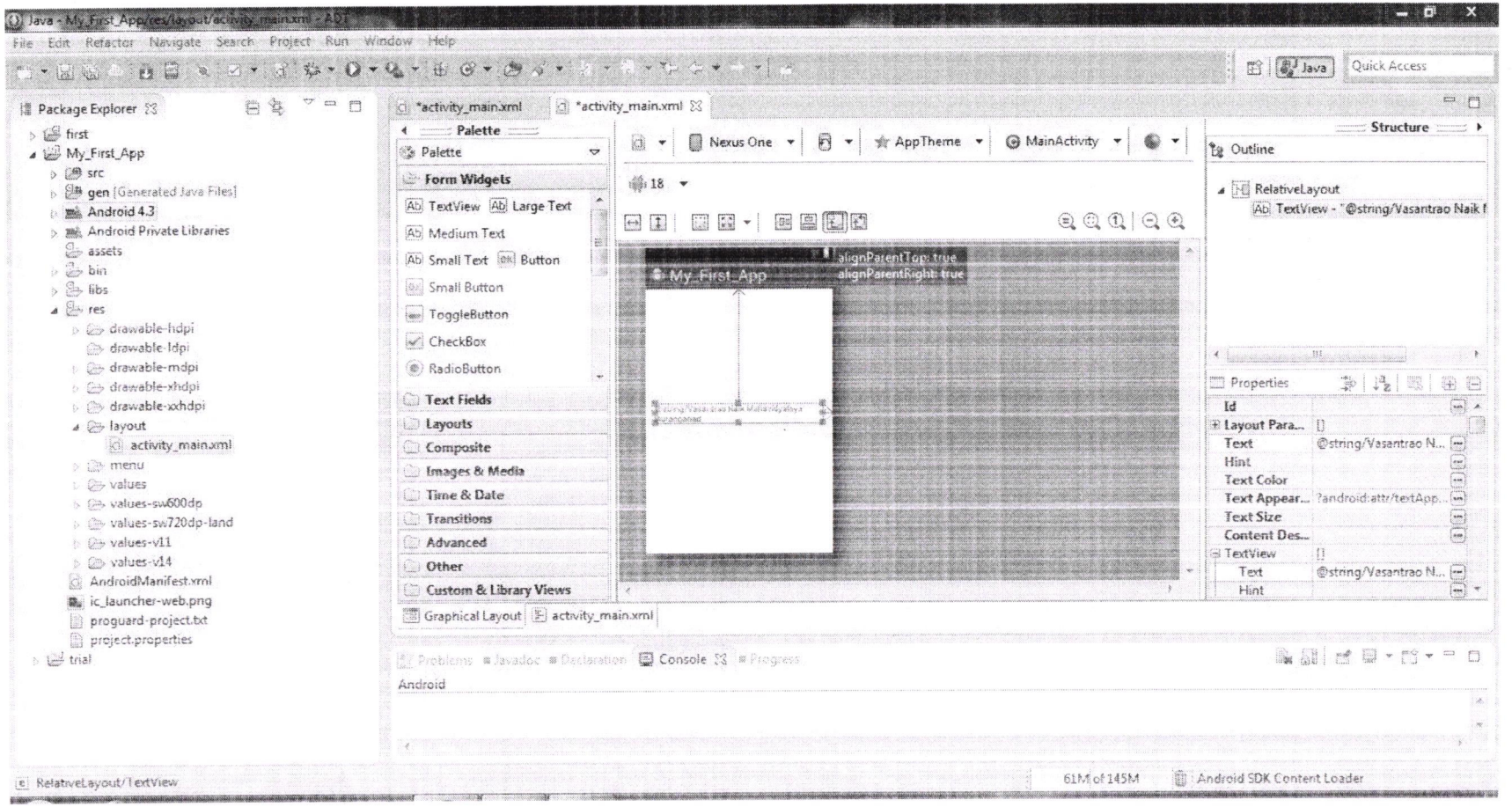
Chavan
Amol. S. Chavan
Dept of Computer Science.

HEAD
Department of Computer Science
Vasantrao Naik Mahavidyalaya

Appendix -- I


Java - My_First_App/res/layout/activity_main.xml - ADT
File Edit Refactor Navigate Search Project Run Window Help
Package Explorer
first
My_First_App
src
gen [Generated Java Files]
Android 4.3
Android Private Libraries
assets
bin
libs
res
drawable-hdpi
drawable-ldpi
drawable-mdpi
drawable-xhdpi
drawable-xxhdpi
layout
activity_main.xml
menu
values
values-sw600dp
values-sw720dp-land
values-v11
values-v14
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ic_launcher-web.png
proguard-project.txt
project.properties
trial
*activity_main.xml
*activity_main.xml
Palette
Form Widgets
TextView
Large Text
Medium Text
Small Text
Button
Small Button
ToggleButton
CheckBox
RadioButton
Text Fields
Layouts
Composite
Images & Media
Time & Date
Transitions
Advanced
Other
Custom & Library Views
Nexus One
AppTheme
MainActivity
18
My_First_App
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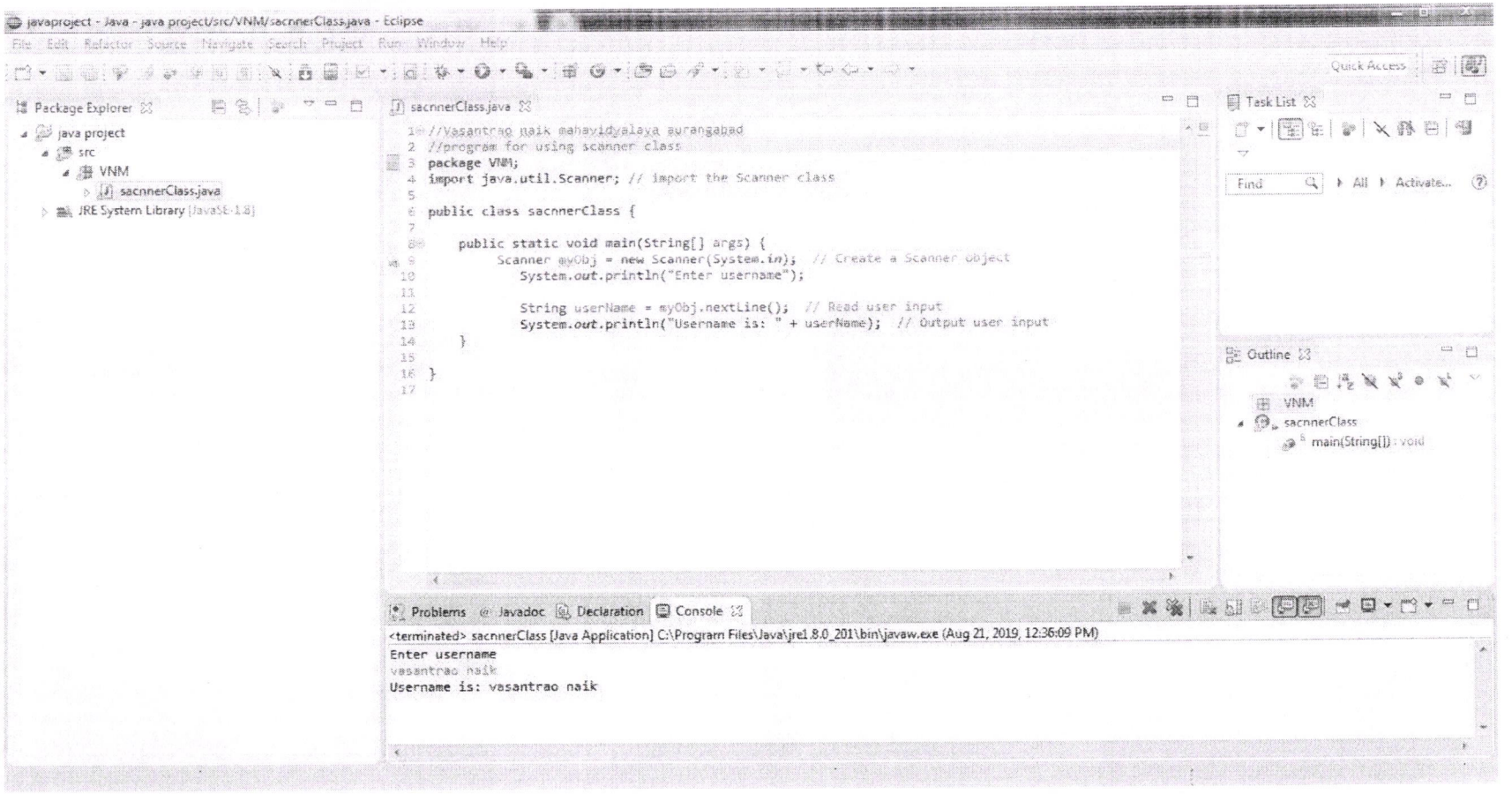
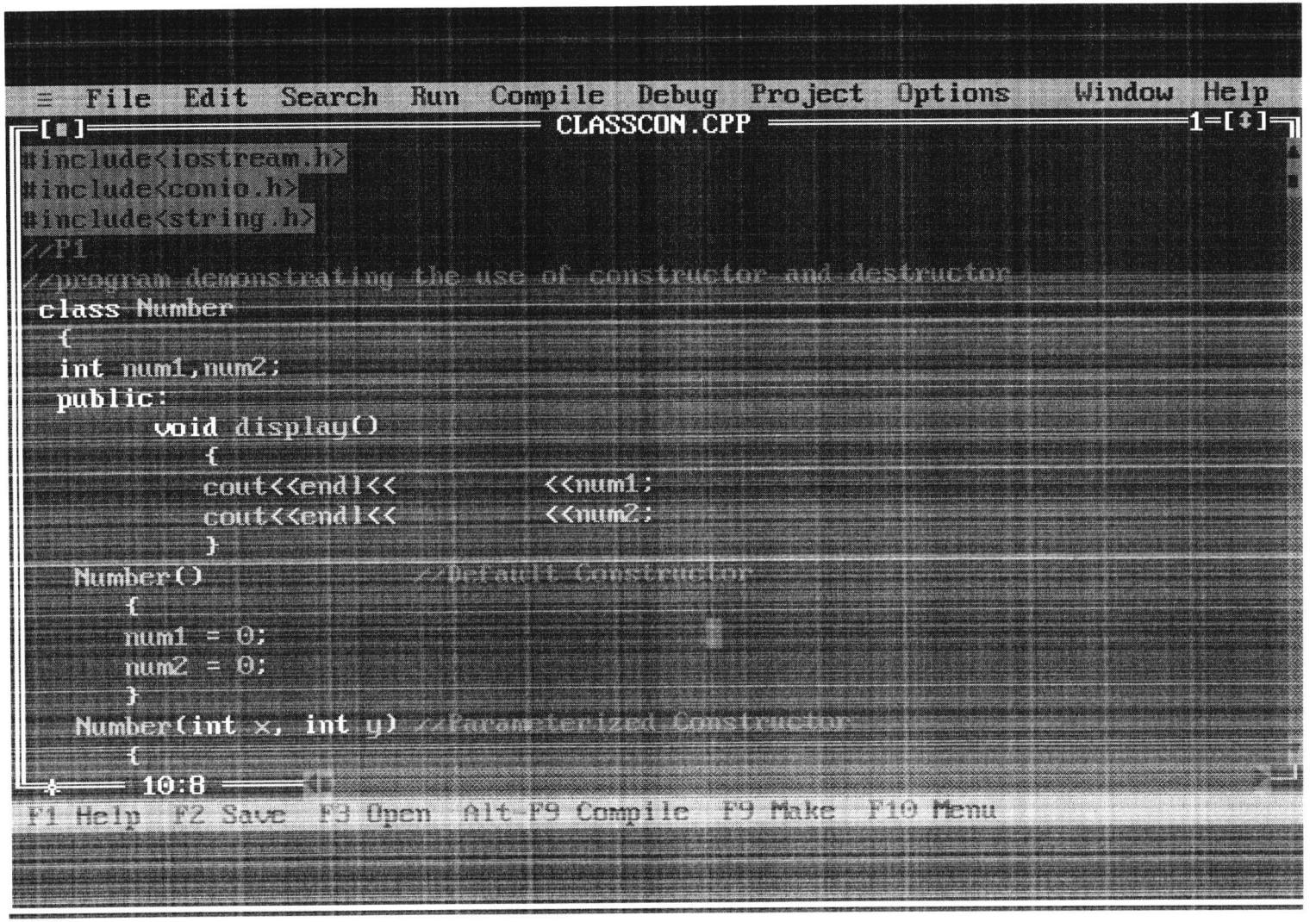
alignParentRight: true
Graphical Layout
activity_main.xml
Structure
Outline
RelativeLayout
TextView - "@string/Vasantrao Naik
Properties
Id
Layout Para...
Text
@string/Vasantrao N...
Hint
Text Color
Text Appear...
?android:attr/textApp...
Text Size
Content Des...
TextView
Text
@string/Vasantrao N...
Hint
Problems
Javadoc
Declaration
Console
Progress
Android
RelativeLayout/TextView
61M of 145M
Android SDK Content Loader

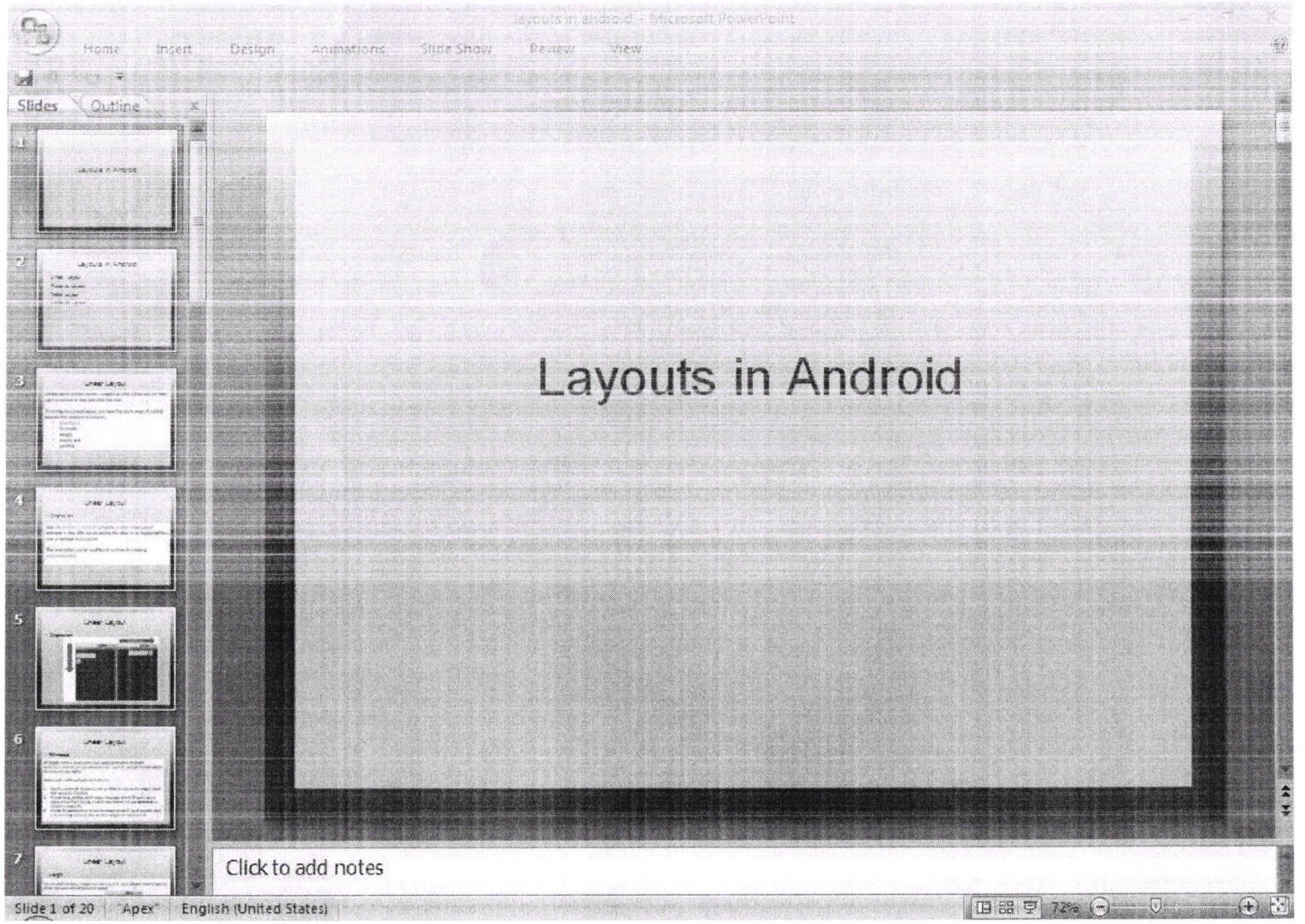
Appendix -- II


javaproject - Java - java project/src/VNM/sacnnerClass.java - Eclipse
File Edit Refactor Source Navigate Search Project Run Window Help
Quick Access
Package Explorer
java project
src
VNM
sacnnerClass.java
JRE System Library [JavaSE-1.8]
sacnnerClass.java
1 //Vasantrao naik mahavidyalaya aurangabad
2 //program for using scanner class
3 package VNM;
4 import java.util.Scanner; // import the Scanner class
5
6 public class sacnnerClass {
7
8 public static void main(String[] args) {
9 Scanner myObj = new Scanner(System.in); // Create a Scanner Object
10 System.out.println("Enter username");
11
12 String userName = myObj.nextLine(); // Read user input
13 System.out.println("Username is: " + userName); // Output user input
14 }
15
16 }
17
Task List
Find
All
Activate...
Outline
VNM
sacnnerClass
main(String[]) : void
Problems
Javadoc
Declaration
Console
<terminated> sacnnerClass [Java Application] C:\Program Files\Java\jre1.8.0_201\bin\javaw.exe (Aug 21, 2019, 12:36:09 PM)
Enter username
vasantrao naik
Username is: vasantrao naik

Appendix – III



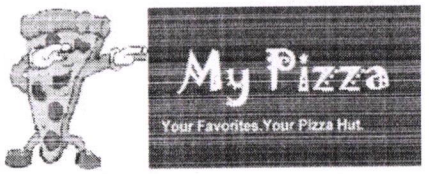
Appendix – IV


Home
Insert
Design
Animations
Slide Show
Review
View
Slides
Outline
Layouts in Android
Click to add notes
Slide 1 of 20
"Apex"
English (United States)

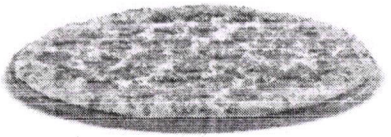
Appendix – V

Android Project sample Screenshots:

1.Homepage

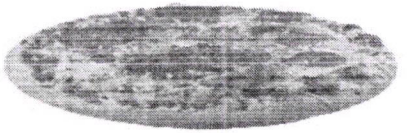


2.Veg Menu



NON VEGGIE MAGIC SOLO - Chicken Keema Pizza.

☐ Price : 290

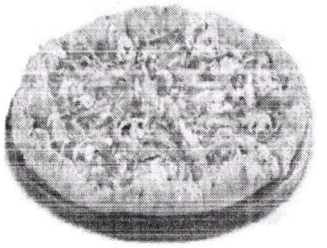


CHICKEN N SPICY - Chicken Hot and Chilly, Capsicum, Mushroom Pizza.

☐ Price : 300

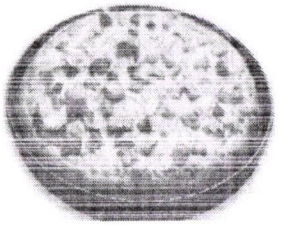
CANCEL ORDER

Menu



Veggie Supreme : Mushroom, capsicum, onion, tomato, baby corn and olives.

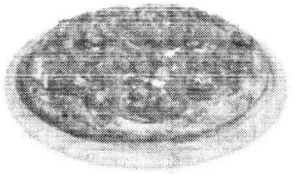
☐ Price : 265



Country Feast : Sweet corn, mushroom, tomato, onion and capsicum.

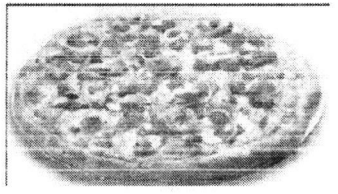
CANCEL ORDER

2.Non-Veg



Fiery Ride : Tomato, Onion, Capsicum, Sweet Corn , Olives , Jalapenos and Green Chillies

☐ **Price : 265**



Panner Makhani : Paneer, capsicum, onion, and red paprika.

☐ **Price : 230**

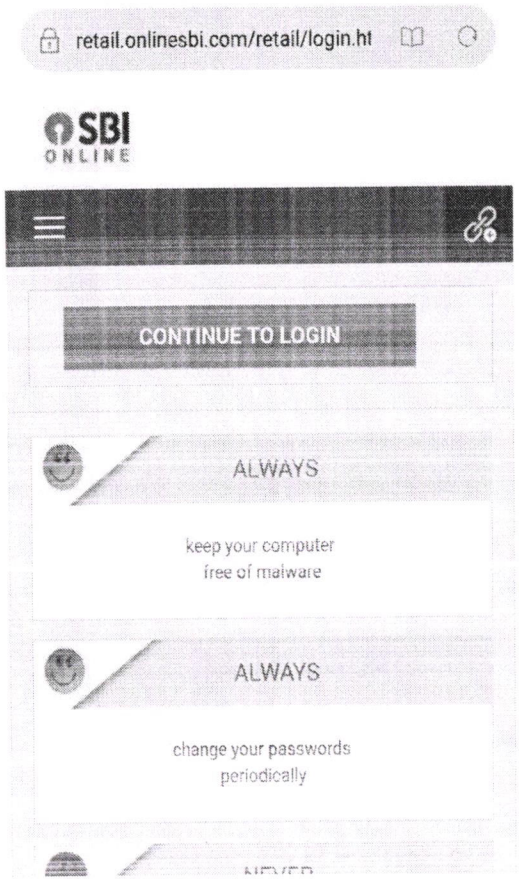
CANCEL ORDER

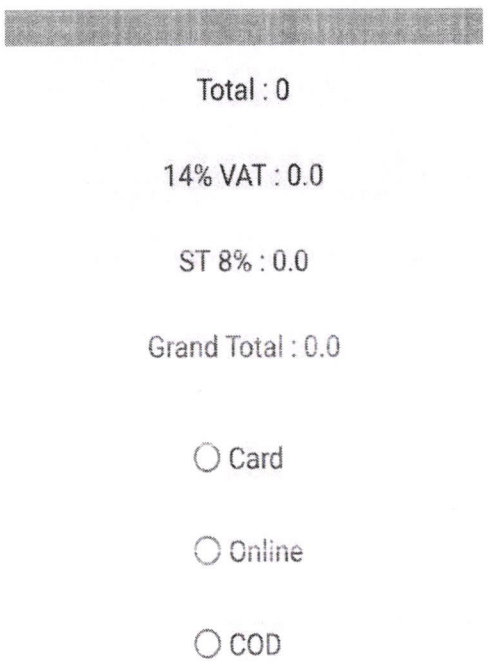
Paneer overloaded : Peppy Paneer, Onion, Tomato, Green Chillies, Corn, Italian Sprinkle
Price : 199

Total : 199

PAY

Payment Options And delivery



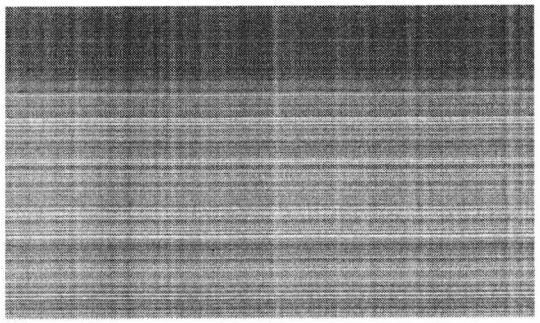


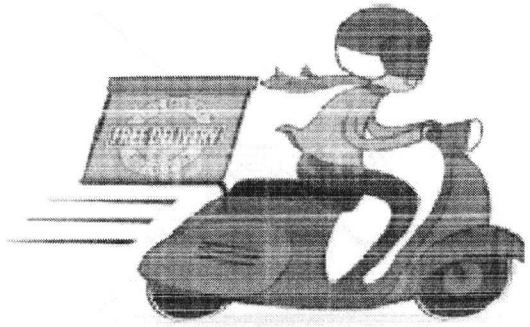
Total : 230

Please provide Bank name

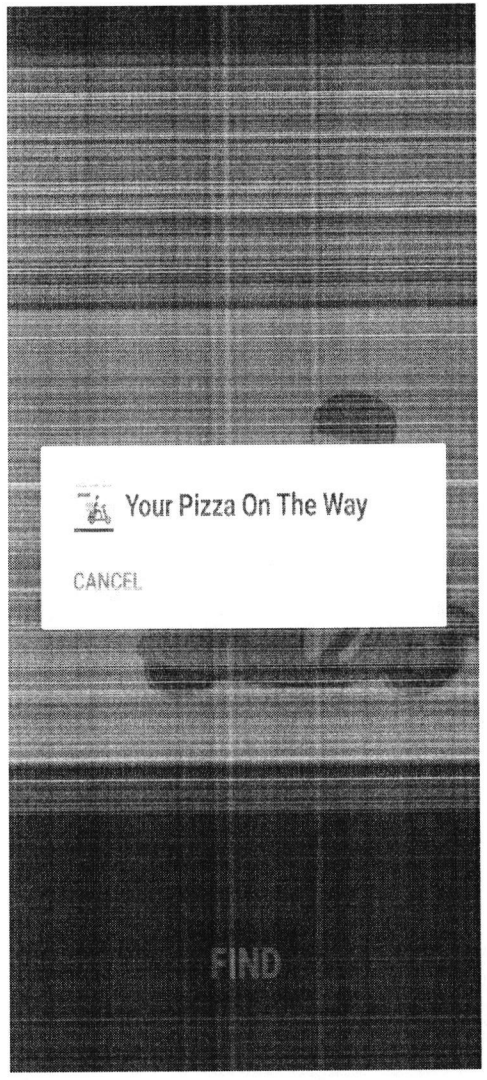
- (•) State Bank of India
- ( ) Bank of Baroda
- ( ) Allahabad Bank
- ( ) Central Bank of India
- ( ) Andhra Bank
- ( ) Punjab National Bank
- ( ) Canara Bank

CANCEL

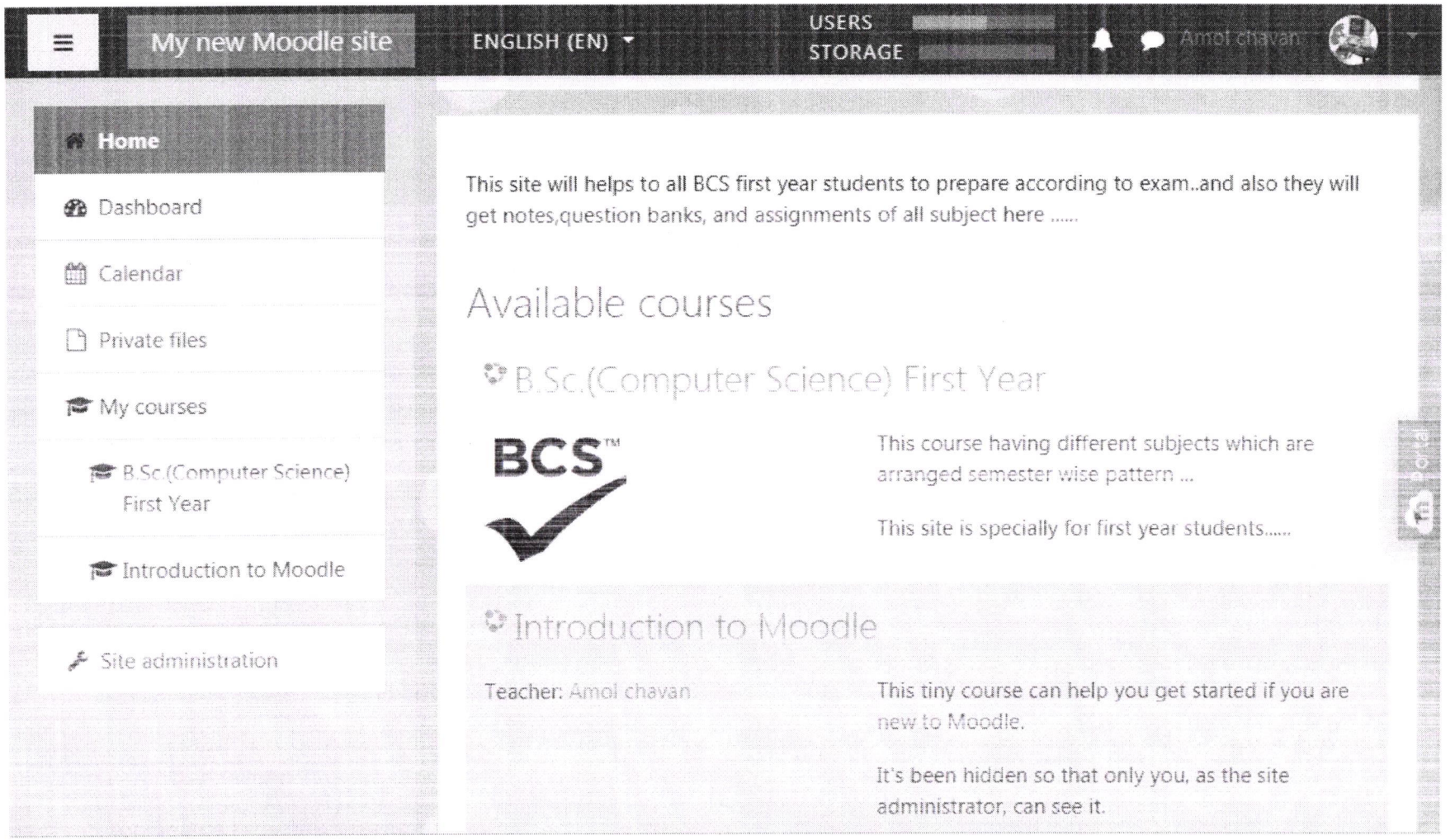


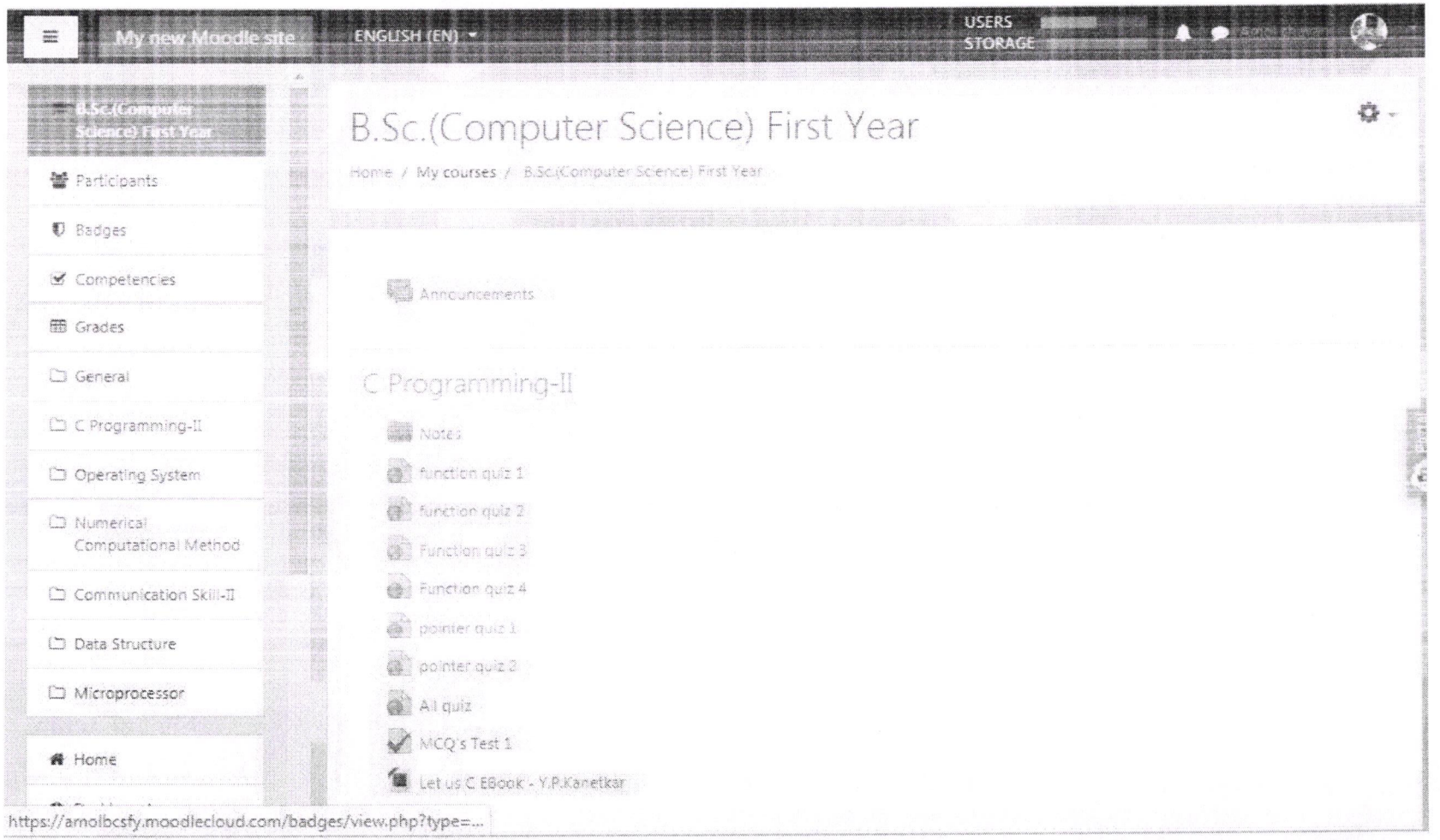


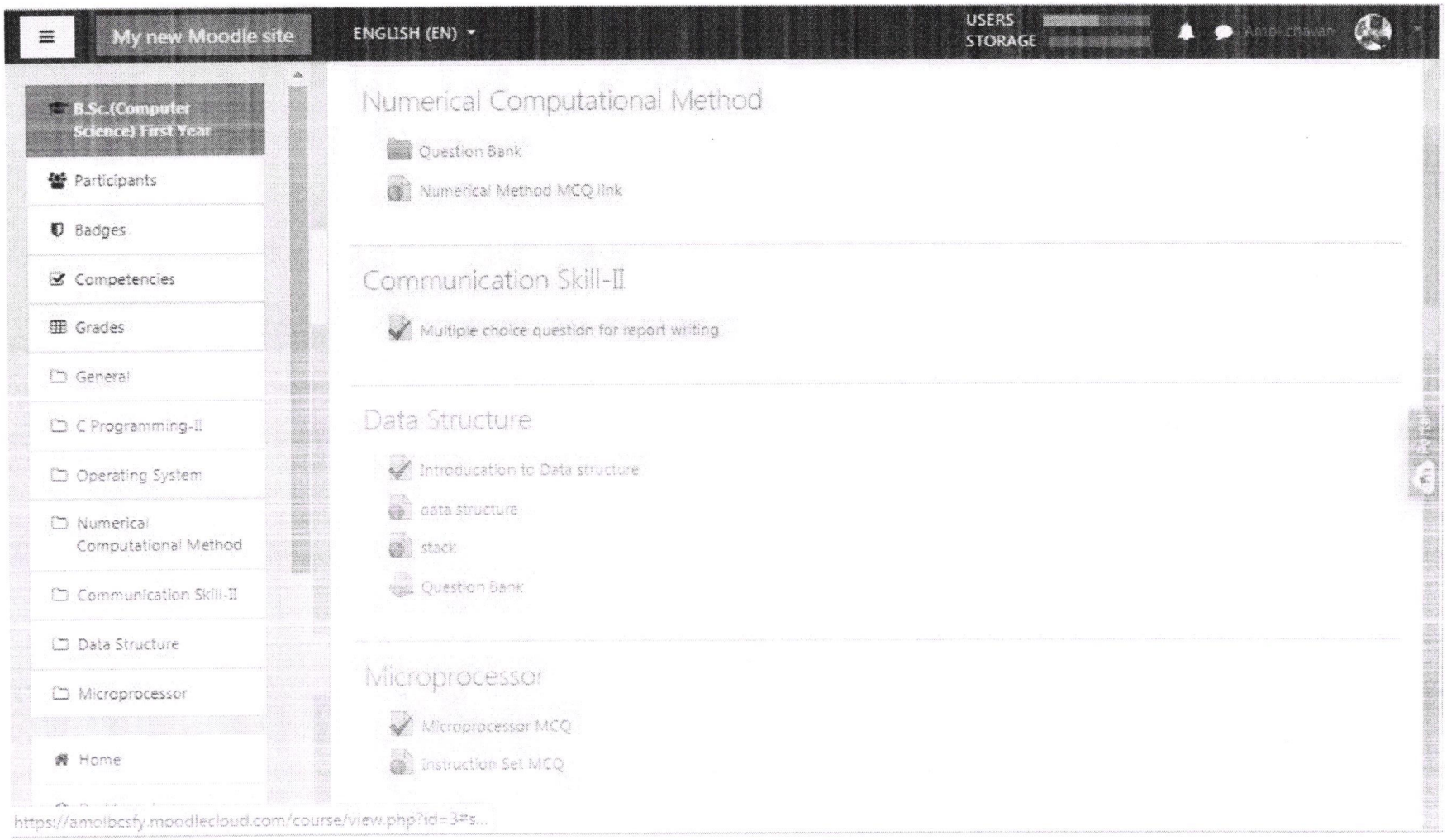
FIND

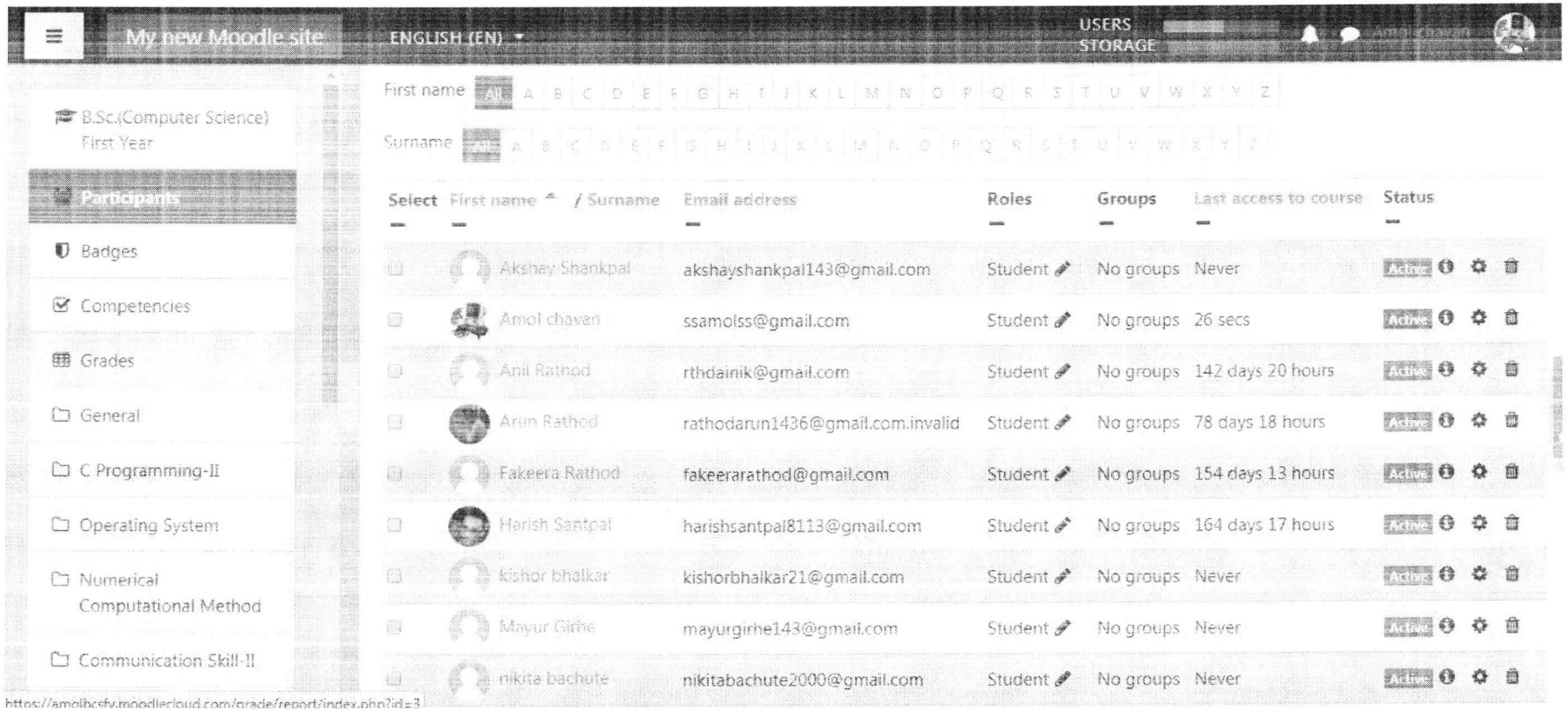


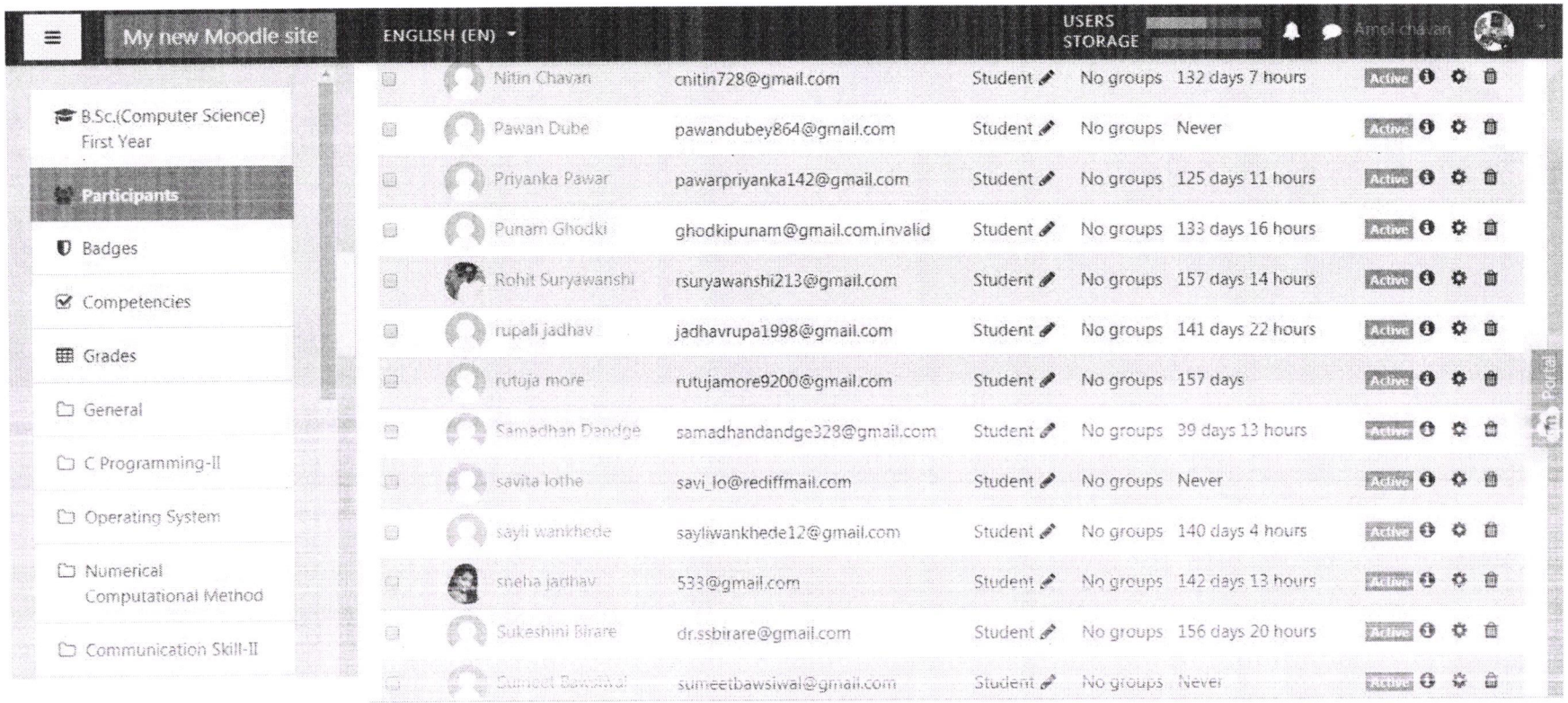
Appendix VI


My new Moodle site
ENGLISH (EN)
USERS
STORAGE
Amol chavan
Home
Dashboard
Calendar
Private files
My courses
B.Sc.(Computer Science) First Year
Introduction to Moodle
Site administration
This site will helps to all BCS first year students to prepare according to exam..and also they will get notes,question banks, and assignments of all subject here .....
Available courses
B.Sc.(Computer Science) First Year
BCS™
This course having different subjects which are arranged semester wise pattern ...
This site is specially for first year students.....
Introduction to Moodle
Teacher: Amol chavan
This tiny course can help you get started if you are new to Moodle.
It's been hidden so that only you, as the site administrator, can see it.


My new Moodle site
ENGLISH (EN)
USERS
STORAGE
B.Sc.(Computer Science) First Year
Participants
Badges
Competencies
Grades
General
C Programming-II
Operating System
Numerical Computational Method
Communication Skill-II
Data Structure
Microprocessor
Home
B.Sc.(Computer Science) First Year
Home / My courses / B.Sc.(Computer Science) First Year
Announcements
C Programming-II
Notes
function quiz 1
function quiz 2
Function quiz 3
Function quiz 4
pointer quiz 1
pointer quiz 2
All quiz
MCQ's Test 1
Let us C EBook - Y.P.Kanetkar
https://arnolbcsfy.moodlecloud.com/badges/view.php?type=...


My new Moodle site
ENGLISH (EN)
USERS
STORAGE
B.Sc.(Computer Science) First Year
Participants
Badges
Competencies
Grades
General
C Programming-II
Operating System
Numerical Computational Method
Communication Skill-II
Data Structure
Microprocessor
Home
Numerical Computational Method
Question Bank
Numerical Method MCQ link
Communication Skill-II
Multiple choice question for report writing
Data Structure
Introducation to Data structure
data structure
stack
Question Bank
Microprocessor
Microprocessor MCQ
Instruction Set MCQ
https://amolbcsfy.moodlecloud.com/course/view.php?id=3#s...


My new Moodle site
ENGLISH (EN)
USERS
STORAGE
B.Sc.(Computer Science)
First Year
Participants
Badges
Competencies
Grades
General
C Programming-II
Operating System
Numerical
Computational Method
Communication Skill-II
First name All A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
Surname All A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
Select
First name / Surname
Email address
Roles
Groups
Last access to course
Status
Akshay Shankpal akshayshankpal143@gmail.com Student No groups Never Active
Amol chavan ssamolss@gmail.com Student No groups 26 secs Active
Anil Rathod rthdainik@gmail.com Student No groups 142 days 20 hours Active
Arun Rathod rathodarun1436@gmail.com.invalid Student No groups 78 days 18 hours Active
Fakeera Rathod fakeerarathod@gmail.com Student No groups 154 days 13 hours Active
Harish Santpal harishsantpal8113@gmail.com Student No groups 164 days 17 hours Active
kishor bhalkar kishorbhalkar21@gmail.com Student No groups Never Active
Mayur Girhe mayurgirhe143@gmail.com Student No groups Never Active
nikita bachute nikitabachute2000@gmail.com Student No groups Never Active
https://amolbcsfy.moodlecloud.com/grade/report/index.php?id=3


My new Moodle site
ENGLISH (EN)
USERS STORAGE
B.Sc.(Computer Science) First Year
Participants
Badges
Competencies
Grades
General
C Programming-II
Operating System
Numerical Computational Method
Communication Skill-II
Nitin Chavan cnitin728@gmail.com Student No groups 132 days 7 hours Active
Pawan Dube pawandubey864@gmail.com Student No groups Never Active
Priyanka Pawar pawarpriyanka142@gmail.com Student No groups 125 days 11 hours Active
Punam Ghodki ghodkipunam@gmail.com.invalid Student No groups 133 days 16 hours Active
Rohit Suryawanshi rsuryawanshi213@gmail.com Student No groups 157 days 14 hours Active
rupali jadhav jadhavrupa1998@gmail.com Student No groups 141 days 22 hours Active
rutuja more rutujamore9200@gmail.com Student No groups 157 days Active
Samadhan Dandge samadhandandge328@gmail.com Student No groups 39 days 13 hours Active
savita lothe savi_lo@rediffmail.com Student No groups Never Active
sayli wankhede sayliwankhede12@gmail.com Student No groups 140 days 4 hours Active
sneha jadhav 533@gmail.com Student No groups 142 days 13 hours Active
Sukeshini Birare dr.ssbirare@gmail.com Student No groups 156 days 20 hours Active
Sumeet Bawaiwal sumeetbawaiwal@gmail.com Student No groups Never Active

Appendix – VII

1) Creating Login Page In android.

https://www.youtube.com/watch?v=lF5m4o_CuNg&t=623s

2) Android UI Controls

https://www.youtube.com/watch?v=nwELM7hsP3o

3) Registration and Login Page with Sqlite Database in android

https://www.youtube.com/watch?v=mPhqDzO7PUU

4)Using android intents in android

https://www.youtube.com/watch?v=bgIUdb-7Rqo

(For the year 2018-19)

2.3 Teaching - Learning Process	
2.3.1 Percentage of teachers using ICT for effective teaching with Learning Management Systems (LMS), E-learning resources etc. (current year data)	
Name of teacher using ICT *(LMS, e-Resources)*	E-resources and techniques used
Ms.Snehal Anirudh Kulthe	**Appendix I** -Visual Basic 6.0 **Appendix II** -Eclipse Editor (for JAVA program) -Notepad Editor (for Java Program) **Appendix III** -TurboC7 Editor (for CPP program) **Appendix IV** -PPT – PowerPoint Presentation. -PDF-PDF Reader **Appendix V** -Visual Basic Project sample screenshots. **Appendix VI** -Online video link of Java,Visual Basic tutorials.

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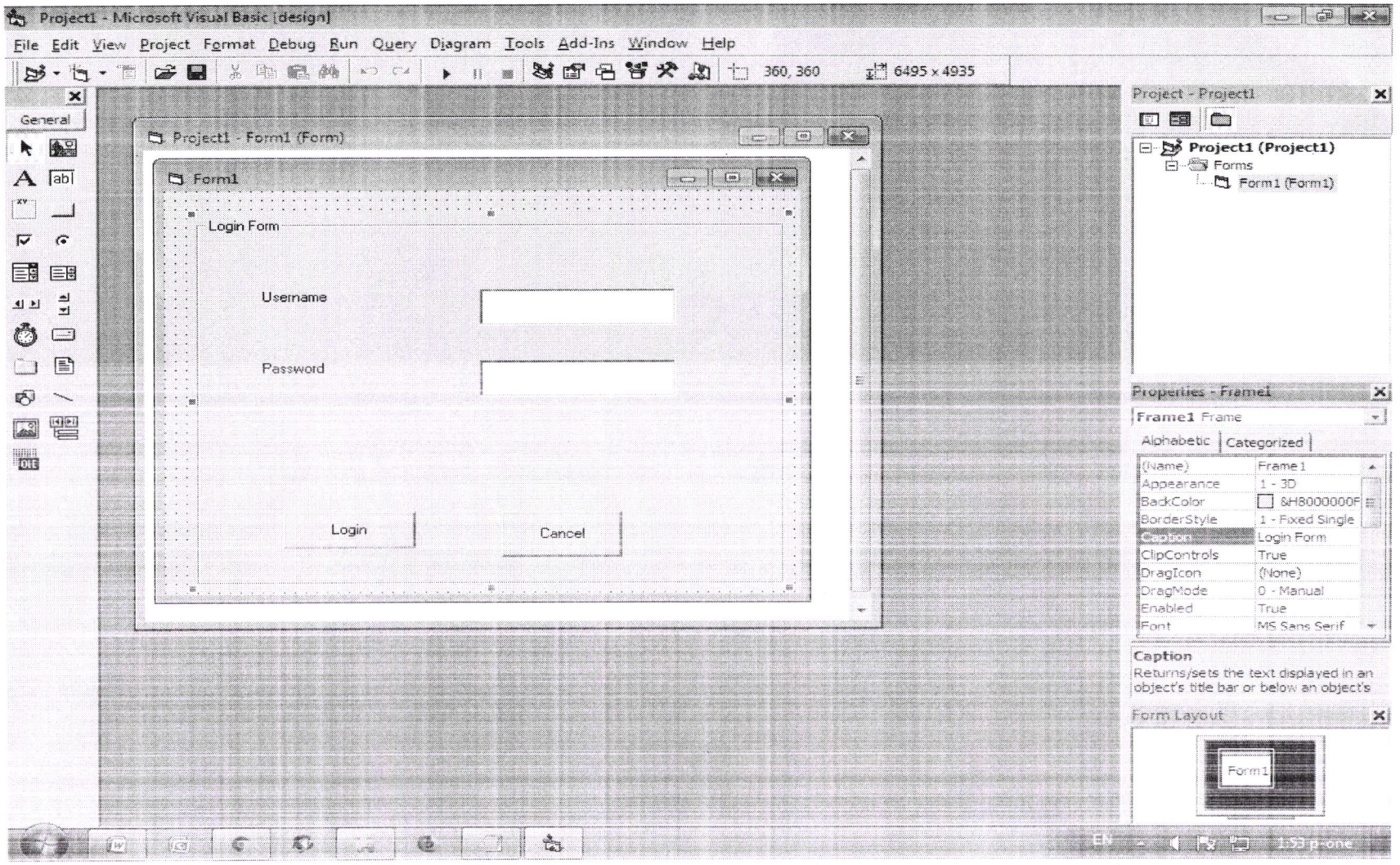
Skulthe

Snehal Kulthe.

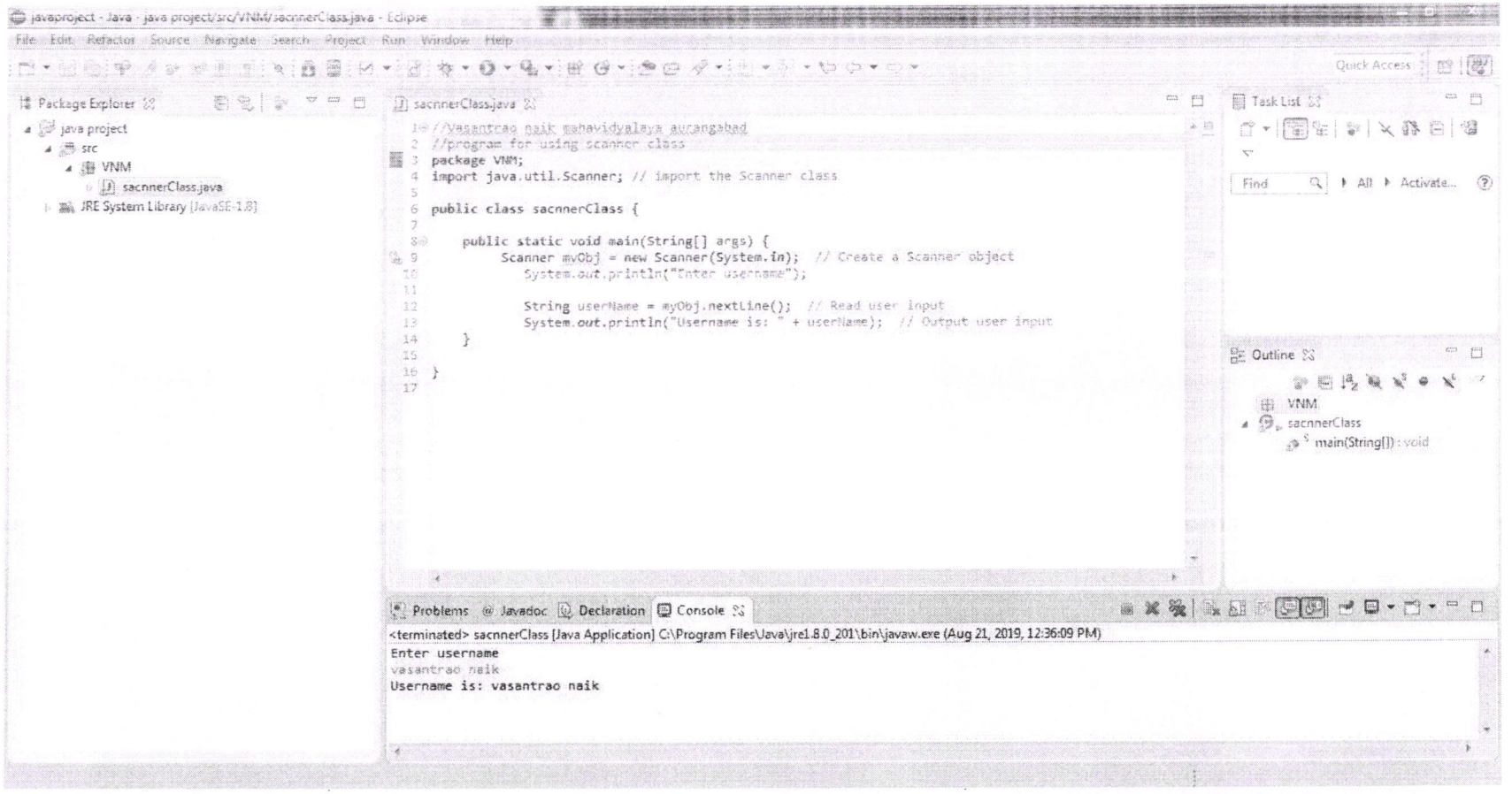
Asthe

HEAD
Department of Computer Science
Vasantrao Naik Mahavidyalaya,
Aurangabad-431 003,

Appendix – I


Project1 - Microsoft Visual Basic [design]
File Edit View Project Format Debug Run Query Diagram Tools Add-Ins Window Help
360, 360
6495 x 4935
General
Project1 - Form1 (Form)
Form1
Login Form
Username
Password
Login
Cancel
Project - Project1
Project1 (Project1)
Forms
Form1 (Form1)
Properties - Frame1
Frame1 Frame
Alphabetic
Categorized
(Name) Frame1
Appearance 1 - 3D
BackColor &H8000000F
BorderStyle 1 - Fixed Single
Caption Login Form
ClipControls True
DragIcon (None)
DragMode 0 - Manual
Enabled True
Font MS Sans Serif
Caption
Returns/sets the text displayed in an object's title bar or below an object's
Form Layout
Form1

Appendix -- II

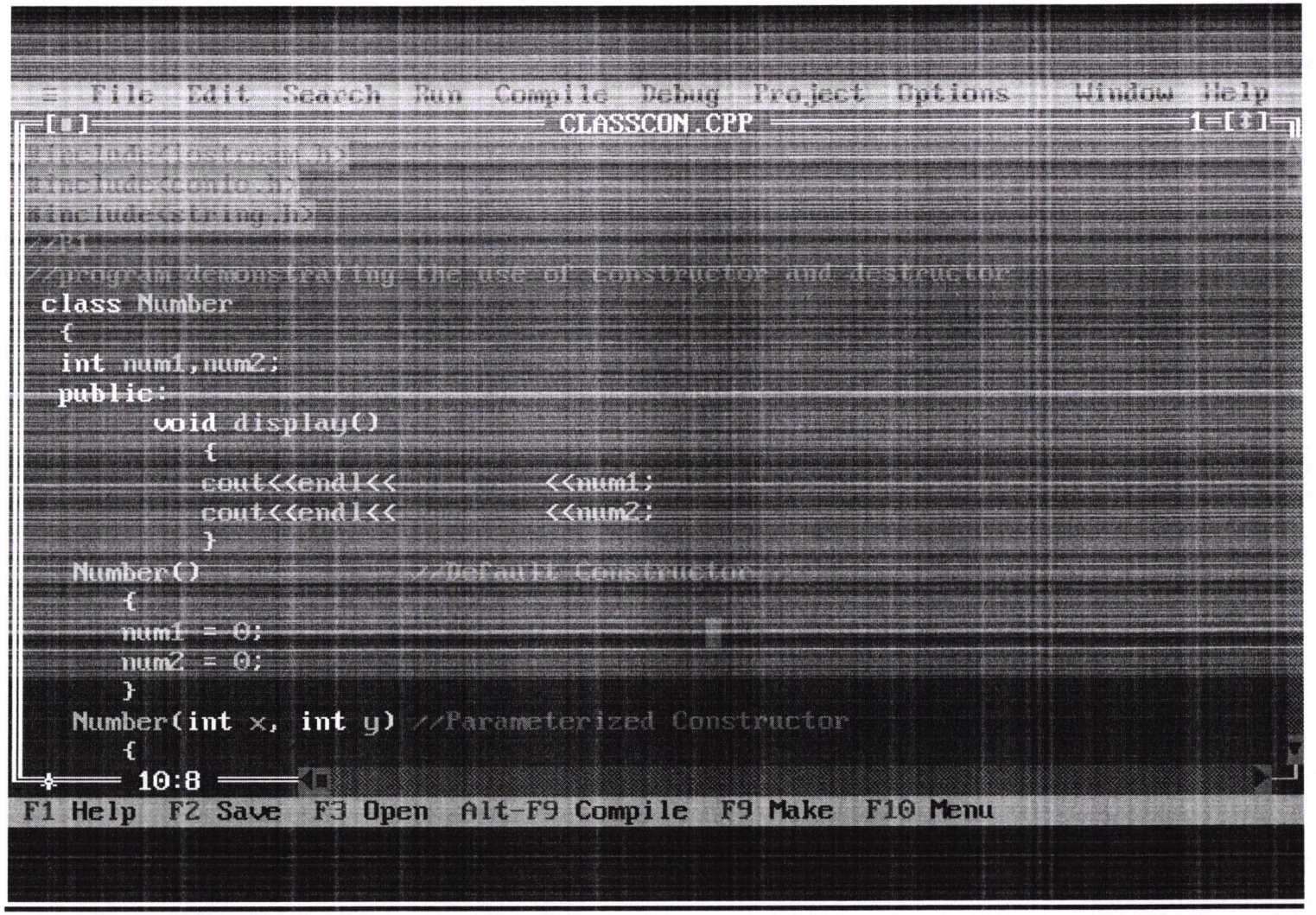

javaproject - Java - java project/src/VNM/sacnnerClass.java - Eclipse
File Edit Refactor Source Navigate Search Project Run Window Help
Quick Access
Package Explorer
java project
src
VNM
sacnnerClass.java
JRE System Library [JavaSE-1.8]
sacnnerClass.java
1 //vasantrao naik mahavidyalaya aurangabad
2 //program for using scanner class
3 package VNM;
4 import java.util.Scanner; // import the Scanner class
5
6 public class sacnnerClass {
7
8 public static void main(String[] args) {
9 Scanner myObj = new Scanner(System.in); // Create a Scanner object
10 System.out.println("Enter username");
11
12 String userName = myObj.nextLine(); // Read user input
13 System.out.println("Username is: " + userName); // Output user input
14 }
15
16 }
17
Task List
Find All Activate...
Outline
VNM
sacnnerClass
main(String[]) : void
Problems Javadoc Declaration Console
<terminated> sacnnerClass [Java Application] C:\Program Files\Java\jre1.8.0_201\bin\javaw.exe (Aug 21, 2019, 12:36:09 PM)
Enter username
vasantrao naik
Username is: vasantrao naik

program - Notepad

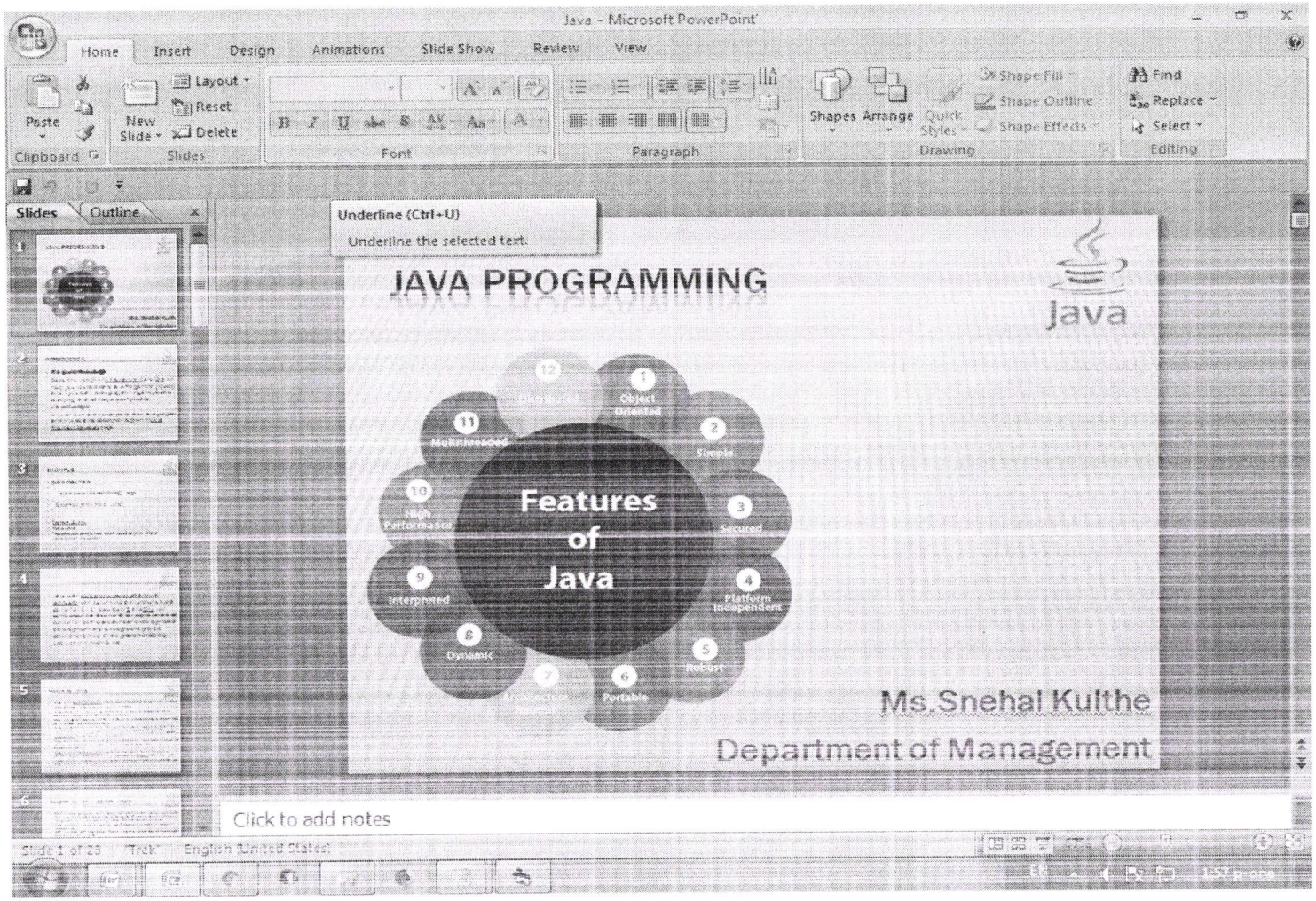
File Edit Format View Help

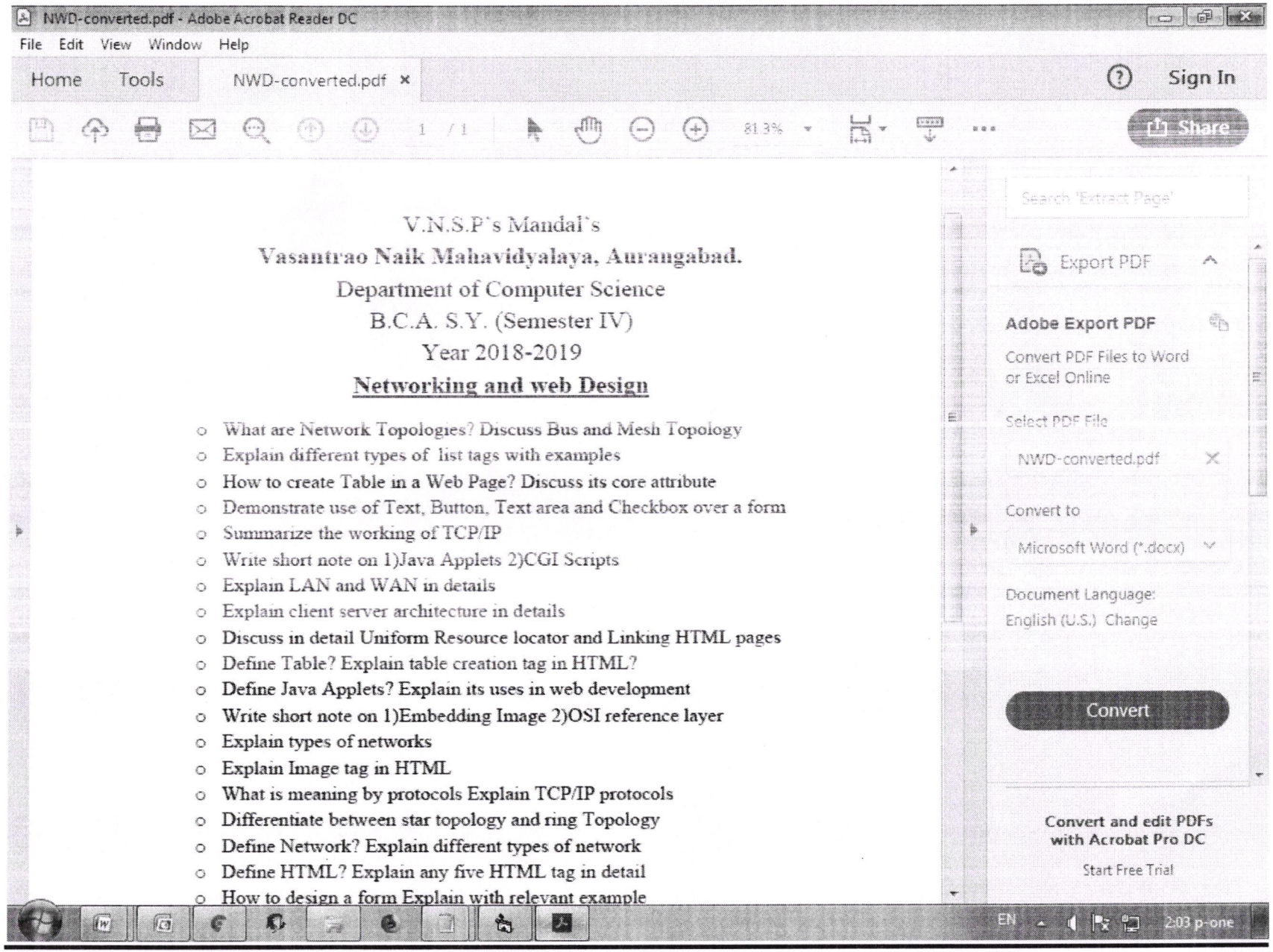
```
// Add of Two String
import java.util.Scanner;
class app
{
   public static void main(String args[])
   {
      Scanner sname=new Scanner (System.in);
      int a, b, c;
      System.out.println("Enter the First Value:   ");
      a=sname.nextInt();
      System.out.println("Enter the Second Value:  ");
      b=sname.nextInt();
      c=a+b;
      System.out.println(c);

   }
}
```

Appendix – III



Appendix – IV

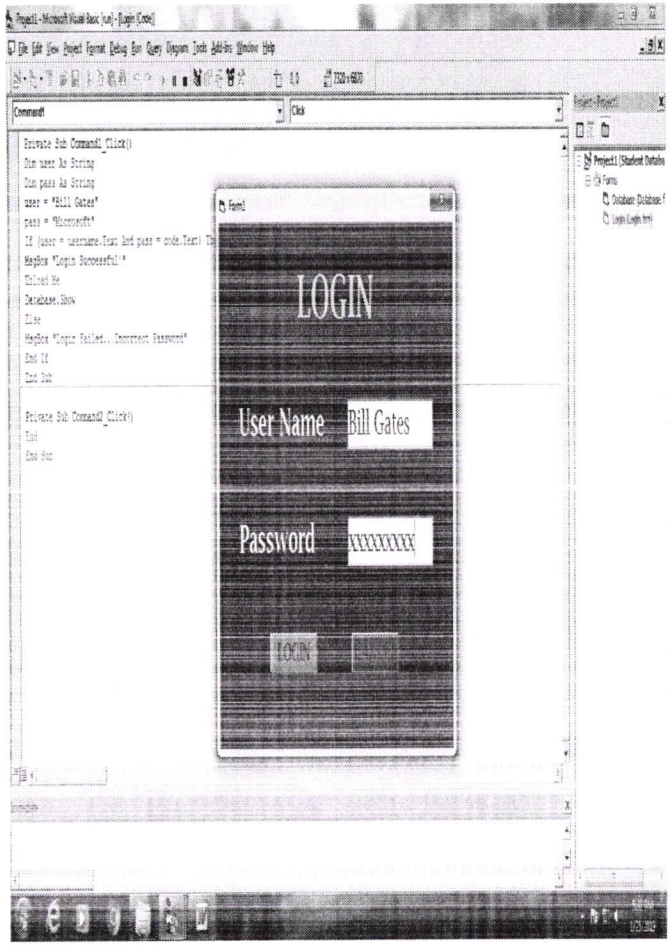

Java - Microsoft PowerPoint
Home
Insert
Design
Animations
Slide Show
Review
View
Underline (Ctrl+U)
Underline the selected text.
JAVA PROGRAMMING
Java
Features of Java
Object Oriented
Platform Independent
Portable
Secured
Robust
Dynamic
Interpreted
High Performance
Multithreaded
Ms.Snehal Kulthe
Department of Management
Click to add notes


NWD-converted.pdf - Adobe Acrobat Reader DC
File Edit View Window Help
Home Tools
NWD-converted.pdf
Sign In
Share
V.N.S.P's Mandal's
Vasantrao Naik Mahavidyalaya, Aurangabad.
Department of Computer Science
B.C.A. S.Y. (Semester IV)
Year 2018-2019
Networking and web Design
What are Network Topologies? Discuss Bus and Mesh Topology
Explain different types of list tags with examples
How to create Table in a Web Page? Discuss its core attribute
Demonstrate use of Text, Button, Text area and Checkbox over a form
Summarize the working of TCP/IP
Write short note on 1)Java Applets 2)CGI Scripts
Explain LAN and WAN in details
Explain client server architecture in details
Discuss in detail Uniform Resource locator and Linking HTML pages
Define Table? Explain table creation tag in HTML?
Define Java Applets? Explain its uses in web development
Write short note on 1)Embedding Image 2)OSI reference layer
Explain types of networks
Explain Image tag in HTML
What is meaning by protocols Explain TCP/IP protocols
Differentiate between star topology and ring Topology
Define Network? Explain different types of network
Define HTML? Explain any five HTML tag in detail
How to design a form Explain with relevant example
Export PDF
Adobe Export PDF
Convert PDF Files to Word or Excel Online
Select PDF File
NWD-converted.pdf
Convert to
Microsoft Word (*.docx)
Document Language:
English (U.S.) Change
Convert
Convert and edit PDFs with Acrobat Pro DC
Start Free Trial

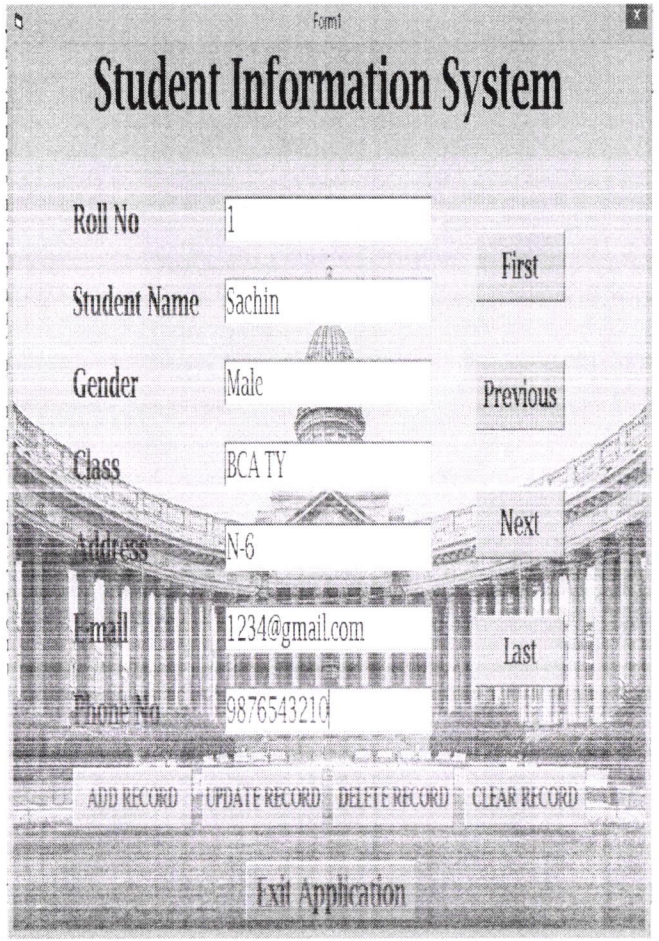
Appendix – V

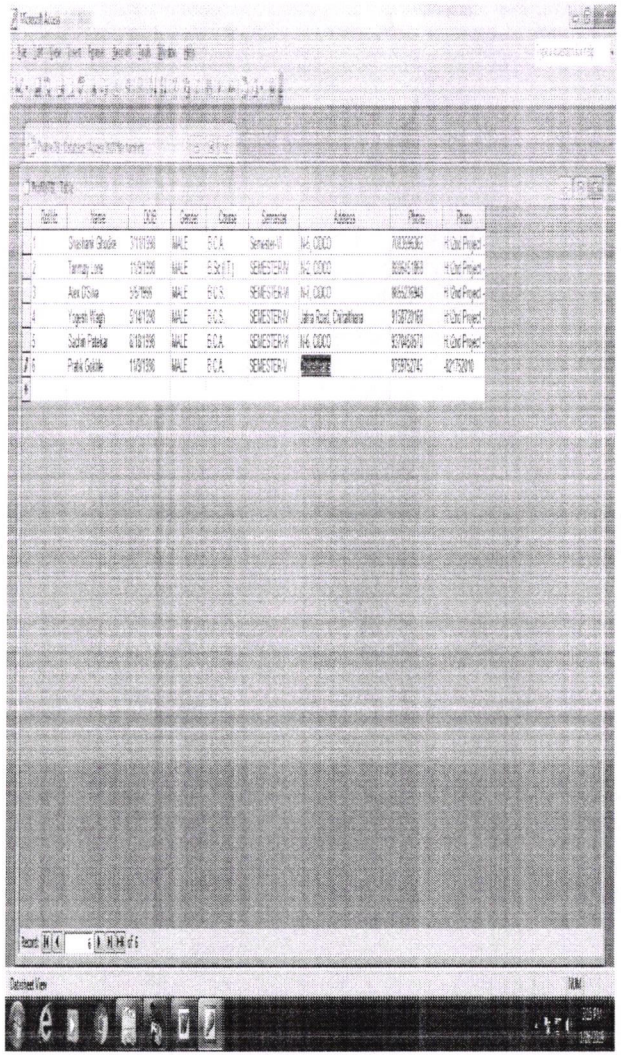
Visual Basic Project sample Screenshots:

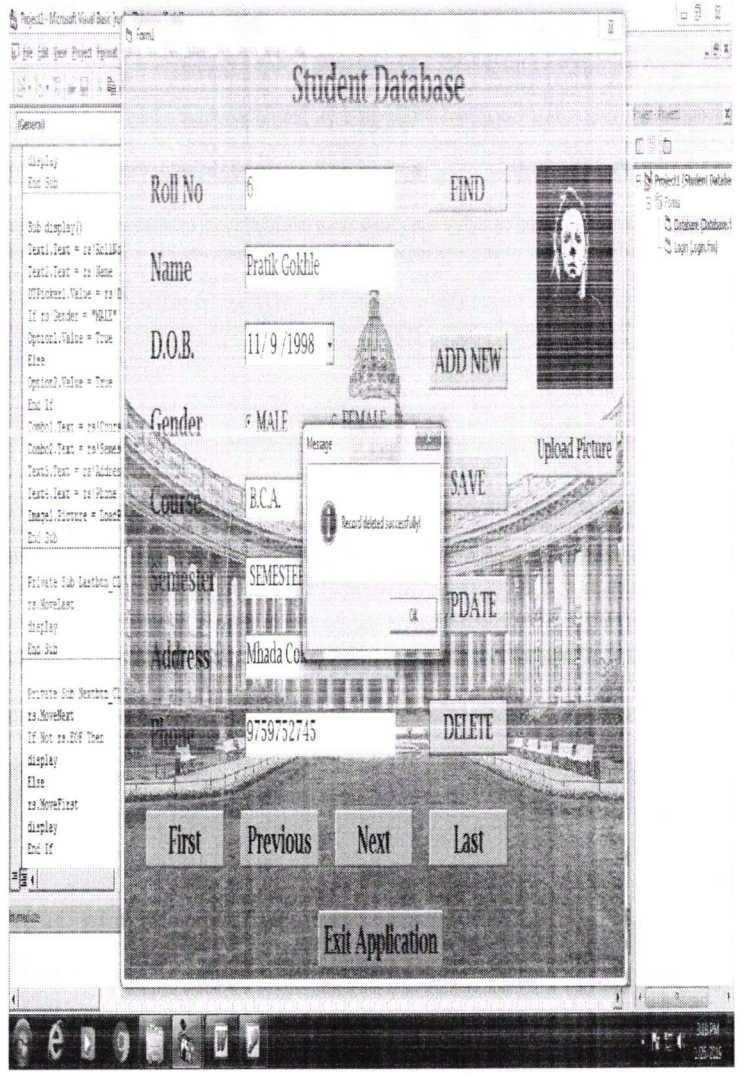
1.Login Page



2. HomePage






Student Database
Roll No
5
FIND
Name
Pratik Gokhle
D.O.B.
11/ 9 /1998
ADD NEW
Gender
MALE
Upload Picture
Course
B.C.A.
SAVE
Semester
SEMESTER
UPDATE
Address
Mhada Col
Phone
9759752745
DELETE
First
Previous
Next
Last
Exit Application
Message
Record deleted successfully!
OK

Appendix – VI

1) Creating Calculator in Visual Basic

https://www.youtube.com/watch?v=y_8Qlq0D3wg

2) Simple Visual Basic Database Application using Data Control

https://www.youtube.com/watch?v=PldGe0-FnI8

3) Data Report using Data Environment

https://www.youtube.com/watch?v=vjQDtKMUCKk

(For the year 2018-19)

2.3 Teaching - Learning Process	
2.3.1 Percentage of teachers using ICT for effective teaching with Learning Management Systems (LMS), E-learning resources etc. (current year data)	
Name of teacher using ICT *(LMS, e-Resources)*	E-resources and techniques used
Ms.Varsha Gokhale	**Appendix I** Slide share uploaded by ppts **Appendix II** PPT-PowerPoint Presentation **Appendix III** -C# Project sample screenshots. **Appendix IV** -www.vnmbcssy.moodlecloud.com

(For the year 2018-19)

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Name of teacher using ICT *(LMS, e-Resources)*	E-resources and techniques used
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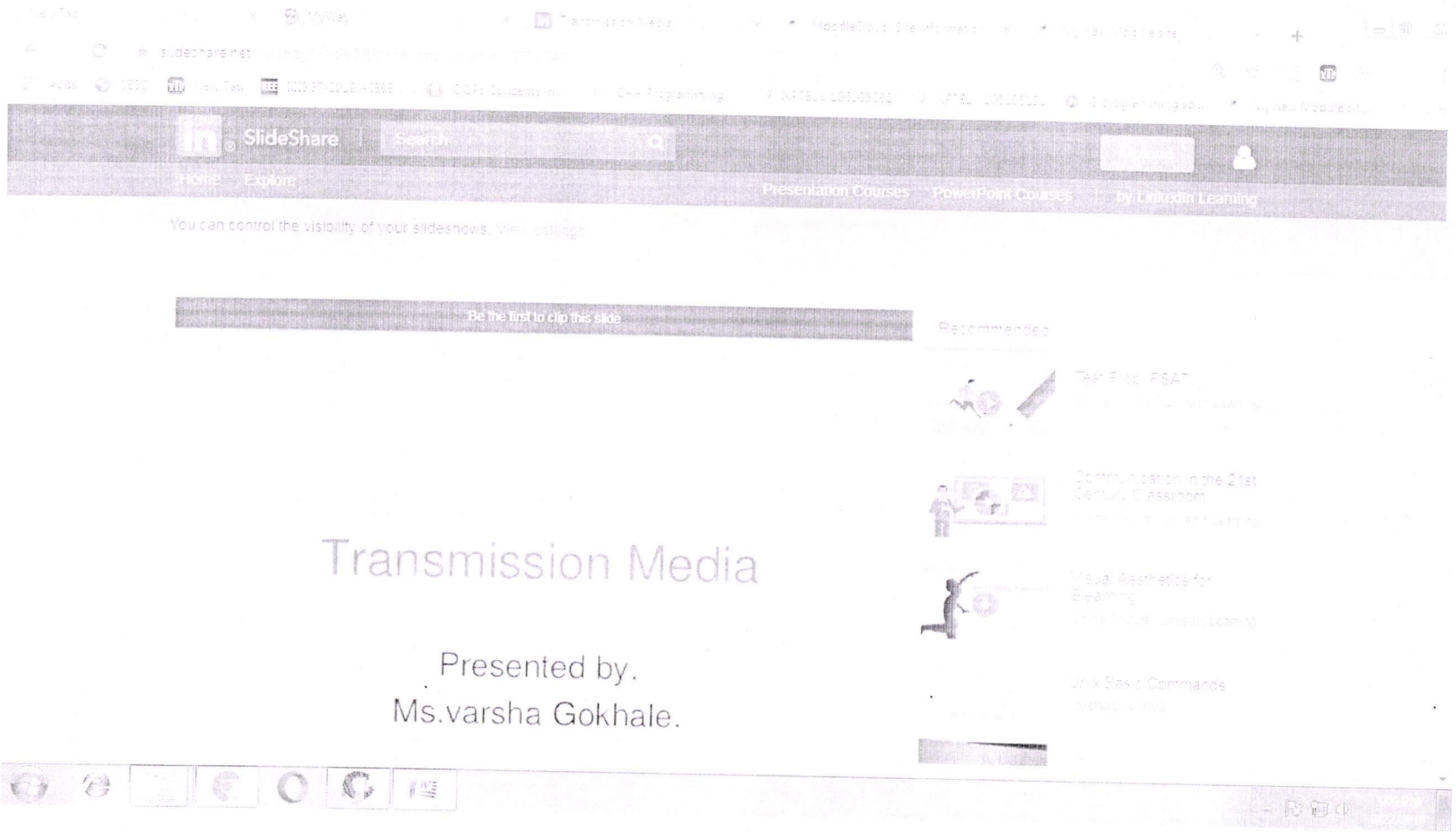
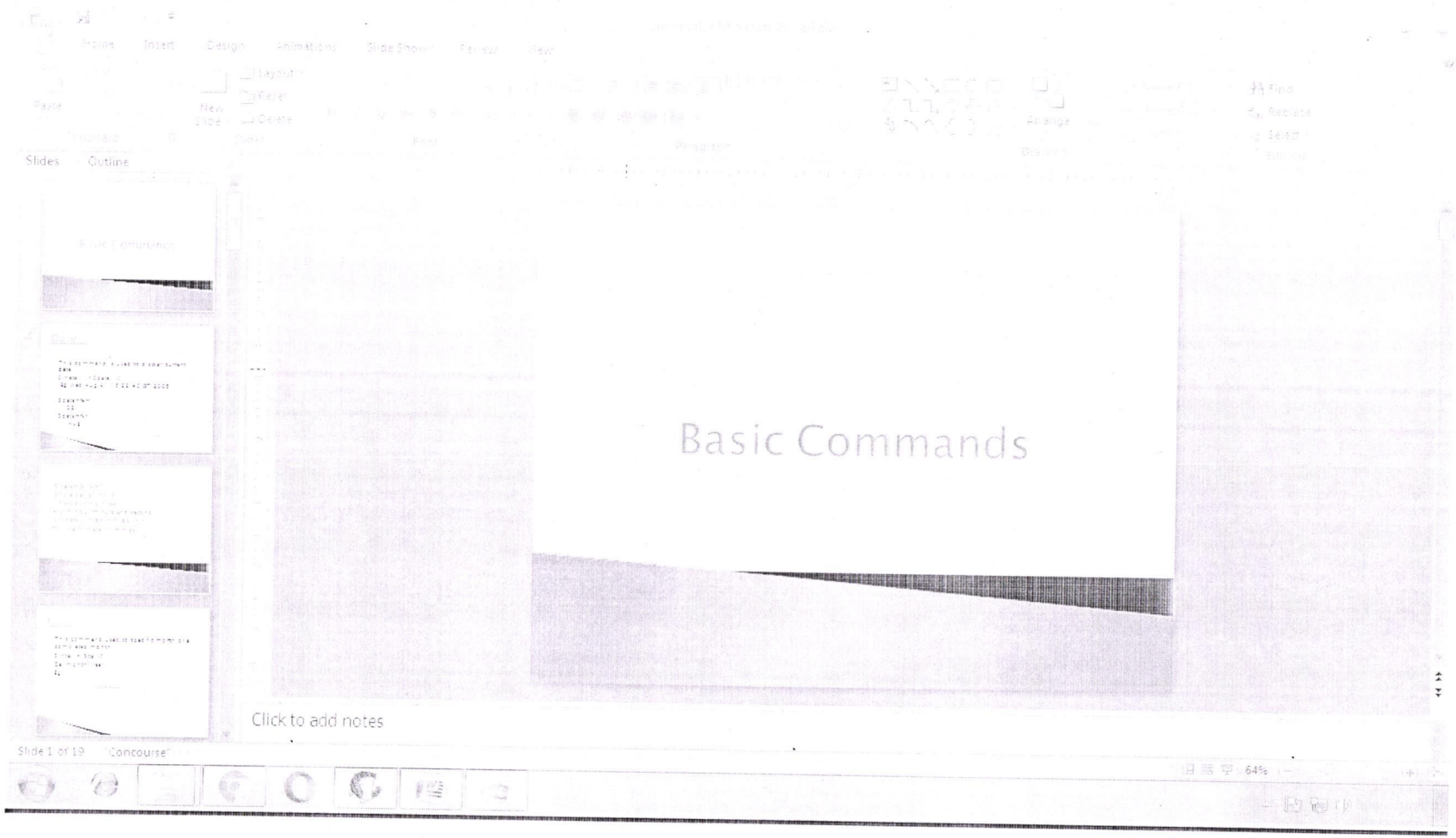
Gotchale
Varsha. S. Gotchale
Dept. of Comp. Sci

Dept HEAD Comp Sci
Department of Computer Science
Vasantrao Naik Mahavidyalaya,
Aurangabad-431 003.

Appendix – I

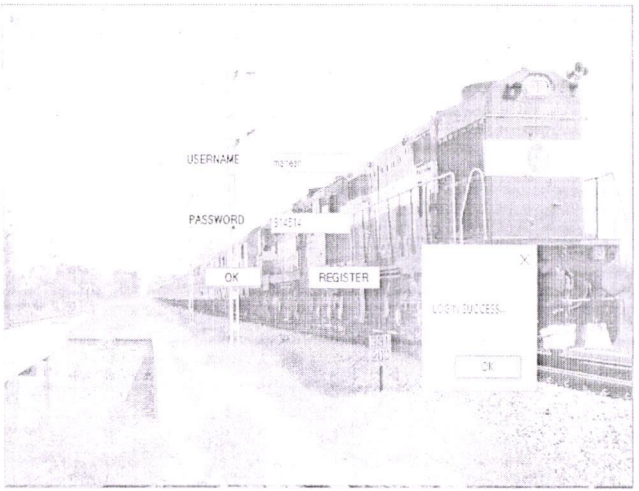

SlideShare
Search
Home
Explore
Presentation Courses
PowerPoint Courses
by LinkedIn Learning
You can control the visibility of your slideshows.
Be the first to clip this slide
Recommended
Transmission Media
Presented by.
Ms.varsha Gokhale.

Appendix– II

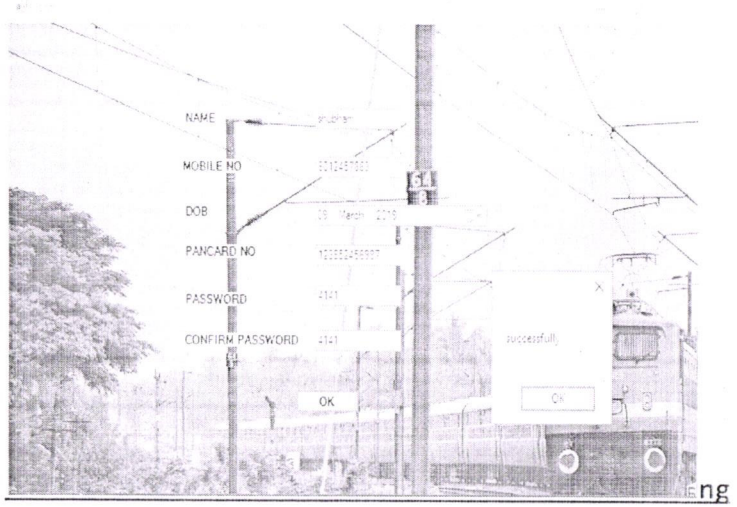

Slides
Outline
Basic Commands
Click to add notes
Slide 1 of 19
"Concourse"

Appendix – III

Login form



Registration form



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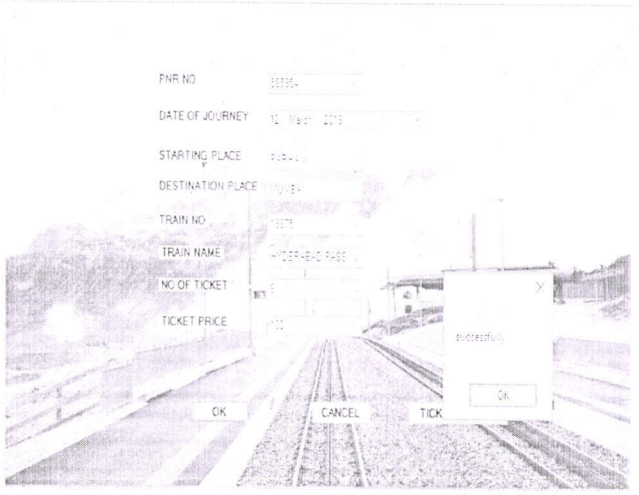
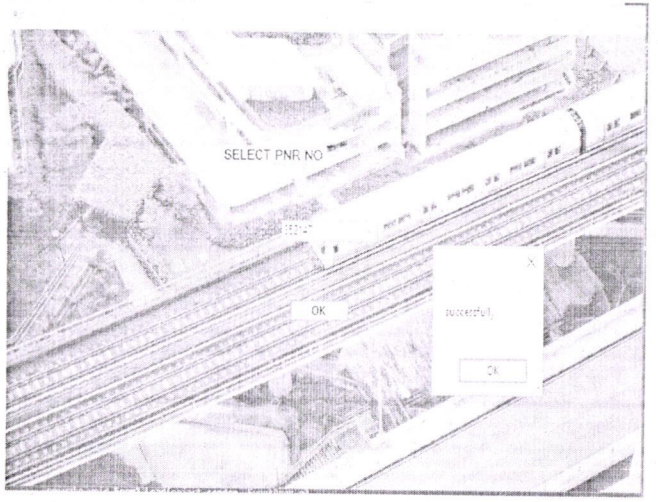
Booking form



Cancellation form



(For the year 2018-19)

2.3 Teaching - Learning Process	
2.3.1 Percentage of teachers usingICT foreffective teaching with Learning Management Systems (LMS), E-learningresourcesetc. (current year data)	
Name of teacher using ICT *(LMS, e-Resources)*	E-resources and techniques used
Dr. Lothe Savita A.	**Appendix I** https://www.slideshare.net/search/slideshow?searchfrom=header&q=savitamhaske **Appendix II** Editor --- Turbo C **Appendix III** PPT – Powerpoint Presentation, PDF- MCQ, Question Bank **Appendix IV** LMS-MOODLE www.compscieducation.moodlecloud.com www.amolbcsfy.moodlecloud.com Online Videos 1) https://www.youtube.com/watch?v=Xi18hI1LqAALogic Gates Basics 2) https://www.youtube.com/watch?v=SW2Bwc17_wALogic Gates from Transistors: Transistors and Boolean Logic 3) https://www.youtube.com/watch?v=XQq_1yaVDpM How A CPU Works (Hardware + Software Parallelism)

(For the year 2018-19)

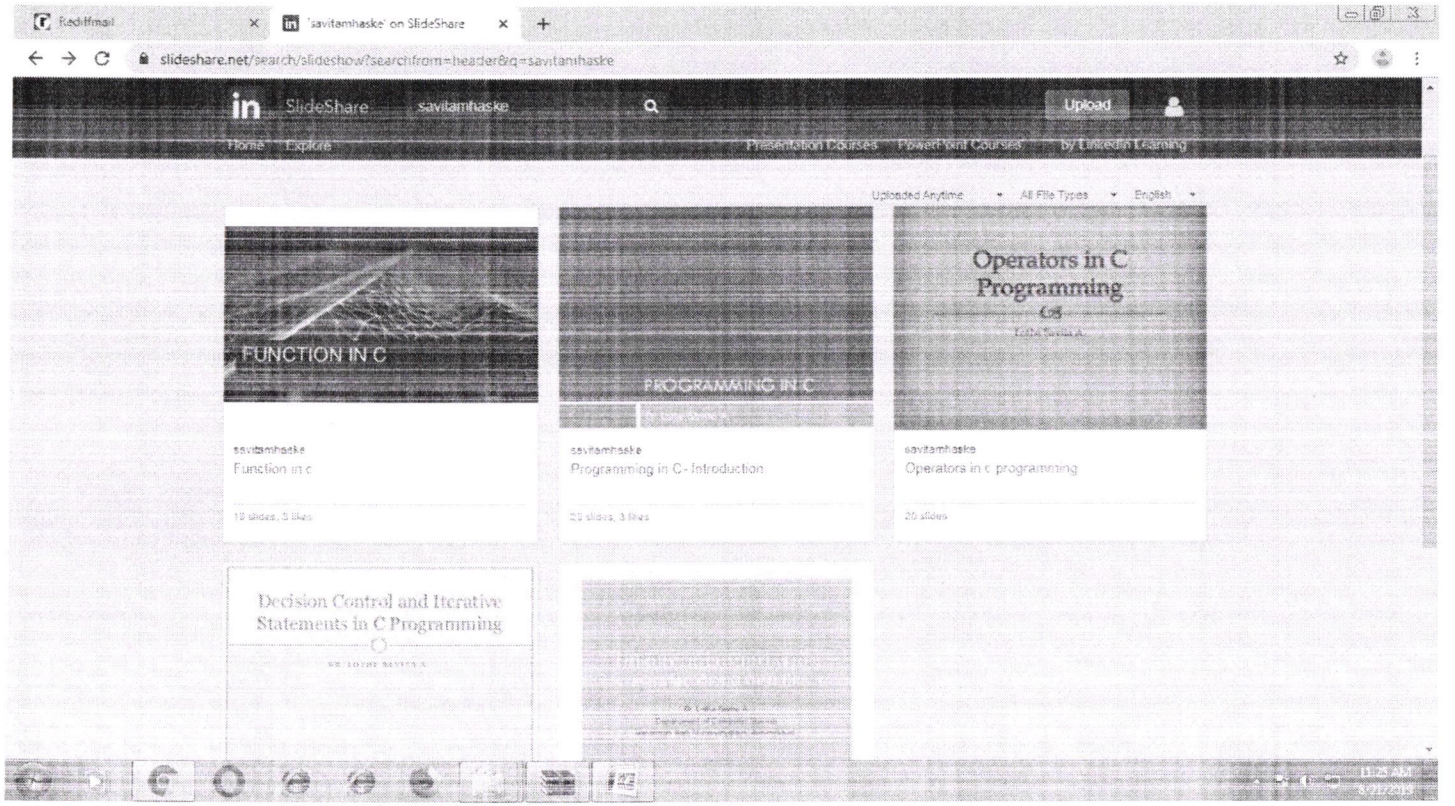
2.3 Teaching - Learning Process	
2.3.1 Percentage of teachers usingICT foreffective teaching with Learning Management Systems (LMS), E-learningresourcesetc. (current year data)	
Name of teacher using ICT *(LMS, e-Resources)*	E-resources and techniques used
Dr. Lothe Savita A.	**Appendix I** https://www.slideshare.net/search/slideshow?searchfrom=header&q=savitamhaske **Appendix II** Editor --- Turbo C **Appendix III** PPT – Powerpoint Presentation, PDF- MCQ, Question Bank **Appendix IV** LMS-MOODLE www.compscieducation.moodlecloud.com www.amolbcsfy.moodlecloud.com Online Videos 1) https://www.youtube.com/watch?v=Xi18hI1LqAALogic Gates Basics 2) https://www.youtube.com/watch?v=SW2Bwc17_wALogic Gates from Transistors. Transistors and Boolean Logic 3) https://www.youtube.com/watch?v=XQq_1yaVDpM How A CPU Works (Hardware + Software Parallelism)

Dr. Lothe S.A.

PRINCIPAL
Vasantrao Naik Mahavidyalaya
Aurangabad

Appendix -- I

https://www.slideshare.net/search/slideshow?searchfrom=header&q=savitamhaske



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savitamhaske

Published on Jan 21, 2019

This ppt introduce the Programming Language C. ...

Published in: Software

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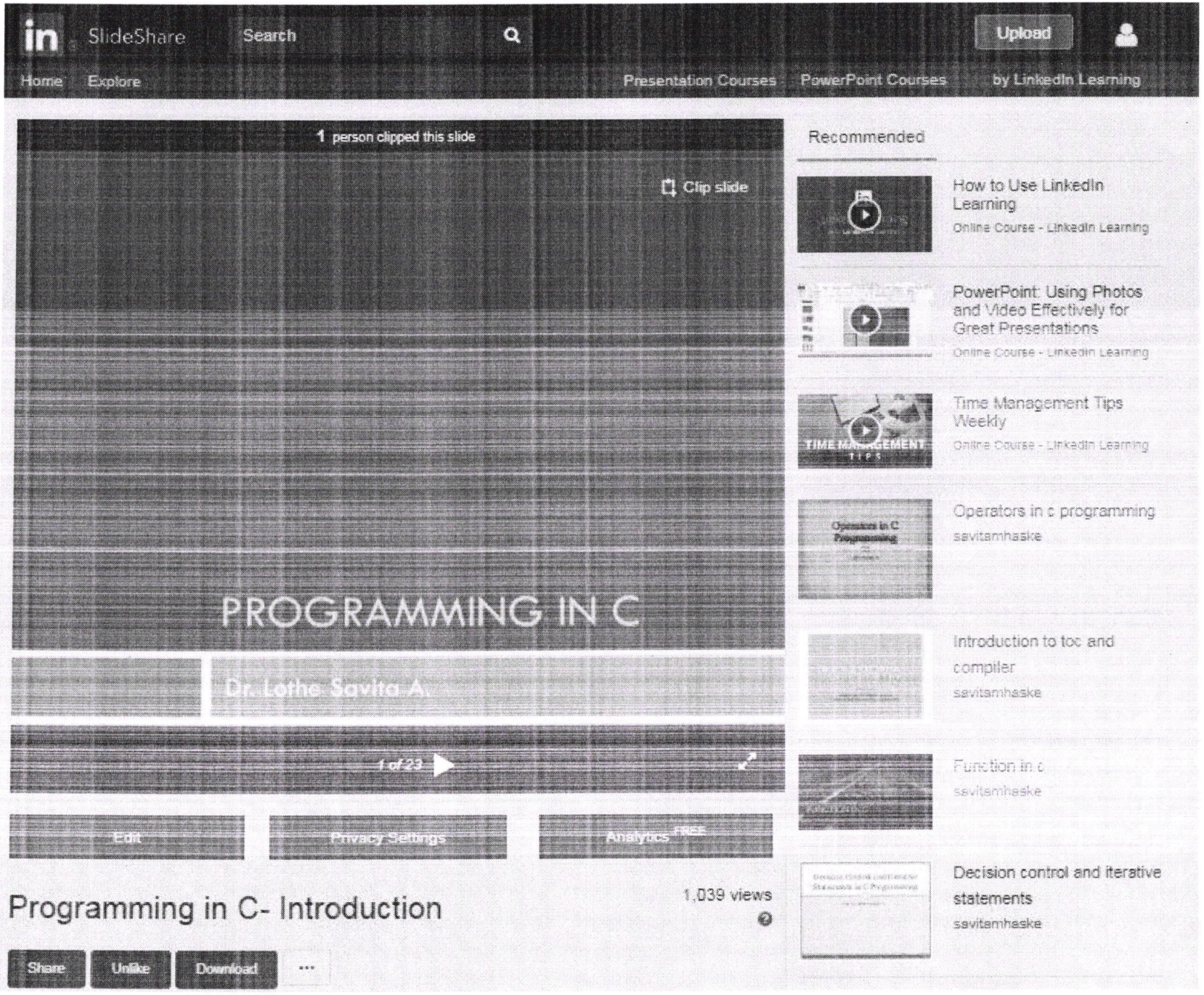
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PROGRAMMING IN C
Dr. Lothe Savita A.
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Introduction to toc and compiler
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Function in c
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Decision control and iterative statements
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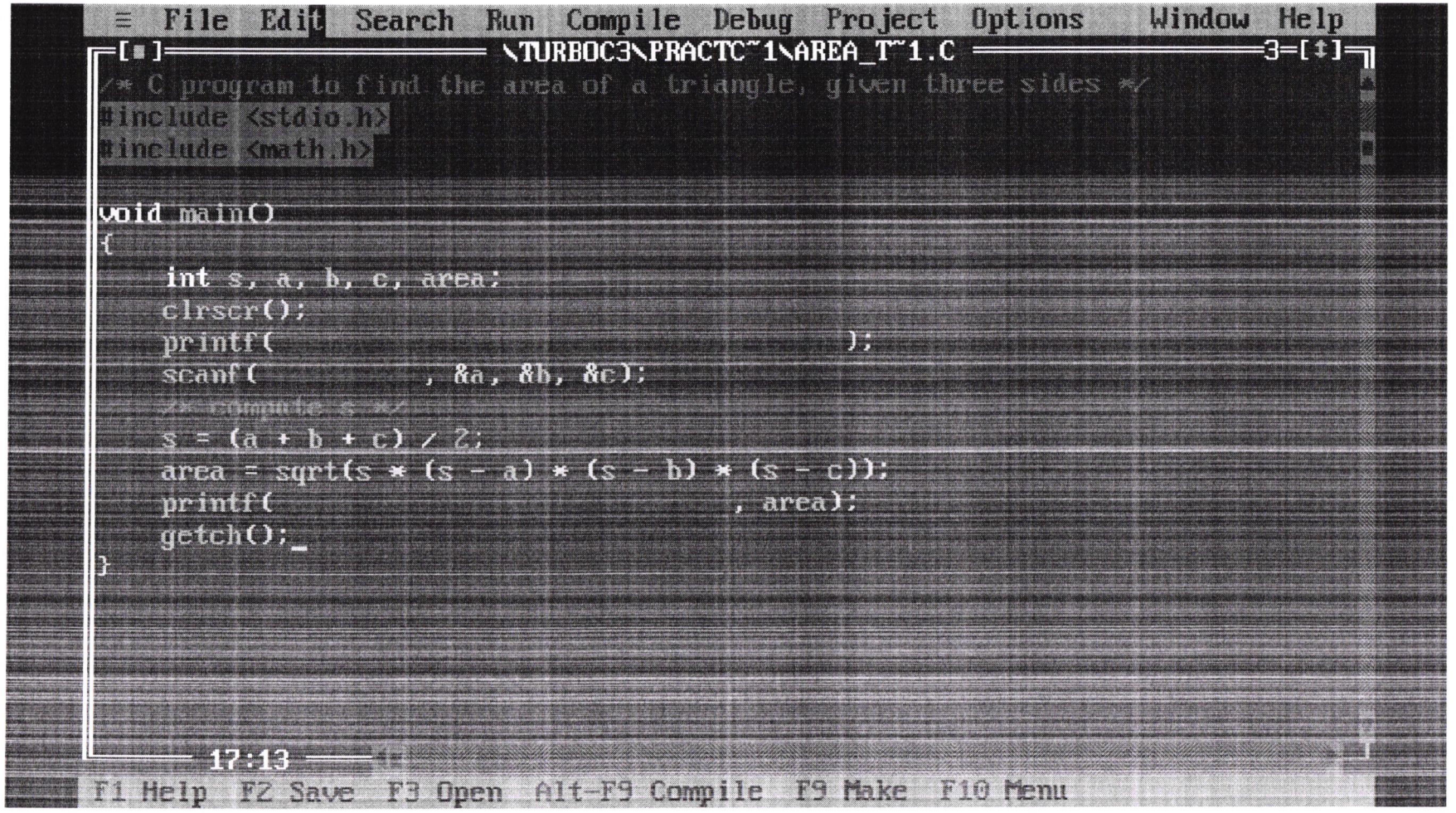
Decision Control and Iterative Statements in C Programming

DR. LOTHE SAVITA A.

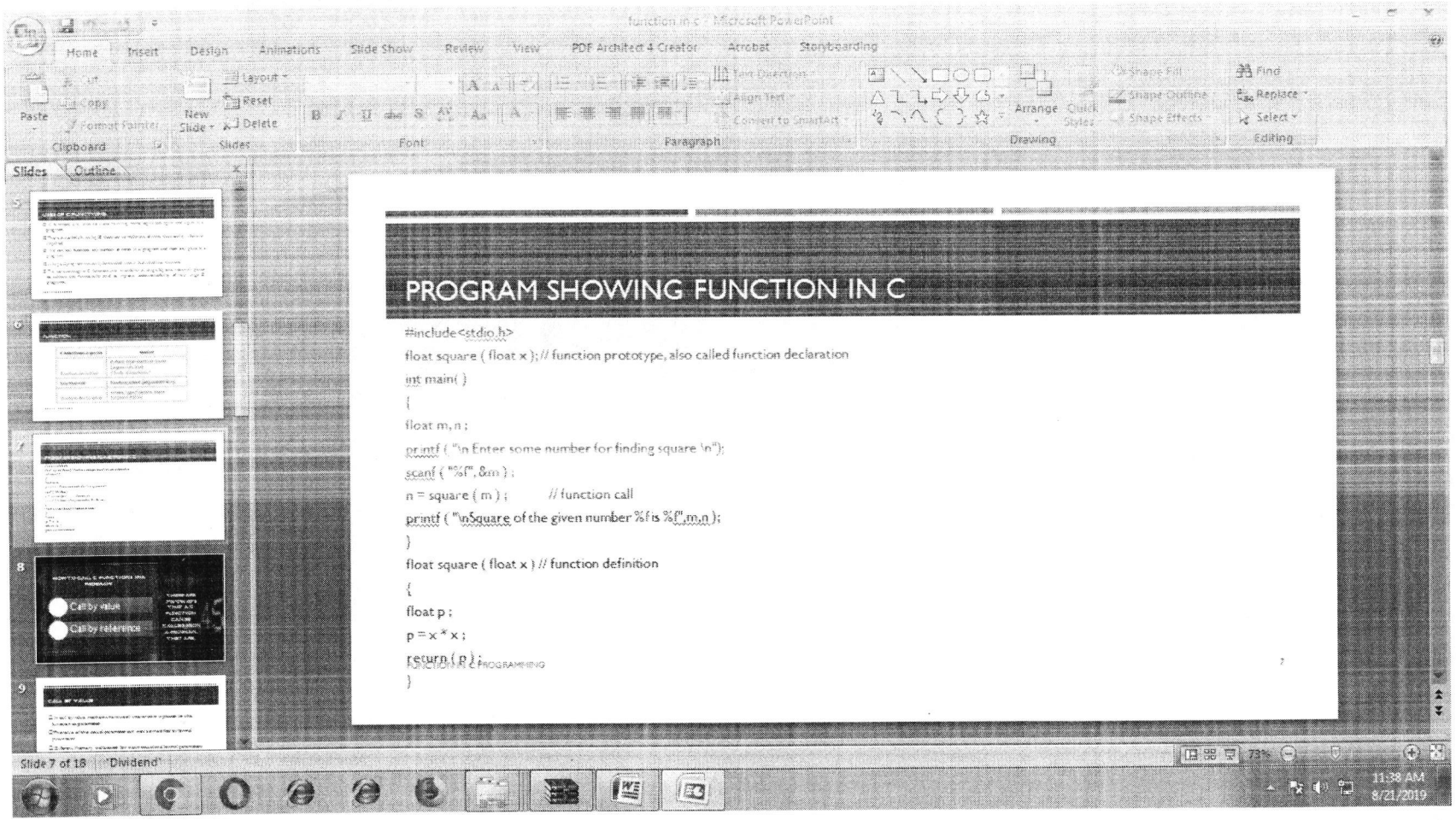
Appendix – II

For Practical – Turboc Editor



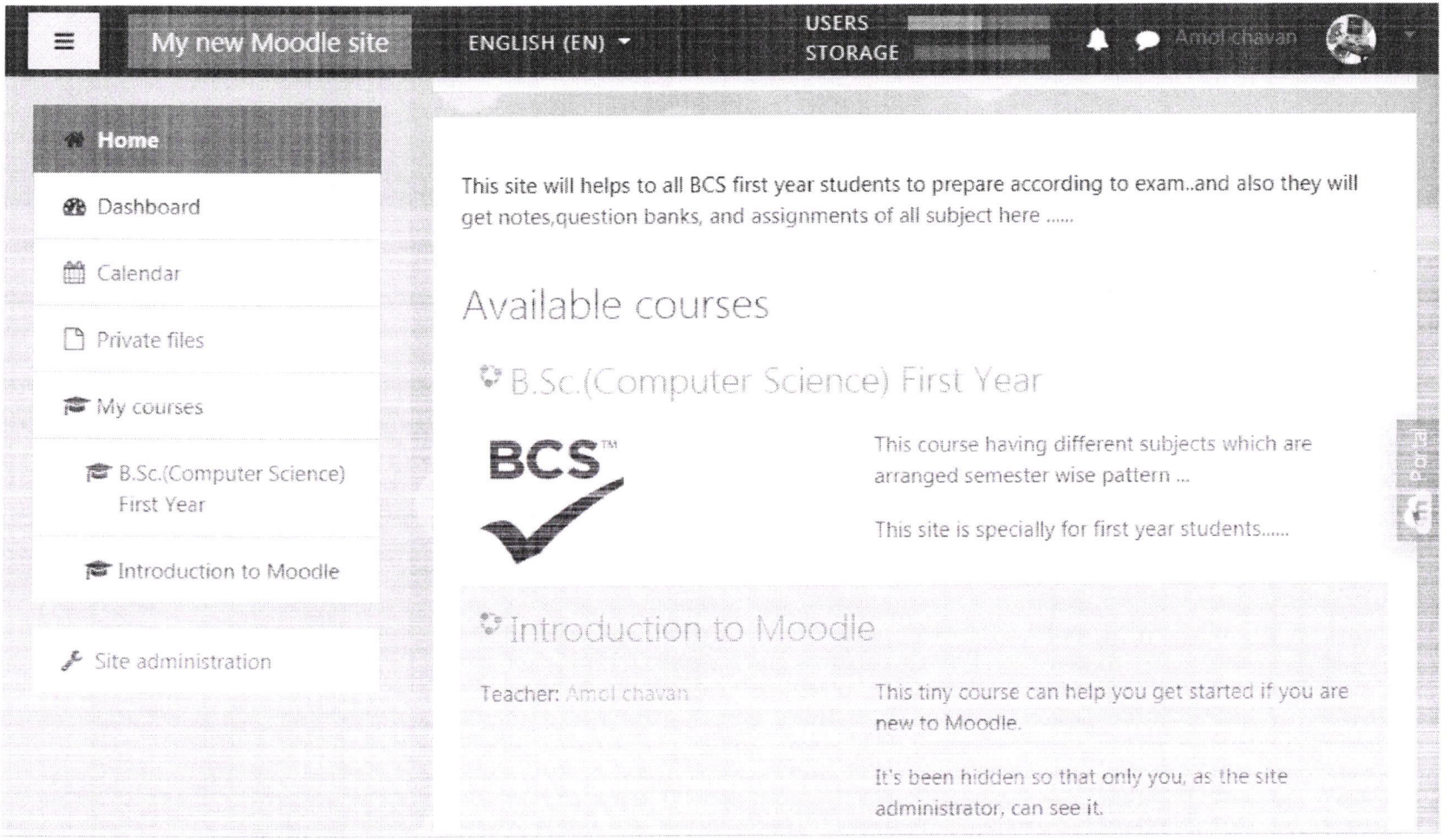
Appendix – III

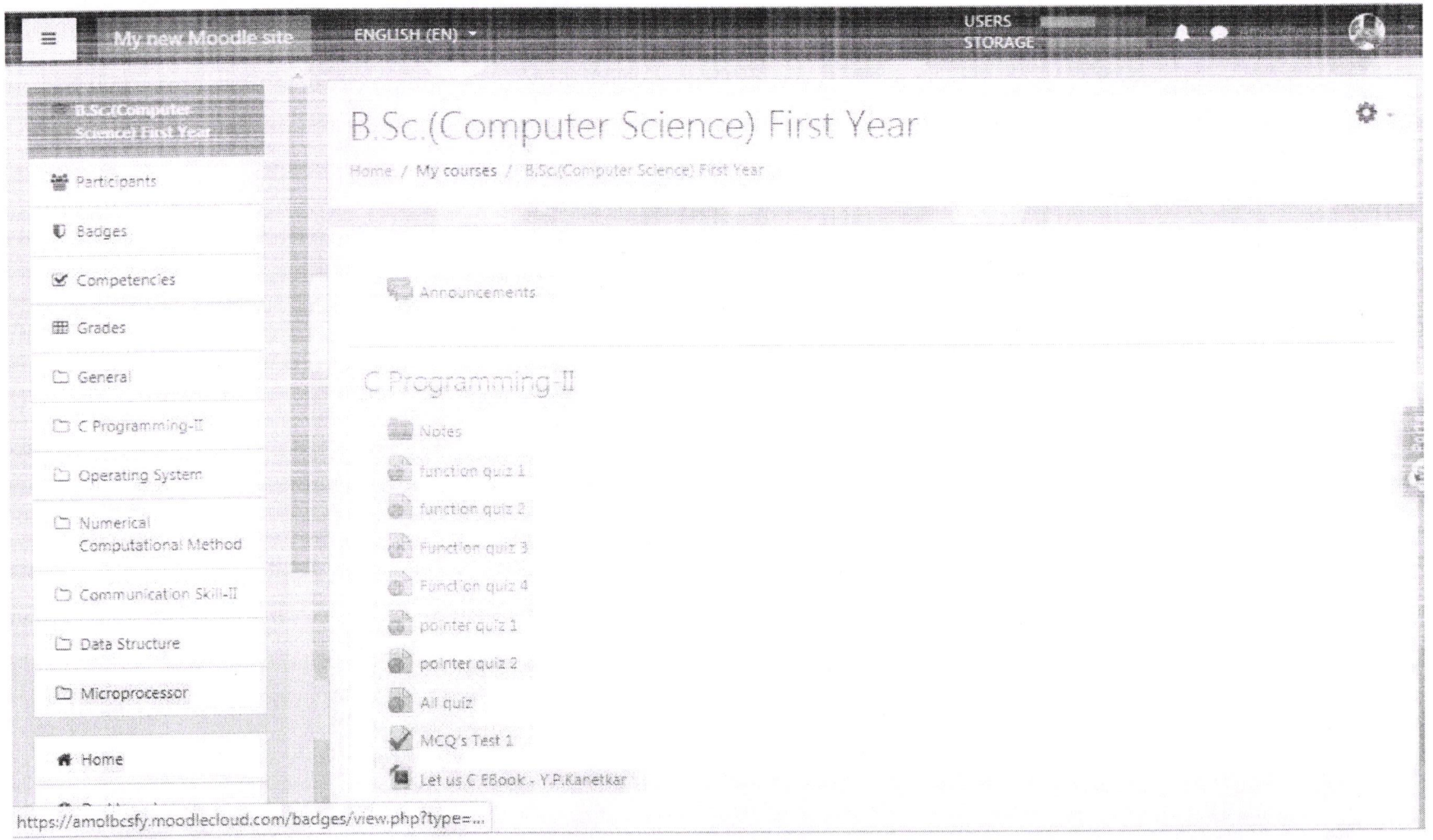
PPT –PowerpointPrsentation

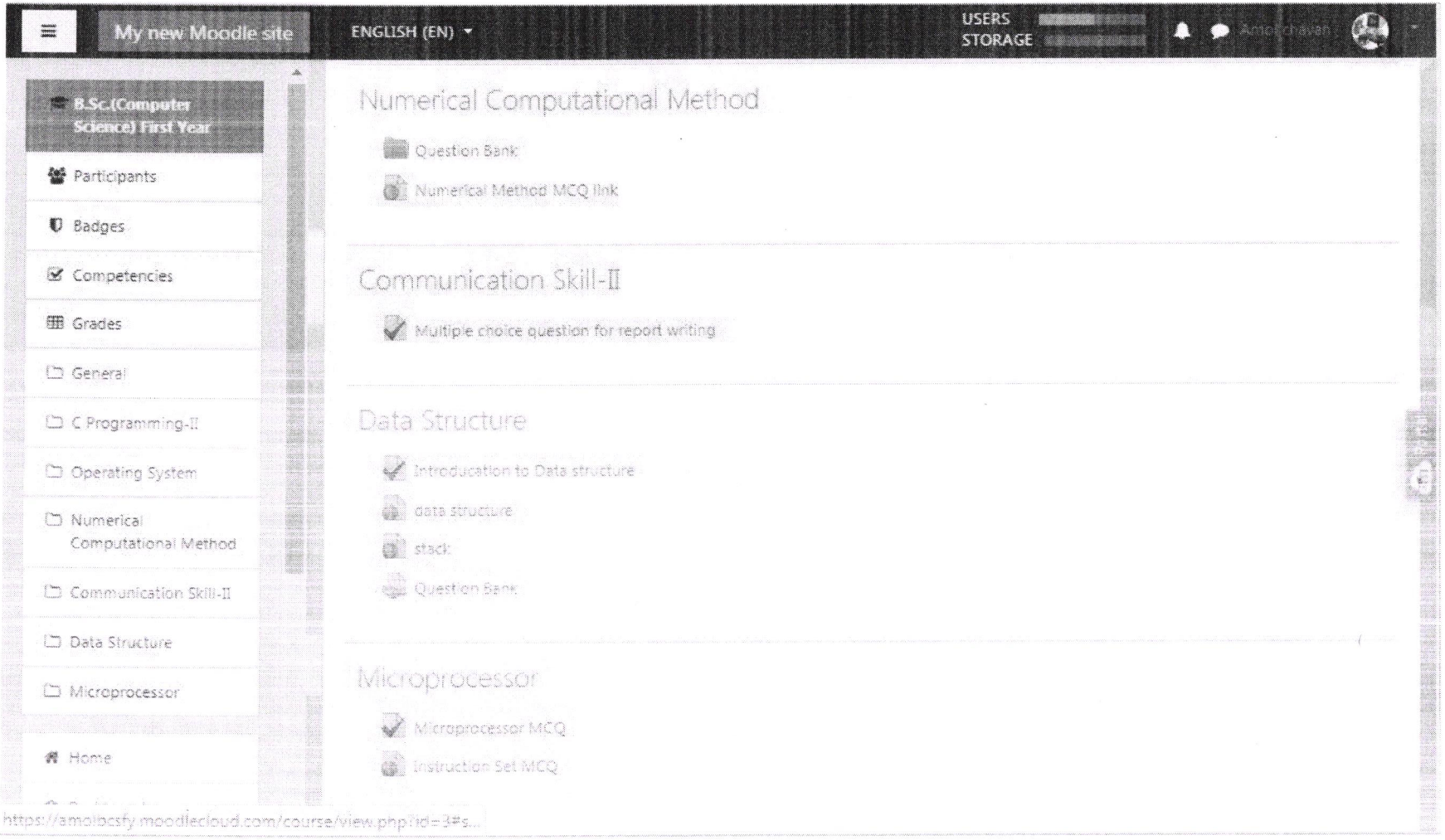


Appendix IV

LMS –Using Moodle




My new Moodle site
ENGLISH (EN)
USERS
STORAGE
B.Sc.(Computer Science) First Year
Participants
Badges
Competencies
Grades
General
C Programming-II
Operating System
Numerical Computational Method
Communication Skill-II
Data Structure
Microprocessor
Home
B.Sc.(Computer Science) First Year
Home / My courses / B.Sc.(Computer Science) First Year
Announcements
C Programming-II
Notes
function quiz 1
function quiz 2
Function quiz 3
Function quiz 4
pointer quiz 1
pointer quiz 2
All quiz
MCQ's Test 1
Let us C EBook - Y.P.Kanetkar
https://amolbcsfy.moodlecloud.com/badges/view.php?type=...


My new Moodle site
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Communication Skill-II
Data Structure
Microprocessor
Home
Numerical Computational Method
Question Bank
Numerical Method MCQ link
Communication Skill-II
Multiple choice question for report writing
Data Structure
Introducation to Data structure
data structure
stack
Question Bank
Microprocessor
Microprocessor MCQ
Instruction Set MCQ
https://amolbcsfy.moodlecloud.com/course/view.php?id=3#s...

(For the year 2018-19)

2.3 Teaching - Learning Process	
2.3.1 Percentage of teachers using ICT for effective teaching with Learning Management Systems (LMS). E-learning resources etc. (current year data)	
Name of teacher using ICT *(LMS, e-Resources)*	E-resources and techniques used
Dr. K.T. Mahajan Shri. C.C. Chorghade Shri. V.A. Harkal	Internet, P.P.T, audi-video Inflibnet ——1.—— swayam ——1.——

Example:

E-resources and techniques used:
MOODLE, LCD, CD's, DVD's, E-Library, Vriddhi, Digital Library, Online Portals, INFLIBNET, National Digital Library, Shodhganga, Blogs, Facebook pages, Language Laboratory etc

Evidences to be attached: (For the year 2018-19)

Soft copies (PowerPoint, audio-videos etc)
Screenshots/images of portals, MOODLE etc
Soft copy of Geotagged Photos (If available)
Links/Hyperlinks

Honours and recognitions received by teachers **(For the year 2018-19)**

Name of full time teachers receiving awards from state level, national level. international level	Year of Award	Designation	Name of the award, fellowship, received from Government or recognized bodies	Whether incentives given by the HEI in recognition of the award	Whether award was in cash/kind
-	-	-	-	-	-

Evidences to be attached:
Xerox copy of certificate
Photos of award

2.4.2 Average percentage of full time teachers with PhD **(For the year 2018-19)**

Name of full time teachers with PhD	Year of obtaining PhD	Is the teacher still serving the institution/ If not last year of the service of Faculty to the institution	Whether recognized as research Guide for PhD	Year of Recognition as Research Guide
Dr. K.T. Maheja. Submission Award	2002 - 2003.	Yes	—	—

Evidences to be attached: (For the year 2018-19)

PhD notification
Recognition letter as PhD guide
List of registered students with guide allotment/admission letter
List of PhD awarded students with notification

NOTIFICATION

It is hereby notified that the thesis entitled " **BLACK IS THE COLOUR OF COSMOS : A STUDY OF THE THEMES AND TECHNIQUES IN THE PLAYS OF LANGSTON HUGHES, LEROI JONES AND AUGUST WILSON** " submitted by **Shri Mahajan Kamlesh Trimbakrao,** has been accepted by this University for the Ph.D. Degree in **English** and he has been declared eligible for the award of the said degree. Shri Mahajan Kamlesh Trimbakrao, submitted his thesis under the guidance of Dr. K.G. Ranveer, Professor, Department. of English, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad .

University Campus,
Aurangabad.

Ref. No. P.G./Ph.D./July-98/Eng./2003/
4116-25

Date :- June 26, 2003.

18/7/03

[Dr. Gajanan Surase]
Registrar.

***

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3] The Deputy Secretary, [Library & Documentation], Association of Indian Universities, AIU 16 Kotla Marg, New Delhi.

4] Shri. N. Z. Wagh, Dean, Faculty of Arts, Kholeshwar Mahavidyalaya, Ambajogai, Dist. Beed.

5] Dr. C.J. Jahagirdar, Professor & Head, Department of English, Shivaji University, Kolhapur.

6] Dr. N.K. Dakorwala, Reader in English, Department of English, Faculty of Arts, The M.S. University of Baroda, Vadodara – 390 002.

7] Dr. K.G. Ranveer, Professor, Department. of English, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad .

Head Lec. Dept. Of Vasantrao Naik Mahavidyalaya Aurangabad

8] The Head, Deptt.of English, Dr.Babasaheb Ambedkar Marathwada University,

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Head Deptt.of English, Dr.Babasaheb Ambedkar Marathwada Unive

(For the year 2018-19)

Dr. V.C.Khilare, Associate Professor in Botany

Dr. M.P. Kulthe, Assistant Professor in Botany

2.3 Teaching – Learning Process	
2.3.1 Percentage of teachers using ICT for effective teaching with Learning management Systems (LMS), E-learning resources etc. (Current year data)	
Name of the teacher using ICT *(LMS, 3-Resources)*	
Dr. V.C.Khilare	PPT and some video for B.Sc. FY-Paper I for Algae, Fungi, Bacteria,Viruses, Lichen
	PPT for B.Sc. SY-Paper VII for Angiosperms
	PPT for B.Sc. TY-Paper XVI for Angiosperms
	PPT for B.Sc. TY-Paper XX for Angiosperms
Dr.M.P. Kulthe	PPT and some video for B.Sc. FY-Paper IV for Bryophytes, Ptridophytes
	PPT for B.Sc. SY-Paper XI for Gymnosperms & Utilization of Plants
	PPT for B.Sc. TY-Paper XV for Cell Biology & Molecular Biology
	PPT for B.Sc. TY-Paper XIX for Genetics and Biotechnology

Evidences to be attached (For the year 2018-19)

Handouts of PPT (B.Sc. FY, SY & TY)

Honours and recognition received by teachers (For the year 2018-19)

Name of the full time teachers receiving awards from state level, national level, international level	Year of Award	Designation	Name of the award, fellowship, received from Government or recognized bodies	Whether incentives given by HEI in recognition of the award	Whether award was in cash/kind
Dr. V.C.Khilare	NIL	Associate Professor	NIL	NIL	NIL
Dr. M.P. Kulthe	NIL	Assistant Professor	NIL	NIL	NIL

2.4.2 Average percentage of full time teachers with Ph.D. (For the year 2018-19)

Name of the full time teachers with Ph.D.	Year of obtaining Ph.D.	Is the teacher is serving in institution /If not last year of the service of Faculty to the Institution	Whether recognized as research guide for Ph.D.	Year of Recognition as Research Guide
Dr. V.C.Khilare	1997	Yes	Yes	2005
Dr. M.P. Kulthe	2009	Yes	NIL	NIL

Evidences to be attached (For the year 2018-19)

Ph.D. Notifications

Research Guide Letter

B.Sc FY Paper - I (2018-19)

Semester - I (Viruses bacteria & Mycoplasma)

(Teacher - Dr. V.C. Khilare)

16-Sep-19

(01)

Viruses

Definition: (Use any one)

1. 'Small sized agents of diseases that are capable of passing through filters that retain even bacteria, increase only in the presence of living cells and give rise to new strains by mutations'.
2. Bowden (1964) defined viruses as, 'Sub microscopic infective entities that multiply only intracellular and potentially pathogenic'.
3. According to Hairon (1964), 'Viruses are bits of infectious heredity in search of a chromosome'.

(02)

General Characters of Viruses

1. Viruses are smallest, simple and most primitive organisms. They are non-cellular, ultramicroscopic particles of protein and nucleic acid.
2. They grown and multiply only in living cells, hence are on the boundary between living and nonliving.
3. They cause many highly infectious diseases of animals including man, angiosperms, bacteria, fungi and algae. All known viruses are pathogens.
4. Viruses exist outside the host, free in air, water for long period but remain inert in the free state. They become activated only when they enters in living cells of a host organism.

(03)

5. They are cultivated only in intact living cells, thus are obligate endoparasite and are the smallest of all infective agents much smaller than the smallest bacteria. They are not visible with the light microscope.
6. Viruses can be observed and photographed with the electron microscope. In electron micrographs, some appears rod shaped others have spherical, cubical or tadpole forms.
7. Most of them can be crystallized. The virus crystal resembles simple chemical compounds. Within host cell the viruses possess some of the properties of life but not all.

(04)

8. They grow, reproduce and undergo mutation but no virus has any respiration of its own.
9. They depend upon enzymes of host to do their work. They have host specificity.
10. Antibiotics have no effects on viruses.

- Nature of viruses:
  - The nature and origin of viruses is still not clear.
  - Some virologists regard them as animate where as others consider them as inanimate.

(05)

- **Viruses are living because:**

1. They show growth.
2. They show mutation.
3. They can be transmitted from the diseased organism to healthy ones i.e. have ability to infect.
4. They react to heat, chemical and radiations.
5. They have genetic material i.e. DNA or RNA.
6. They are capable to multiply in number of same genetic type.
7. Viruses show irritability, a character of only living organism.
8. Nucleoproteins of viruses are similar with the protein and nucleic acids of other living organisms.

(06)

- **Viruses are non-living because:**

1. They can be crystallized.
2. They are inert outside the host.
3. A cell wall or cell membrane of any kind is absent in viruses.
4. They do not show functional autonomy.
5. They don't respire or excrete.
6. Their sedimentation according to their molecular weight is like that of non-living.
7. They lack any energy producing enzyme system.
8. Because of such characters, some virologists consider them as a transition stage between living and non-living world.

PTO

81 (76)

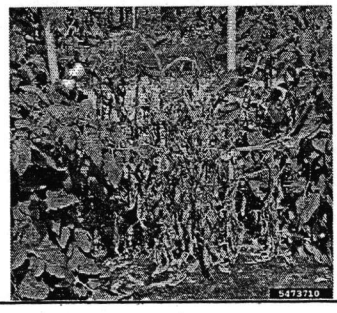
- The donor bacterium carries a DNA sequence called the fertility factor, or F-factor.
- The F-factor allows the donor to produce a thin, tubelike structure called a pilus, which the donor uses to contact the recipient.
- The pilus then draws the two bacteria together, at which time the donor bacterium transfers genetic material to the recipient bacterium.
- Typically, the genetic material is in the form of a plasmid, or a small, circular piece of DNA.
- The genetic material transferred during conjugation often provides the recipient bacterium with some sort of genetic advantage.
- For instance, in many cases, conjugation serves to transfer plasmids that carry antibiotic resistance genes.

(78)

Economic importance of bacteria

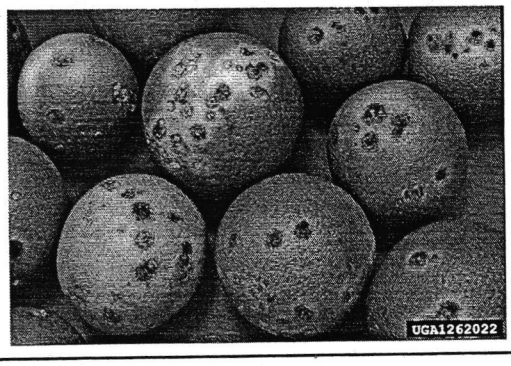
Plant disease

- **Tomato wilt caused by *Ralstonia solanocearum***



(78)

Plant disease-Citrus canker caused by *Xanthomonas citri*



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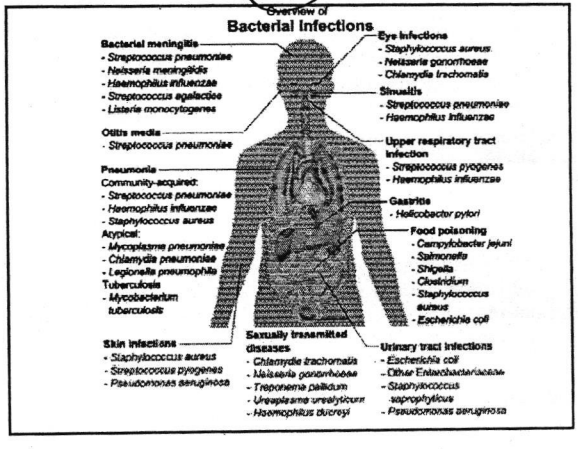
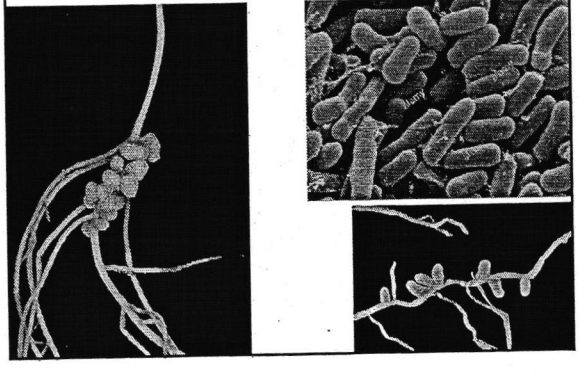


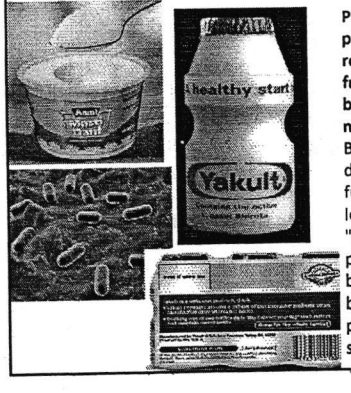
(80)

Beneficial bacteria- Nitrogen fixation by *Rhizobium* spp.



(81) (Last slide)

Beneficial bacteria- healthy drink by *Lactobacillus caesi*



Probiotics are believed to play very important roles in regulating proper intestinal function and digestion - by balancing intestinal microflora.
Best results against diarrhea, in good brain function, to reduce blood levels of LDL or "bad" cholesterol, Blood pressure, protect against bacterial infection and benefits for patients with psoriasis and chronic fatigue syndrome

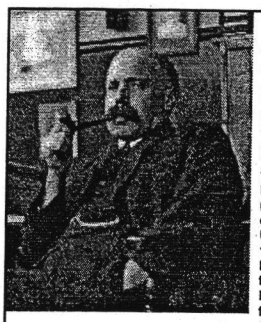
B.Sc. FY Paper - I ('2018-19)

Semester - I

Teacher - Dr. V.C. Khilare (Algae)

16-Sep-19

(01)



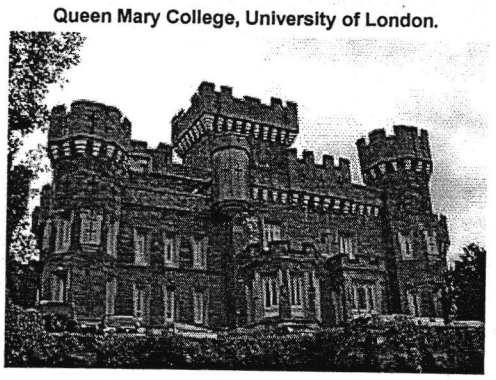
Prof. F.E. Fritsch 1879 - 1954

The book for which Felix Eugen Fritsch may be known is 'Structure and Reproduction of Algae'. He also revised and rewrote Prof. G.S. West's 'British Fresh Water Algae'. His other publications include several reviews of ecological, taxonomic, classificatory, morphological and evolutionary aspects of 'Phycology'. The career of Fritsch took him to the University of Munich, University College London, and the Royal Botanic Gardens (Kew). Following this he started a new Botany department at what is now Queen Mary College, University of London. He became professor in 1924 and retired in 1948. For many years he had been concerned about the lack of a British freshwater biological station. In 1929 the Freshwater Biological Association (FBA) was founded. Fritsch was chairman of the FBA's Council until his death.

In 1912, Fritsch started to put illustrations of freshwater algae onto foolscap sheets of paper. At his death there were about 20,000 such illustrations. The Fritsch Collection of illustrations of Freshwater Algae now contains millions of illustrations, and a microfiche edition is available (Herbarium of Algae)

(02)

Queen Mary College, University of London.



(03)

Classification of Algae by F.E. Fritsch (1935)

- The term 'algae' is used for some lower plants and many, often unrelated groups of microorganisms that are able to perform photosynthesis.
- The algae with about 14,000 species belonging to about 950 genera are one of the big plant groups.
- Fritsch (1935) classified algae into the following 11 classes on the basis of following points

1. Number and attachment of flagella
2. Structure of thallus
3. Chemical nature of pigments
4. Reserve food material
5. Method of reproduction
6. Variation in life cycle.

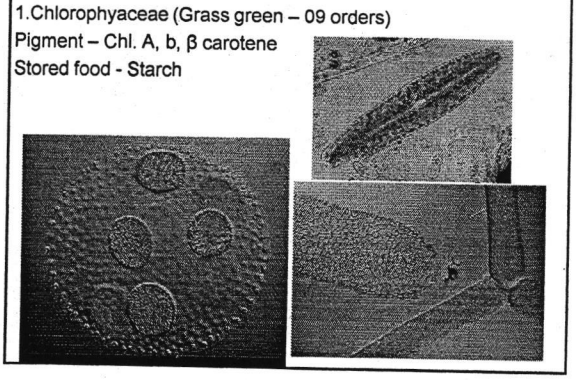
(04)

Different classes of Algae

1.Chlorophyaceae (Grass green – 09 orders)

Pigment – Chl. A, b, β carotene

Stored food - Starch



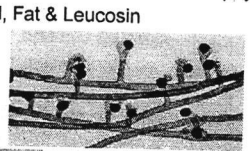
(05)

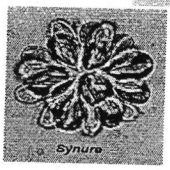
2. Xanthophyceae (Yellow – green) 04 Orders

Pigment – Chl. a, e, β carotene and xanthophylls

Stored food – Oil, Fat & Leucosin

Vaucheria





3. Chrysophyceae (Brown -Orange) 03 Orders

Pigment – Chl. a, β carotene and xanthophylls

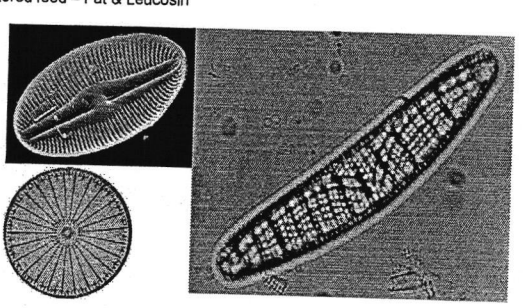
Stored food – Fat & Leucosin

(06)

4. Bacillariophyaceae (Diatoms) (Yellow – golden brown) 02 Orders, Cell wall is made up of silica

Pigment – Chl. a, c, β carotene and xanthophylls

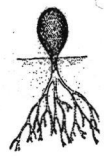
Stored food – Fat & Leucosin



P.T.O.

63

- **Thallus structure:**
- The bladder-like of *Botrydium* consists of a yellow-green pear-shaped or spherical, aerial portion which is anchored to the substratum by a colourless, branched rhizoidal portion.
- The subterranean rhizoid is dichotomously branched.
- The tiny, balloon-like overground portion, which is 1-2 mm in diameter, is called vesicle. Vesicle has central vacuole.
- Cytoplasm contains numerous chromatophores.

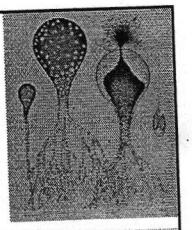


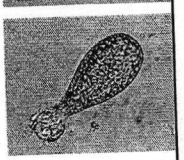
64

- **Reproduction:** *Botrydium* reproduces by both asexually as well as sexually.
- **Asexual reproduction:**

1. By Zoospores:

- The zoospores are formed when the plants are submerged under water.
- The protoplast metamorphoses into many small uni-nucleate parts.
- Each uni-nucleate daughter part pushes towards anterior end & converts into zoospores has two unequal flagella.
- They liberated through an apical aperture of vesicle.
- Each zoospore encysts and forms a wall around it. It then germinates by producing colourless rhizoid at its attached end.

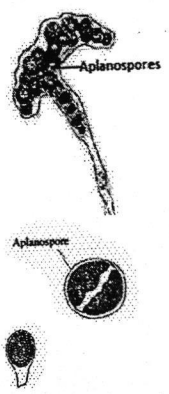




65

2. By Aplanospores:

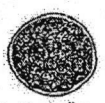
- The aplanospores are formed under damp air on wet soil but not submerged.
- The protoplast of vesicle divides repeatedly to form uni-nucleate daughter protoplast.
- Each daughter protoplast becomes rounded and secretes a wall around it before liberation.
- It is an aplanospore.
- The aplanospore produces new plant after germination.

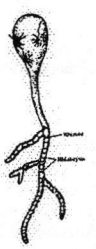


66

3. Resting body:

- Under dry conditions the entire protoplast of vesicle rounds off to form a single large multinucleate structure which secretes a thick wall around it to become a macrocyst known as resting bodies.
- Sometimes such macrocysts are formed in rhizoids called as rhizocyst.

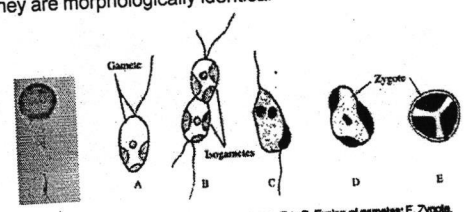




67

Sexual reproduction

- *Botrydium* is monoecious (bisexual)
- Sexual reproduction is isogamous (similar gametes)
- The isogametes are uni-nucleate and biflagellate
- They are morphologically identical



Botrydium, sexual reproduction. A, A gamete; B to D, Fusion of gametes; E, Zygote.

68 (Last slide)

- As many as 40,000 isogametes are produced in each vesicle
- The isogametes are obpyrifom (inversely pear shaped)
- They fuse through their posterior end
- Fusion of gametes are takes place in vesicle because the plant is monoecious
- Fusion of gametes forms zygote which is round
- Zygote germinates immediately
- Zygote undergoes meiosis and forms 4-8 haploid zoospores
- The zoospores germinate into new *Botrydium* plant.

B.Sc. FY Paper - I (2018-19)

Semester - I

Teacher- Dr. V C Khilare (Fungi)

16-Sep-19

Fungi - A Introduction

1. The word **Myco-** derives from the Greek word for **fungus.**
2. Over 70,000 species of living fungi have been identified.
3. Fungi are **heterotrophs** that are important decomposers; most are **saprophytes** (grow on non-living organic matter), and some are **parasites** (grow on organic matter of living organisms).
4. Digestion is extracellular; fungal cells secrete powerful digestive enzymes into their surroundings.
5. Nutrients are then absorbed.
6. Most fungi consist of multicellular filaments called **hyphae** (hypha is singular);
7. Hyphae are tube shaped and have walls made of the nitrogenous polysaccharide **chitin,** which makes them resistant to heat, cold, and desiccation.
8. Cross walls are present for strength, and these are perforated so that cytoplasm is continuous from cell to cell.

9. The meshwork (जाळी) of hyphae that absorbs nutrients is called a **mycelium** (pl. mycelia).
10. Fungal **spores** disperse from the parent body and germinate into new mycelia.
11. Fungi do not possess the green pigment chlorophyll found in plants, so they have to gain their food from other sources in much the same way that an animal does.
12. Fungi play a vital role in recycling by breaking down lignin.
13. Many fungi form symbiotic associations with trees and other plants (mycorrhizal fungi), which enters the plant root system helps in the uptake of water and nutrients.
14. Over 90% of plants have a fungus associated with their roots and many would not survive without their fungal partner.
15. Fungi may also form symbiotic relationships with algae, known as lichens.

What are Fungi?

1. Heterotrophic
2. Eukaryotic
3. Have cell walls
4. Has its own kingdom
5. Absorbs food through hyphae
6. Uses spores to reproduce
7. Fungi needs a warm, moist places to grow. They thrive on moist foods, damp tree barks, and wet bathroom tiles.
8. The largest known organism on Earth is actually underground fungus that covers an area as large as 1000 football fields!!
9. Fuzzy molds are loosely packed vs. mushrooms with caps and stalks where the hyphae are so tightly packed that they look solid.

10. Hyphae attaches to food source and releases ooze to decompose food. Then the hyphae acts like a straw and transports the food to the fungus.
11. **Fungi reproduce sexually when environmental conditions are unfavorable**
12. **No male or female** fungi
13. Two mating types: **plus (+) and minus (-)**
14. **Fertilization** occurs when **(+) hyphae fuse with (-) hyphae to form a 2n** or diploid **zygote**
15. Some fungi show **dimorphism** (ability to change their form in response to their environmental conditions)
16. The sexual (Perfect, Meiotic) state is referred to the teleomorph
17. The asexual (imperfect, mitotic) state is termed as anamorph

Albugo

Classification

Division: Mastigomycotina

Sub division: Diplomastigomycotina

Class: Oomycetes

Order: Pernosporales

Family: Albuginaceae

Genus: *Albugo*

***Albugo* is the only one genus of the family Albuginaceae and represented by 18 spp. in India and 25 spp. throughout world.**

5

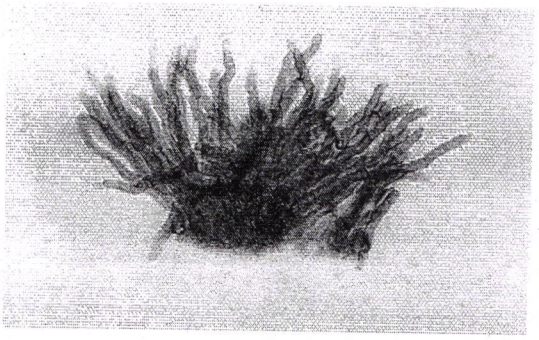
Occurrence:

- The fungus occurs in higher plants as an obligate endoparasite and causes the well-known 'white rust' disease.
- In Latin 'Albus' means 'white'.
- This disease commonly found amongst Brassicaceae family members include cabbage, cauliflower, radish, mustard and turnip.
- The fungus attacks all parts except root.
- The disease appears in the form of white, shining, irregular patches or pustules on the aerial parts especially the leaves and hence named 'white rust'.

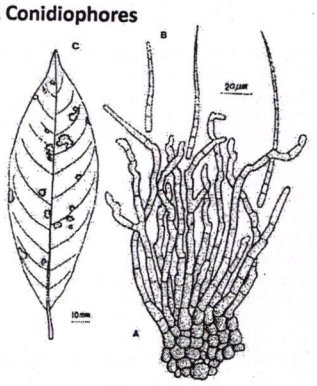
6

PTO

Stroma & Conidiophores

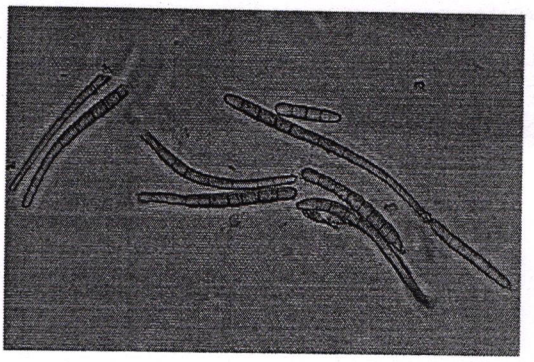


Stroma & Conidiophores

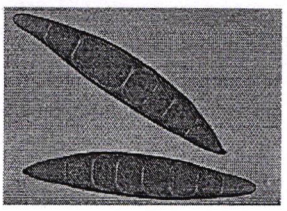


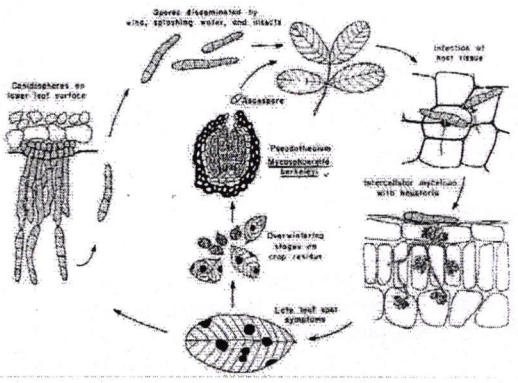
- Conidiophore produces conidia at apex pushed to a side and the tip of the conidiophore resumes its growth.
- Later a new conidium is produced at apex. Conidia falls off and spread in air.
- Conidium is inversely clavate (rounded at base and tapering towards apex) and straight or slightly curved.
- It is generally 1 –7 septate, long.
- Conidia are hyaline (colourless) or pale yellow to slightly olivaceous.
- On detachment from conidiophore, the conidia leave a scar at the place of attachment.
- The conidia are dispersed by wind or rain splash.
- They germinate under favourable condition (24 28°C) by giving rise germ tubes.
- Each germ tube ultimately develops into a new mycelium.

Cercospora: Conidia



Cercospora: Conidia





B.Sc. FY
Semester - I
Bridge Lecture
Teacher - Dr. V. C. Khilare

16-Sep-19

01

BRIDGE LECTURE FOR B.SC. FY (BOTANY)

Dr. V. C. Khilare
Associate Professor

02

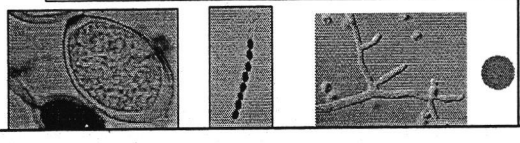
Botany is important...

Botany is important primarily because
- **it is the scientific study of plants,**
- **used in many aspects of human life.**
- **Plant study for their knowledge of characteristics**
- **traits of crops,**
- **plants and flowers to influence the fields of medicine, science and cosmetics.**
- **plants support basic daily functions of human life by providing food and nutrition.**

03

WHAT ARE FUNGI?

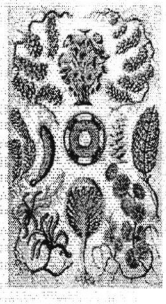
- A **eukaryotic, heterotrophic** organism devoid of chlorophyll that obtains its nutrients by **absorption,** and reproduces by **spores.**
- The primary carbohydrate storage product of fungi is **glycogen.**
- Most fungi have a **thallus** composed of **hyphae** (sing. **hypha**) that elongate by **tip growth**



04

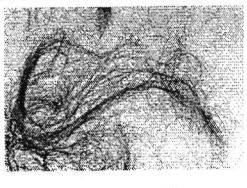
What is algae?

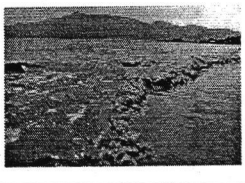
- Algae are a large and successful group of organisms, which flourish in the sea, in fresh-water and in damp places on land.
- Most algae contain green chlorophyll, and can produce foods, such as sugars, from the sun.
- They have been classified in a separate kingdom called Protista.
- They are the base of the aquatic food chain.
- Algae growth is a natural occurrence in all water bodies.
- Algae thrives on hot weather when it reproduces more rapidly. It is stimulated by nutrients.



05

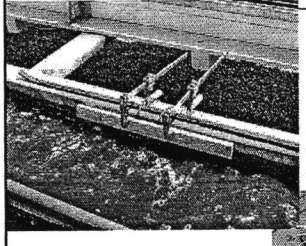
- The algae with about 14,000 species belonging to about 950 genera; are one of the big plant groups.

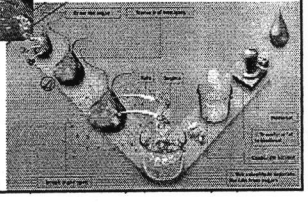




06

The algae used as fuel





27

Career Opportunities and Job Prospects

- Moreover the application of plant sciences improves the yield and supply of medicines, foods, fibers, building materials and other plant products.
- The knowledge of **plant sciences** is essential for development and management of forests, parks, waste lands, sea wealth etc.
  Few of the **industries** which one can work with are:
- Chemical Industry
- Food Companies
- Arboretum

28

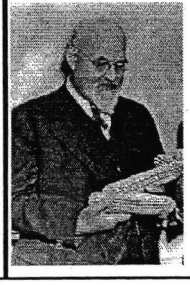
Career Opportunities and Job Prospects

- Competitive Exams. MPSC, UPSC
- Forest Services
- Biotechnology Firms
- Tissue Culture
- Oil Industry
- Land Management Agencies
- Seed And Nursery Companies
- Plant Health Inspection Services
- National Parks
- Biological Supply Houses
- Plant Resources Laboratory
- Educational Institutions
- Forensic Departments

29

Top Most Influential People in Botany /Agriculture/Farming History

George Shull (1874-1954)



- **A botanist by training at Cold Spring Harbor, Long Island New York.**
- **The father of hybrid corn.**
- **Shull devoted 30 years of his life to corn breeding.**
- **He served as a Professor of Botany and Genetics at Princeton University**

30

Barbara McClintock (1902-1992)

- She won a Nobel Prize in 1983 for her study of corn chromosomes, which revolutionized the field of cytogenetics.
- She specialized in cytogenetics.
- She discovered the role of "controlling elements" in genetic regulation and transposition.

31

Norman Borlaug (1914 –2009)

- Awarded the Nobel Peace Prize in 1970 for his work on the world's food supply,
- Borlaug is known the world over for his highly successful wheat breeding and wheat research programs in Mexico.

32

M.S. Swaminathan (07.08.1925)

- Born on 7 August 1925, an Indian geneticist.
- Swaminathan is known as "Indian Father of Green Revolution" for his leadership and success in introducing and further developing high-yielding varieties of wheat in India.

B.Sc. SY Paper VII (2018-19)

Semester - III (General Taxonomy)

(Teacher - Dr V C Khilare)

16-Sep-19

(01)

Binomial Nomenclature

It is the system of naming plants on the scientific basis is known as plant nomenclature.

The earliest names were polynomials, composed of several words.

Nomenclature is needed for identity of plants. If there were no names for all how strange life would be in such a condition?

Therefore nomenclature for everything is needed.

In the present botanical world, the nomenclature involves the principles governed, formulated and adopted by **International Botanical Congress** (IBC).

The rules developed by IBC are listed formally in a code known as **International Code of Botanical Nomenclature** (ICBN).

(02)

Binomial system of nomenclature:

- Linnaeus employed the binomial system of nomenclature in the first edition of his ***Species Plantarum*** published in 1753.
- According to the system of nomenclature the name of the plant consists of two Latin words, the first representing the genus and the second the species.
- For example, the botanical name of Mango is ***Mangifera indica***.
- The first word ***Mangifera*** designates the genus of plant and the second word ***indica*** represents particular species of that genus.
- The scientific names always-printed in italics and hand written and typed names are always underlined. The generic name starts with a capital letter, whereas the specific name with a small letter.
- There is only one scientific name for a plant, which is known as its legitimate name.

(03)

Concept of Genus, Species and Epithet

Concept of Genus

- In biology, a **genus** (plural: **genera**) is a low-level taxonomic rank used in the biological classification of living and fossil organisms, which is an example of definition by genus and differentia.
- Genera and higher taxonomic levels such as families are used in biodiversity studies, particularly in fossil studies since species cannot always be confidently identified and genera and families typically have longer stratigraphic ranges than species
- The term comes from Latin genus "descent, family, type, gender", cognate with Greek:– *genos*=race.
- The composition of a genus is determined by a taxonomist.
- The standards for genus classification are not strictly codified, and hence different authorities often produce different classifications for genera.
- In the hierarchy of the binomial classification system, genus comes above species and below family.

(04)

Concept of Species:

- In biology, a **species** is one of the basic units of biological classification and a taxonomic rank.
- A species is often defined as a group of organisms capable of interbreeding and producing fertile offspring. While in many cases this definition is adequate, more precise or differing measures are often used, such as similarity of DNA, morphology or ecological niche. Presence of specific locally adapted traits may further subdivide species into sub species.
- Species that are believed to have the same ancestors are grouped together, and this group is called a genus. A species can only belong to one genus that it was grouped into. All species are given a two part name (called a 'binomial name' – 'bi' for two, 'nomial' for name).

(05)

- The first part of a binomial name is the generic name, the genus of the species. The second part is either the specific name (a term used only in zoology, never in botany, for the second part of a binomial) or the specific epithet (the term always used in botany, which can also be used in zoology). For example, *Boa constrictor*, which is commonly called by its binomial name, and is one of five species of the *Boa* genus. The first part of the name is capitalized, and the second part has a lower case. The two part of the name is written in italics.

(06)

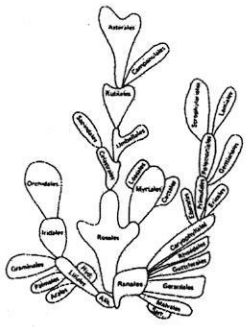
Concept of Epithet: (विशेष उल्लेख करणे)

- The name of a species is a binomial and consists of a generic name and a specific epithet. A specific epithet is the second part of the binomial. It must always used with a generic name to form the binary combination for that species. The specific epithets are formed from nouns, adjectives, plant parts, colour, geography, etc. and may join these words with a large number of prefixes and suffixes.
- Some Latin prefixes of numbers are as: uni –(L.): *uniflorus* (one-flowered)
- Common suffixes used as: -aceus: *crustaceus,* alis: *digitalis,* estris: *campestris*

PTO

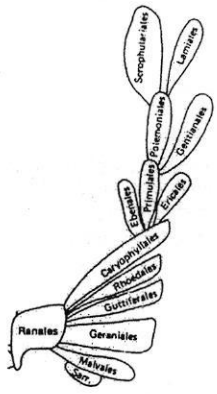
57

Bessey's Cactus



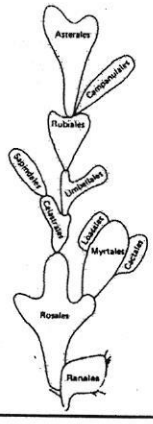
58

- **First Line:** In the first line hypogynous condition remain unchanged. Rhoeadales and Sarraceniales evolved parallely from Ranales. Development of gynophore in Capparidaceae shows a definite relation between Parietales and Rhoeadales. Malvales evolved through Bombacaceae. There are some definite relationship between Malvales and Geraniales. Geraniales are also related to Sapindales, and Sapindales to Rhamnales. Fusion of sepals, petals carpels and epipetalous condition in Solanaceae is also related with Labiateae. Labiateae is the most advanced family in this line.



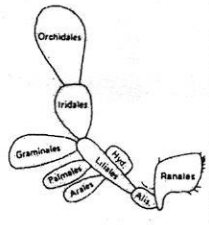
59

- **Second Line:** A change is observed from hypogyny to epigyny through perigyny. The change from hypogyny to epigyny is seen clearly in Rosales. The formation of hypanthodium shows a change of perigyny into epigyny in Myrtales. Epigyny and syncarpy in Umbellales show advancement over Myrtales. Umbellales are related to Rubiales through the characters such as Umbel-like inflorescence, suppression of calyx, epigyny. Campanulales are present at the top in this line with presence of pappus, irregular flowers and fusion of floral parts.



60

- **Third Line:** It shows a few resemblances between monocotyledons (Alismataceae) and dicotyledons (Ranunculaceae). Liliales and Ranales differ in the number of floral parts and fusion of carpels. Epigynous condition of Iridaceae and Amaryllidaceae is an advancement over Liliales. Here are some reports that Gramineae is originated from Liliaceae. But the reduction in number of stamens and carpels, loss of perianth parts indicates that Gramineae is more advanced than Liliaceae. Orchidaceae possess insect-pollinated, irregular and showy flowers, and thus the most advanced family of monocotyledons.



61

- <u>Classification of Angiosperms</u>
- Various attempts were made to classify the plants fall in one of the following three categories.
- Artificial systems
- Natural systems
- Phylogenetic system
- **1) Artificial classification system:** In the period 300 B.C. to 1830 the classification of plants was artificial. The artificial systems propounded by early herbalist were based on one or few characters like habit and floral characters. Some important workers in artificial systems are **Theophrastus, Dioscorides, Caesalpino, Bauhin, John Ray, and Carolus Linnaeus.** The system of Linnaeus, which largely depended on the number of stamens and carpels in the flower. It was very simple and convenient system became popular. It remained dominant over 75 years until it was replaced by the systems of **de Jussieu** and **de Candolle.**

62 (Last Slide)

- **2) Natural Classification Systems:** In Natural system plants were classified depending upon their natural affinities. Some important workers in natural systems are **de Jussieu, de Candolle** & <u>**Bentham and Hooker.**</u>
-
- **3) Phylogenetic Classification Systems:** In these systems plants are classified based on genetic and phylogenetical (evolutionary) approach. The most widely known phylogenetic systems are those of <u>**Engler and Prantl**</u>, **Hutchinson, Takhtajan** and **Cronquist.**

B.Sc. Sy Paper - VII

Semester - III (Angiosperms - Families)

(Teacher - Dr. V-C. Khilare)

16-Sep-19

(01)

Syllabus

Study of the following families: systematic position (30 Lect.) salient features, floral formula, floral diagram, common examples and their economic importance

1. **Annonaceae**
2. **Malvaceae**
3. **Leguminosae (Papilionaceae)**
4. **Caesalpiniaceae**
5. **Mimosaceae**
6. **Apocynaceae**
7. **Solanaceae**
8. **Acanthaceae**
9. **Lamiaceae (Labiatae)**
10. **Nyctaginaceae**
11. **Liliaceae**
12. **Poaceae (Gramineae)**

(02)

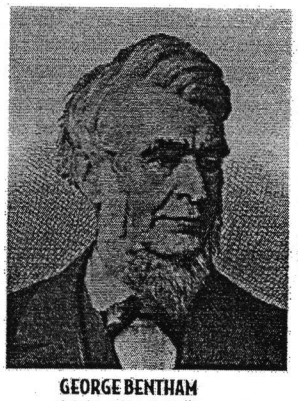
1. **Salient features, origin and evolution of Angiosperms**
2. **Bentham and Hooker's system of classification upto series level, its merits and demerits**
3. **Taxonomy in relation to anatomy, embryology, palynology, ecology and cytology**
4. **Concept of Binomial Nomenclature and its advantages**
5. **Concept of genus, species and epithet.**
6. **Herbaria and Botanical Gardens.**

(03)

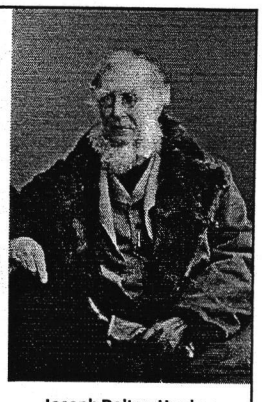
Bentham and Hookers Classification

- **George Bentham (1800-1884)**
- **Joseph Dalton Hooker (1817-1911)**
- The two British Botanists who were associated with the Royal Botanical Garden, Kew, England wrote a book 'Genera Plantarum' (1862-1883) wherein they presented their outstanding system of classification. This was the greatest taxonomic work. This system is still used and followed in several herbaria of the world. It is supposed to be the best system for students.

(04)

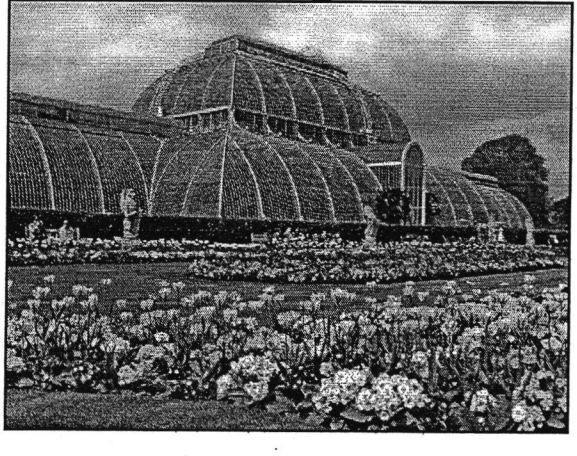


GEORGE BENTHAM
(1800–1884, British)



Joseph Dalton Hooker

(05)



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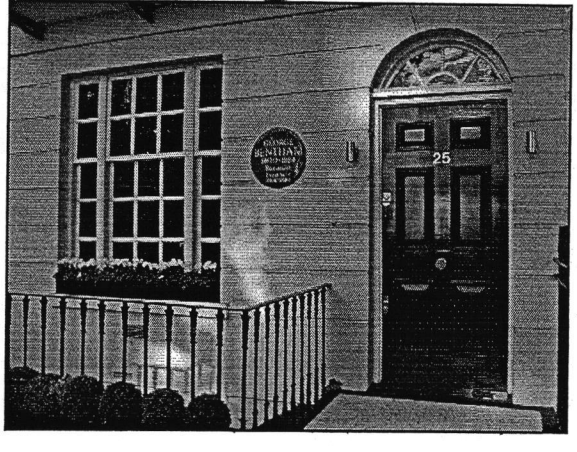

PTO

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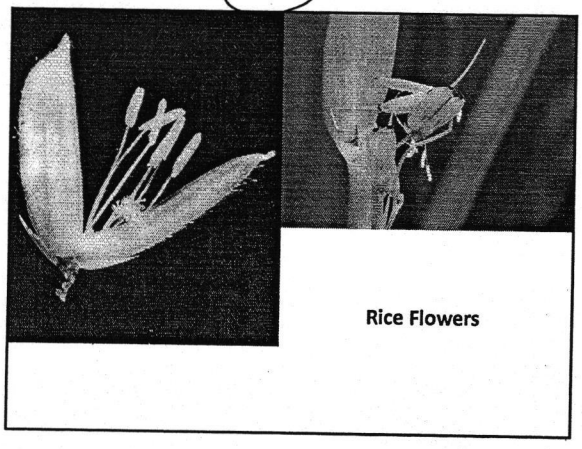
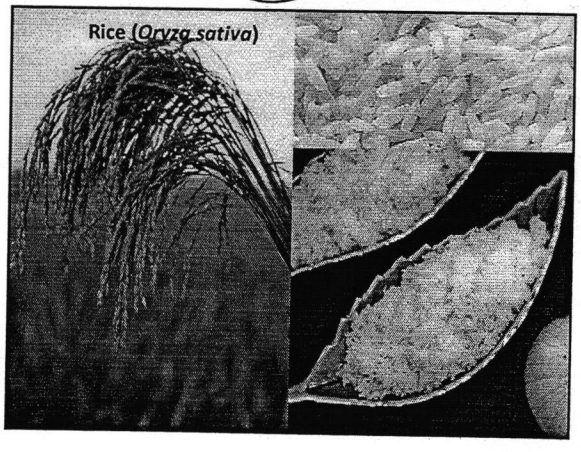


Rice Flowers

418



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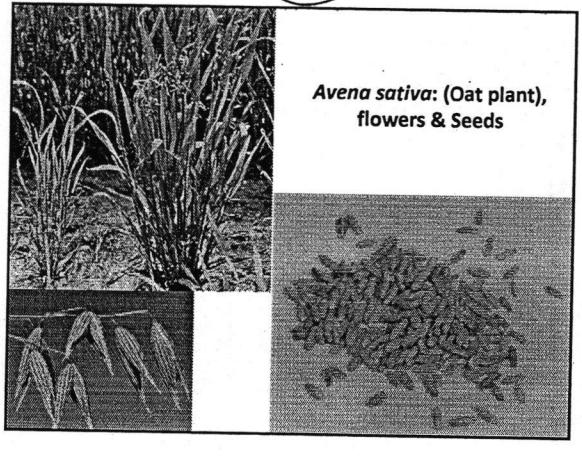

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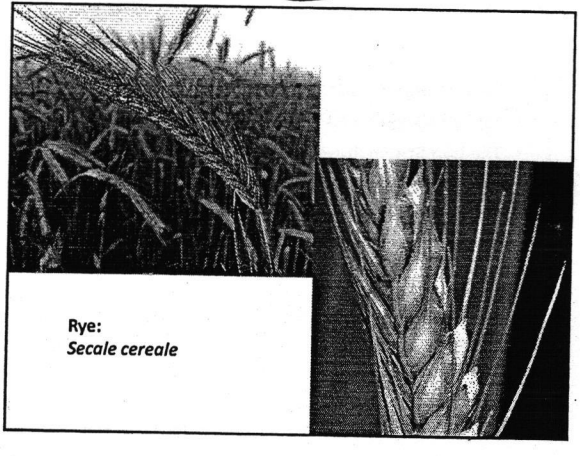

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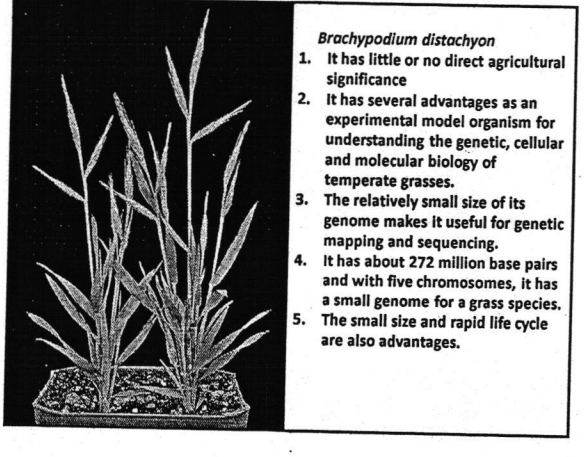
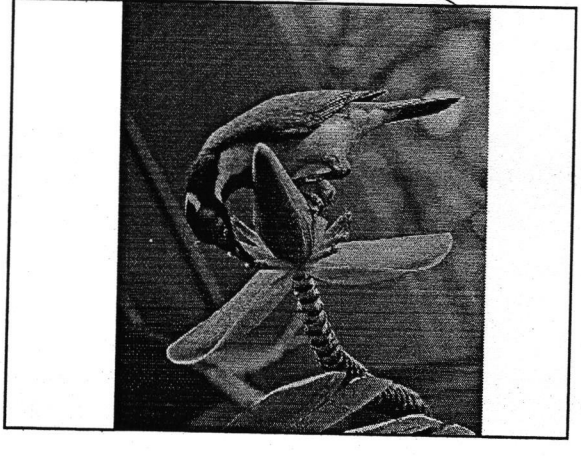


422 (Last slide)



B.Sc TY
Semester. V
Paper - XVI (A)
(Biodiversity)

(2018-19)

16-Sep-19

Teacher - Dr. V C Khilare

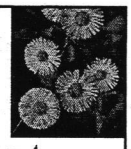
(01)

Syllabus

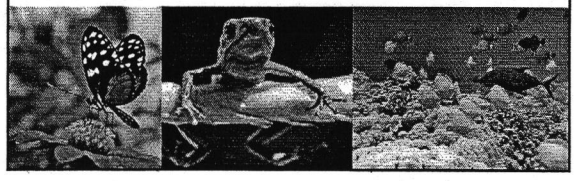
1. Biodiversity :
   i. Definition, concept, origin and evolution
2. Types of biodiversity:
   i. Species, genetic, ecological, cropland and agricultural diversity;
   ii. biodiversity in India; endemism and hot spots; threatened species,
   iii. threats to biodiversity
3. Conservation of biodiversity:
   i. Major causes for loss of biodiversity, listing of threatened biodiversity;
   ii. threatened categories – extinct, endangered, vulnerable, rare and indeterminate. Conservation measures: – ex-situ, and in-situ; biodiversity conservation in India.
4. Phytotaxonomy: Classification of Angiosperms with special reference to
   i. Linnaeus,
   ii. A. P. de Candole,
   iii. Bentham and Hooker.

(02)

What is Biodiversity ?



- Refers to the numbers, variety and variability of living organisms and ecosystem.
- Includes all terrestrial, marine an other aquatic organisms.
- Covers diversity within species, between species as well as variations among ecosystems.



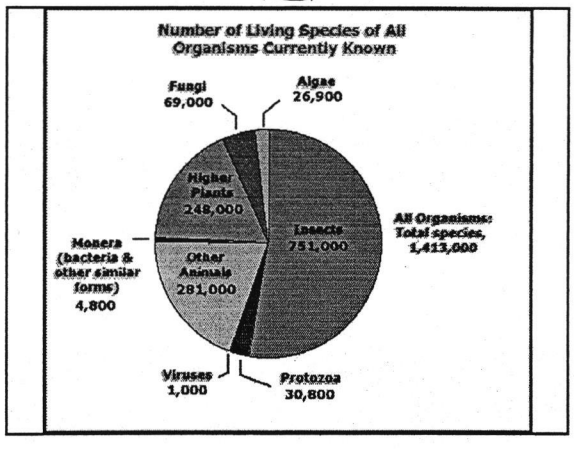
(03)

Biodiversity

Biodiversity Definition, Concept, Origin & Evolution

1. Biodiversity is defined as "richness of species (microorganisms, plants and animals) occurring in a given habit"
2. The term 'Biodiversity' was coined as a counteraction of 'biological diversity' in 1985 by a biologists E.O. Wilson
3. Biodiversity is the natural biological capital of the earth.
4. It is a synonymous with life on earth
5. Today's biodiversity is a product of 3.5 billion (350 crores) years
6. The biodiversity exists in 8 groups and 193 biogeographical sub-groups. Each biogeographical sub-group is composed of ecosystem. These communities

(04)



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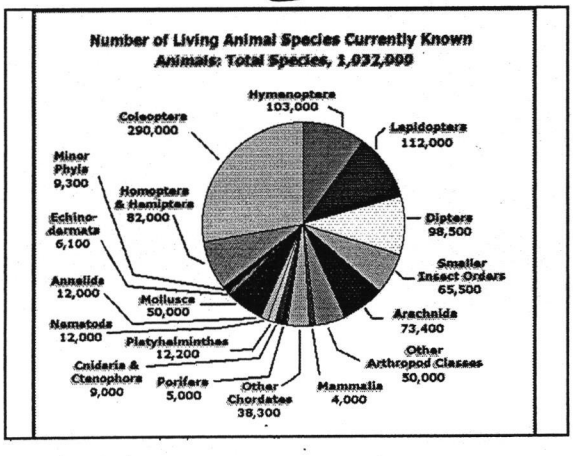

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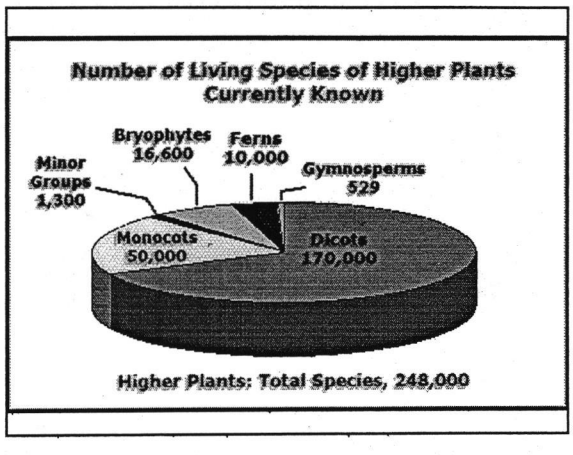
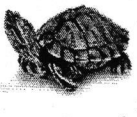


76

लोकसत्ता 16.3.2014

कासवांची तस्करी सशाच्या चपळाईने...



77

'जायंट सॉफ्ट शिल्ड टर्टल' जगभरात फक्त चारच

कासवांच्या अनेक प्रजाती पृथ्वीवरून नामशेष होणार?

78

ग्लोबल वॉर्मिंग, किनाऱ्यालगतची वाढती लोकसंख्या; माशांच्या बेसुमार शिकारीमुळे कोरल रीफ नष्ट होण्याच्या मार्गावर

महासागरी जीवनरेषांच्या अस्तित्वाला मोठा धोका

79

धोका | जैवविविधता मंडळाचा याचिकादाखल अहवाल; महानगरपालिकेलाही नोटीस

दिव्य मराठी
24.06.2015

गोदावरी नदीला औरंगाबादकर देतात ९० टक्के प्रदूषित पाणी

80

दै. महाराष्ट्र टाईम्स 27.08.2015

दृष्टिक्षेप

वाघांची डरकाळी

- देशात आज दीड हजार २२६ पट्टेरी वाघ
- गेल्या पाच वर्षांमध्ये वाघांची संख्या ७० टक्क्यांनी वाढल्याचे स्पष्ट
- देशातील १८ राज्यांमध्ये आज वाघांची कायमस्वरूपी वस्ती
- मानसपाठोपाठ उत्तराखंड, कर्नाटकाला व्याघ्रसंरक्षणात सर्वाधिक यश

वाघांचे राज्यवार वास्तवी संख्या

81 Last Slide

आणखी आठ पक्ष्यांचे अस्तित्व धोक्यात

'कॉन्झर्व्हेशन ऑफ नेचर'कडून यादी प्रसिद्ध

B.Sc. IV
Semester- V & VI
Papers XVI & XX (A)
Teacher- Dr. V.C. Khilare

16-Sep-19

01

Phytotaxonomy-I

Classification systems of Angiosperms with special reference to:

1. **Carolus Linnaeus**
2. **A.P. de Candolle**
3. **Bentham and Hooker**

02

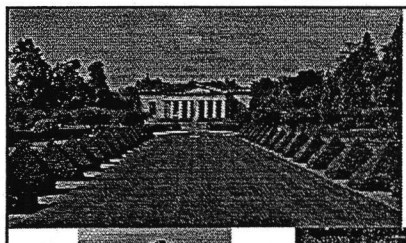
1. Classification by Carolus Linnaeus

- **Carolus Linnaeus (1707-1778)** a great Swedish naturalist, is rightly known as the 'Father of Modern Botany'.
- He became interested in the study of natural history since his childhood.
- In 1730 he published **Hortus Uplandicus** wherein he enumerated the plants of **Uppsala Botanic Garden** in Sweden. Later, in 1737, he published his famous book **Hortus Cliffortianus**, based on the collection of plants in the garden of George Clifford at Hartecamp.

03

Carolus Linnaeus (1707-1778)

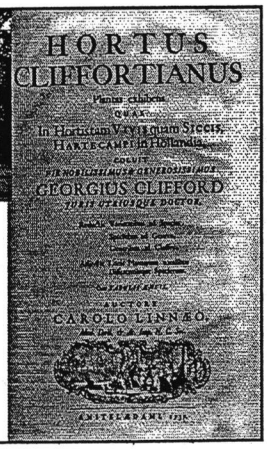
04



Uppsala Botanic Garden, Sweden.

05

Garden of George Clifford, Hartecamp



06

- His **'Genera Plantarum'** and **'Classes Plantarum'** appeared in 1737 and 1738 respectively.
- One more book **'Philosophia Botanica'** appeared in 1751 which contained a revised version of his system published previously in **'Classes Plantarum'** (1738) and **'Systema Natvrae'** (1735).
- His **'Species Plantarum'** was published in 1753, a work where some 7300 species were described and arranged according to his **sexual system** of classification.
- In this book Linnaeus introduced the consistent use of the **binomial system** of plant names.

59

- **Sub-class 2. Ranunculidae**
- Superorder IV. Ranunculanae
- Order 9. Ranunculales, 10. Papaverales, 11. Sarraceniales
- **Sub-class 3. Hamamelidane**
- Superorder V. Hamamelidanae
- Order 12. Trochodendrales, 13. Circidiphyllales, 14. Eupteleales, 15. Didymelales, 16. Hamameliadales, 17. Eucommiales 18. Urticales, 19. Barbeyales, 20. Casuarinales, 21. Fagales, 22. Balanopales 23. Leitneriales.
- Superorder VI. Juglandanae
- Order 24. Myricales, 25. Juglandales

60

- **Sub-class 4. Caryophyllidanae**
- Superorder VII. Caryophyllanae
- Order 26. Caryophyllales, 27. Polygonales
- Superorder VIII. Plumbaginanae
- Order 28. Plumbaginales
- **Sub-class 5. Dilleniidae**
- Superorder IX. Dillenianae
- Order 29. Dilleniales, 30. Paeonales, 31. Theales, 32. Vioales, 33. Begoniales, 34. Capparales, 35. Tamaricales, 36. Salicales
- Superorder X. Ericanae
- Order 37. Ericales, 38. Ebnales, 39. Primulales
- Superorder XI. Malvanae
- Order 40. Malvales, 41. Euphorbiales, 42. Thymeleales

61

- **Sub-class 6. Rosidae**
- Superorder XII. Rosanae
- Order 43. Saxifragales, 44. Rosales, 45. Fabales, 46. Connariales, 47. Podostemales, 48. Nepenthales
- Superorder XIII. Myrtanae
- Order 49. Myrtales
- Superorder XIV. Rutanae
- Order 50. Rutales, 51. Sapindales, 52. Geraniales, 53. Polygalales
- Superorder XV. Aralianae
- Order 54. Cornales, 55. Apiales
- Superorder XVI. Celastranae
- Order 56. Celastrales, 57. Santalales, 58. Balanophorales, 59, Rhamnales, 60. Elaeagnales.
- Superorder XVII. Proteanae
- Order 61. Proteales

62

- **Sub-class 7. Asteridae**
- Superorder XVIII. Gentiananae
- Order 62. Gentianales, 63. Oleales, 64. Dipsacales, 65. Loasales
- Superorder XIX. Laminae
- Order 66. Polemoniales, 67. Lamiales, 68. Scrophulariales
- Superorder XX. Asteranae
- Order 69. Campanuales, 70. Calcycerales, 71. Asterales.

63

- CLASS: LILIOPSIDA (MONOCOTYLEDONS)
- **Sub-class 1. Alismalidae**
- Superorder I. Alismatanae
- Order 1. Alismatales, 2. Najadales
- **Sub-class 2. Liliidae**
- Superorder II. Triuridanae
- Order 3.Triuridales
- Superorder III. Lilianae
- Order 4. Liliales, 5. Smilacales, 6. Burmanniales, 7. Orchidales, 8. Bromeliales
- Superorder IV. Juncanae
- Order 9. Juncales, Order 10. Cyperales
- Superorder V. commelinanae
- Order 11. Commelinales, 12. Eriocaulales, 13. Restionales, 14. Hydatellales, 15. Poales.
- Superorder VI. Zingiberane
- Order 16. Zingiberales
- **Sub-class 3. Arecidae**
- Superorder VII. Arecanae
- Order 17. Arecales, 18. Cyclanthales, 19. Pandanales, 20. Typhales
- Superorder VIII. Aranae
- Order 21. Arales

64 Last slide

- **Merits of Takhtajan system of classification:**
- Dicots are discussed prior to monocots
- Dicots starts with Magnoliales which are universally considerd to be the most primitive angiosperms
- Families are small homogenous units made up of closely relared genera
- Division of dicots into traditional groups of Engler & Prantls i.e. Archychlamydae & Metachlamydae has been abolished in this sytem
- Alismatales considered most primitive living monocots
- **Demerit of Takhtajan system of classification:**
- Narrow defined taxa (plants) splits the related groups

B.Sc. FY
Semester - II & IV
Angiosperms families
Teacher Dr. V. C. Khilare

16-Sep-19

01

1. Family: Magnoliaceae

Classification:
Division – Angiosperms
Class – Dicotyledons
Sub-class – Polypetalae
Series – Thalamiflorae
Order – Ranales (Magnoliales)
Family – Magnoliaceae

02

- **Distinguishing characters:**
  Trees and shrubs, with two ranked stipulate leaves and bisexual, fragrant flowers of large size; perianth usually trimerous, whorled or spiral; stamens and carpels numerous; fruit an etario of follicle or berries
- **Distribution :**
- The family has approximately 225 species in 7 genera. The family ranges across eastern North America, Mexico and Central America, the West Indies, tropical South America, southern and eastern India, Sri Lanka, Indochina, Malaysia, China, Japan, and Korea. A total of 30 species recorded from India.

03

Vegetative characters:

Habit: Trees or shrubs – 60 ft. (Tulip tree), high, few are climbers (*Schizandra* & *Kadsura*). Oil sacs are present in stem and leaves.

Root: Tap-root, branched

Stem: Erect, woody, branched.

Leaf: Alternate, simple, entire, commonly ever-green, coriaceous, stipules large (*Magnolia*) covering younger leaves.

04

Floral characters:

Inflorescence: Solitary terminal or axillary.

Flower: Largest and most showy of the woody families, sometimes 10 inch in diameter *(Magnolia fraseri),* Complete, regular, actinomorphic, unisexual (*Drimys*), usually bisexual, hypogynous, aromatic.

Perianth: Tepals 9 to many, free, all alike and petaloid or three outer ones green (*Liriodendron*); arranged in whorls of three, imbricate and cyclic (*Magnolia* and *Michelia*) or acyclic (spiral), arranged on an elongated semi-elongated convex torus, free, interior. In *Illicium* all perianth leaves are spiral and differentiated

05

in to sepals and petals.

Androecium: Stamens many, free, often spirally arranged in a beautiful series, filaments short or absent, anther lobes linear, with prolonged connective.

Gynoecium: Carpels numerous, free, superior, arranged spirally on a cone shaped elongated thalamus (gynophore), rarely carpels are fused (*Zygogynum*); ovules 1 or 2 or more in each carpel; marginal.

Fruit: An aggregate of berries or follicles. Samara in *Liriodendron*

Seeds: Large, abundant endosperm, testa is decorative.

06

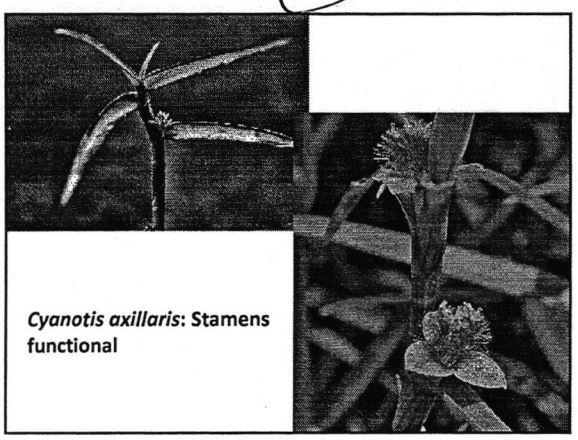
Floral formula:

⊕, ,P 9 or ∞ , C5 A∞,G ∞

Economic important plants:

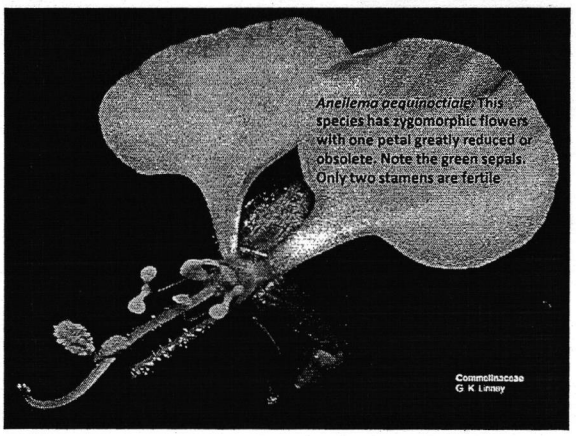
1. ***Michelia champaca***: Cultivated for its sweet fragrant flowers, dried roots are purgative, flowers and fryuits are carminative in renal and venereal diseases like gonorrhoea. The flowers beaten up with oil are applied to fetid discharge from nostrils.
2. ***Illicium verrin:*** A native of China a source of volatile oil obtained from the fruit, used medicinally and in liquors.

615



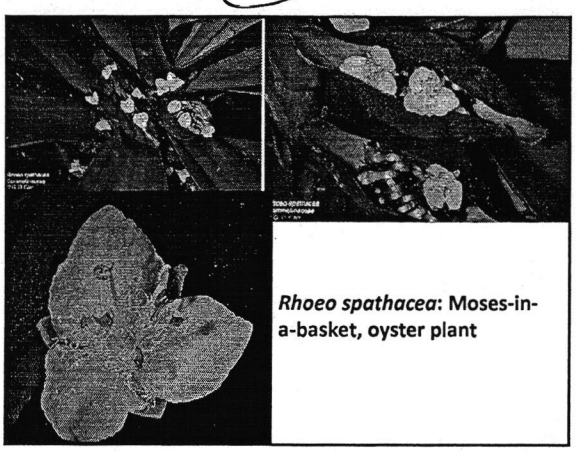
Cyanotis axillaris: Stamens functional

616



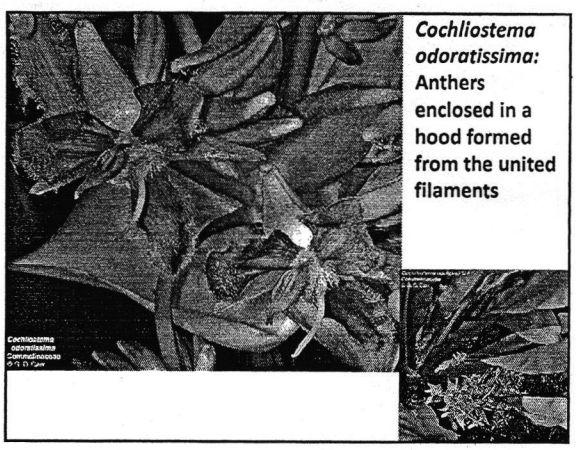
Anellema aequinoctiale: This species has zygomorphic flowers with one petal greatly reduced or obsolete. Note the green sepals. Only two stamens are fertile

617



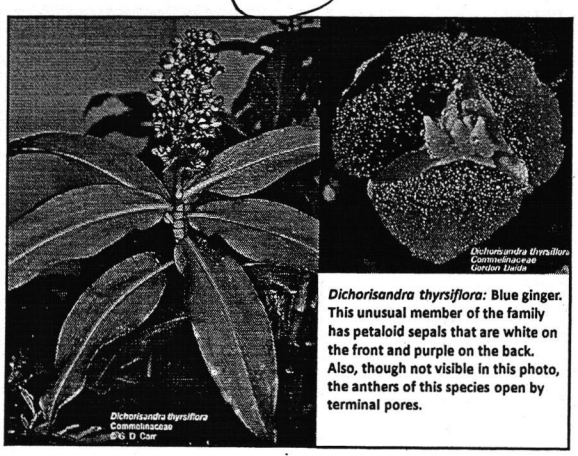
Rhoeo spathacea: Moses-in-a-basket, oyster plant

618



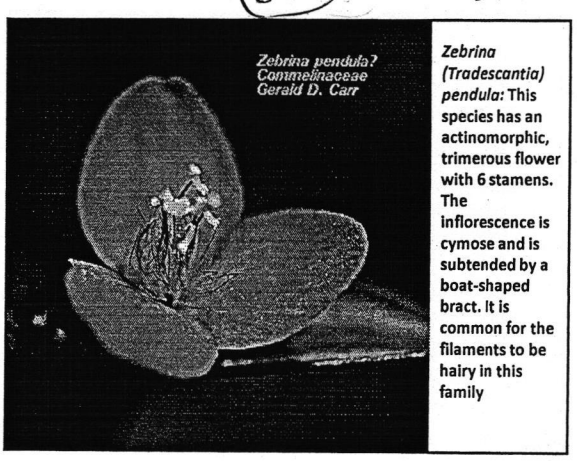
Cochliostema odoratissima: Anthers enclosed in a hood formed from the united filaments

619



Dichorisandra thyrsiflora: Blue ginger. This unusual member of the family has petaloid sepals that are white on the front and purple on the back. Also, though not visible in this photo, the anthers of this species open by terminal pores.

620 last slide



Zebrina (Tradescantia) pendula: This species has an actinomorphic, trimerous flower with 6 stamens. The inflorescence is cymose and is subtended by a boat-shaped bract. It is common for the filaments to be hairy in this family

BSc FY Paper-I (2018-19)

Semester-I (Viruses bacteria & Mycoplasma)

16-Sep-19

(Teacher- Dr. V.C. Khilare)

(01)

Viruses

Definition: (Use any one)

1. 'Small sized agents of diseases that are capable of passing through filters that retain even bacteria, increase only in the presence of living cells and give rise to new strains by mutations'.
2. Bowden (1964) defined viruses as, 'Sub microscopic infective entities that multiply only intracellular and potentially pathogenic'.
3. According to Halron (1964), 'Viruses are bits of infectious heredity in search of a chromosome'.

(02)

General Characters of Viruses

1. Viruses are smallest, simple and most primitive organisms. They are non-cellular, ultramicroscopic particles of protein and nucleic acid.
2. They grown and multiply only in living cells, hence are on the boundary between living and nonliving.
3. They cause many highly infectious diseases of animals including man, angiosperms, bacteria, fungi and algae. All known viruses are pathogens.
4. Viruses exist outside the host, free in air, water for long period but remain inert in the free state. They become activated only when they enters in living cells of a host organism.

(03)

5. They are cultivated only in intact living cells, thus are obligate endoparasite and are the smallest of all infective agents much smaller than the smallest bacteria. They are not visible with the light microscope.
6. Viruses can be observed and photographed with the electron microscope. In electron micrographs, some appears rod shaped others have spherical, cubical or tadpole forms.
7. Most of them can be crystallized. The virus crystal resembles simple chemical compounds. Within host cell the viruses possess some of the properties of life but not all.

(04)

8. They grow, reproduce and undergo mutation but no virus has any respiration of its own.
9. They depend upon enzymes of host to do their work. They have host specificity.
10. Antibiotics have no effects on viruses.

- Nature of viruses:
- The nature and origin of viruses is still not clear.
- Some virologists regard them as animate where as others consider them as inanimate.

(05)

- Viruses are living because:

1. They show growth.
2. They show mutation.
3. They can be transmitted from the diseased organism to healthy ones i.e. have ability to infect.
4. They react to heat, chemical and radiations.
5. They have genetic material i.e. DNA or RNA.
6. They are capable to multiply in number of same genetic type.
7. Viruses show irritability, a character of only living organism.
8. Nucleoproteins of viruses are similar with the protein and nucleic acids of other living organisms.

(06)

- Viruses are non-living because:

1. They can be crystallized.
2. They are inert outside the host.
3. A cell wall or cell membrane of any kind is absent in viruses.
4. They do not show functional autonomy.
5. They don't respire or excrete.
6. Their sedimentation according to their molecular weight is like that of non-living.
7. They lack any energy producing enzyme system.
8. Because of such characters, some virologists consider them as a transition stage between living and non-living world.

PTO

81 (76)

- The donor bacterium carries a DNA sequence called the fertility factor, or F-factor.
- The F-factor allows the donor to produce a thin, tubelike structure called a pilus, which the donor uses to contact the recipient.
- The pilus then draws the two bacteria together, at which time the donor bacterium transfers genetic material to the recipient bacterium.
- Typically, the genetic material is in the form of a plasmid, or a small, circular piece of DNA.
- The genetic material transferred during conjugation often provides the recipient bacterium with some sort of genetic advantage.
- For instance, in many cases, conjugation serves to transfer plasmids that carry antibiotic resistance genes.

(78)

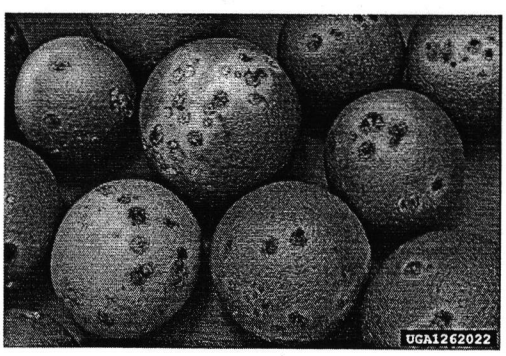
Economic importance of bacteria

Plant disease

- **Tomato wilt caused by *Ralstonia solanocearum***

(78)

Plant disease-Citrus canker caused by *Xanthomonas citri*



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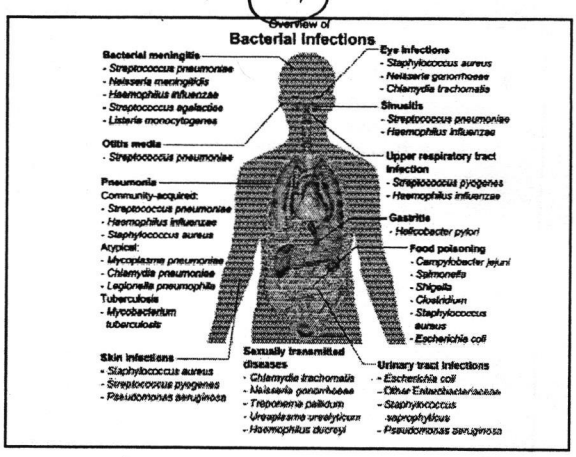
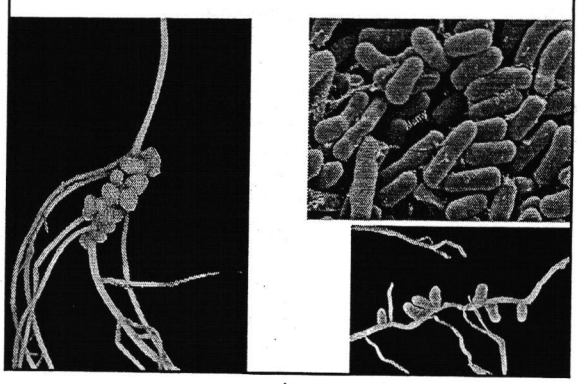


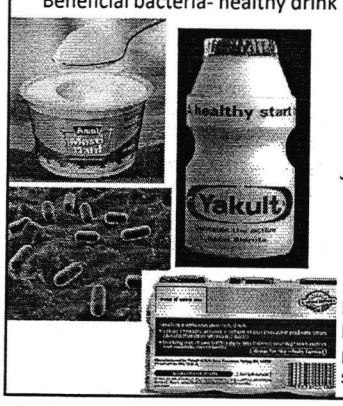
(80)

Beneficial bacteria- Nitrogen fixation by *Rhizobium* spp.



(81) (Last slide)

Beneficial bacteria- healthy drink by *Lactobacillus caesi*



Probiotics are believed to play very important roles in regulating proper intestinal function and digestion - by balancing intestinal microflora.

Best results against diarrhea, in good brain function, to reduce blood levels of LDL or "bad" cholesterol, Blood pressure, protect against bacterial infection and benefits for patients with psoriasis and chronic fatigue syndrome

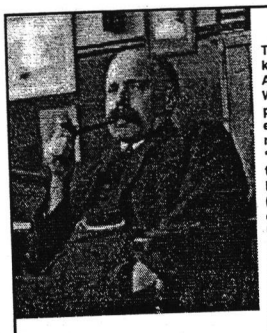
B.Sc. FY Paper - I (2018-19)

Semester - I

Teacher - Dr. V.C. Khilare (Algae)

16-Sep-19

01



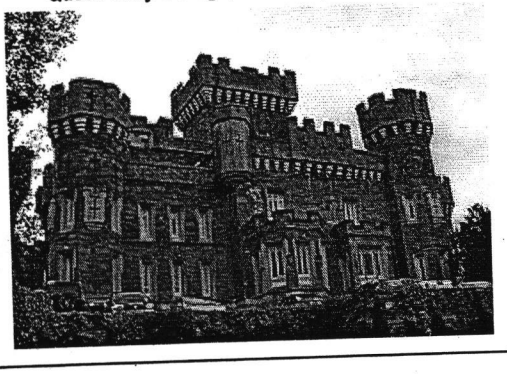
Prof. F.E. Fritsch 1879 - 1954

The book for which Felix Eugen Fritsch may be known is 'Structure and Reproduction of Algae'. He also revised and rewrote Prof. G.S. West's 'British Fresh Water Algae'. His other publications include several reviews of ecological, taxonomic, classificatory, morphological and evolutionary aspects of 'Phycology'. The career of Fritsch took him to the University of Munich, University College London, and the Royal Botanic Gardens (Kew). Following this he started a new Botany department at what is now Queen Mary College, University of London. He became professor in 1924 and retired in 1948. For many years he had been concerned about the lack of a British freshwater biological station. In 1929 the Freshwater Biological Association (FBA) was founded. Fritsch was chairman of the FBA's Council until his death.

In 1912, Fritsch started to put illustrations of freshwater algae onto foolscap sheets of paper. At his death there were about 20,000 such illustrations. The Fritsch Collection of illustrations of Freshwater Algae now contains millions of illustrations, and a microfiche edition is available (Herbarium of Algae)

02

Queen Mary College, University of London.



03

Classification of Algae by F.E. Fritsch (1935)

- The term 'algae' is used for some lower plants and many, often unrelated groups of microorganisms that are able to perform photosynthesis.
- The algae with about 14,000 species belonging to about 950 genera are one of the big plant groups.
- Fritsch (1935) classified algae into the following 11 classes on the basis of following points

1. Number and attachment of flagella
2. Structure of thallus
3. Chemical nature of pigments
4. Reserve food material
5. Method of reproduction
6. Variation in life cycle.

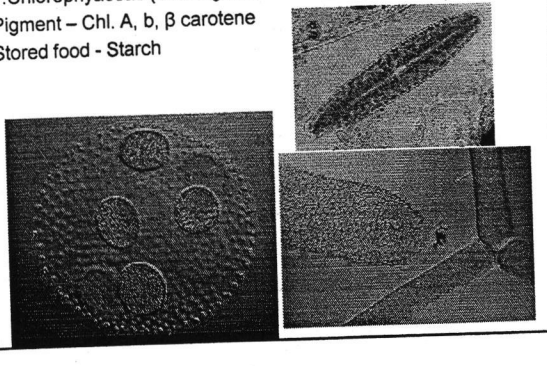
04

Different classes of Algae

1.Chlorophyaceae (Grass green – 09 orders)

Pigment – Chl. A, b, β carotene

Stored food - Starch



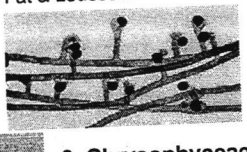
05

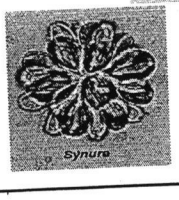
2. Xanthophyceae (Yellow – green) 04 Orders

Pigment – Chl. a, e, β carotene and xanthophylls

Stored food – Oil, Fat & Leucosin

Vaucheria





3. Chrysophyceae (Brown -Orange) 03 Orders

Pigment – Chl. a, β carotene and xanthophylls

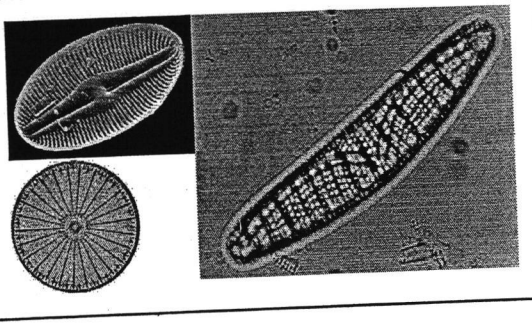
Stored food – Fat & Leucosin

06

4. Bacillariophyaceae (Diatoms) (Yellow – golden brown) 02 Orders, Cell wall is made up of silica

Pigment – Chl. a, c, β carotene and xanthophylls

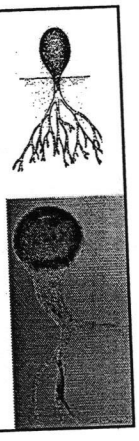
Stored food – Fat & Leucosin



P.T.O.

63

- **Thallus structure:**
- The bladder-like of *Botrydium* consists of a yellow-green pear-shaped or spherical, aerial portion which is anchored to the substratum by a colourless, branched rhizoidal portion.
- The subterranean rhizoid is dichotomously branched.
- The tiny, balloon-like overground portion, which is 1-2 mm in diameter, is called vesicle. Vesicle has central vacuole.
- Cytoplasm contains numerous chromatophores.

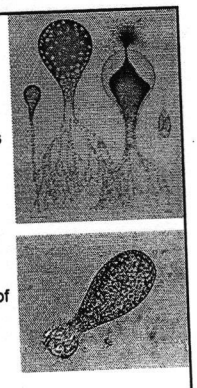


64

- **Reproduction:** *Botrydium* reproduces by both asexually as well as sexually.
- **Asexual reproduction:**

1. By Zoospores:

- The zoospores are formed when the plants are submerged under water.
- The protoplast metamorphoses into many small uni-nucleate parts.
- Each uni-nucleate daughter part pushes towards anterior end & converts into zoospores has two unequal flagella.
- They liberated through an apical aperture of vesicle.
- Each zoospore encysts and forms a wall around it. It then germinates by producing colourless rhizoid at its attached end.



65

2. By Aplanospores:

- The aplanospores are formed under damp air on wet soil but not submerged.
- The protoplast of vesicle divides repeatedly to form uni-nucleate daughter protoplast.
- Each daughter protoplast becomes rounded and secretes a wall around it before liberation.
- It is an aplanospore.
- The aplanospore produces new plant after germination.

66

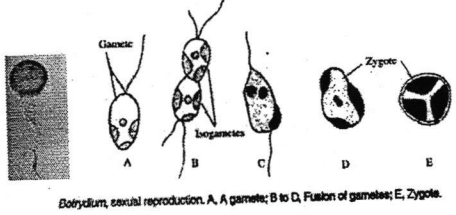
3. Resting body:

- Under dry conditions the entire protoplast of vesicle rounds off to form a single large multinucleate structure which secretes a thick wall around it to become a macrocyst known as resting bodies.
- Sometimes such macrocysts are formed in rhizoids called as rhizocyst.

67

Sexual reproduction

- *Botrydium* is monoecious (bisexual)
- Sexual reproduction is isogamous (similar gametes)
- The isogametes are uni-nucleate and biflagellate
- They are morphologically identical



Botrydium, sexual reproduction. A, A gamete; B to D, Fusion of gametes; E, Zygote.

68 (Last slide)

- As many as 40,000 isogametes are produced in each vesicle
- The isogametes are obpyrifom (inversely pear shaped)
- They fuse through their posterior end
- Fusion of gametes are takes place in vesicle because the plant is monoecious
- Fusion of gametes forms zygote which is round
- Zygote germinates immediately
- Zygote undergoes meiosis and forms 4-8 haploid zoospores
- The zoospores germinate into new *Botrydium* plant.

B.Sc. FY Paper - I (2018-19)

Semester - I (Fungi)

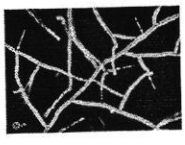
Teacher - Dr. V C Khilare

16-Sep-1

Fungi - A Introduction

1. The word **Myco-** derives from the Greek word for **fungus**.
2. Over 70,000 species of living fungi have been identified.
3. Fungi are **heterotrophs** that are important decomposers; most are **saprophytes** (grow on non-living organic matter), and some are **parasites** (grow on organic matter of living organisms).
4. Digestion is extracellular; fungal cells secrete powerful digestive enzymes into their surroundings.
5. Nutrients are then absorbed.
6. Most fungi consist of multicellular filaments called **hyphae** (hypha is singular);
7. Hyphae are tube shaped and have walls made of the nitrogenous polysaccharide **chitin**, which makes them resistant to heat, cold, and desiccation.
8. Cross walls are present for strength, and these are perforated so that cytoplasm is continuous from cell to cell.
9. The meshwork (जाळी) of hyphae that absorbs nutrients is called a **mycelium** (pl. mycelia).
10. Fungal **spores** disperse from the parent body and germinate into new mycelia.
11. Fungi do not possess the green pigment chlorophyll found in plants, so they have to gain their food from other sources in much the same way that an animal does.
12. Fungi play a vital role in recycling by breaking down lignin.
13. Many fungi form symbiotic associations with trees and other plants (mycorrhizal fungi), which enters the plant root system helps in the uptake of water and nutrients.
14. Over 90% of plants have a fungus associated with their roots and many would not survive without their fungal partner.
15. Fungi may also form symbiotic relationships with algae, known as lichens.

What are Fungi?



1. Heterotrophic
2. Eukaryotic
3. Have cell walls
4. Has its own kingdom
5. Absorbs food through hyphae
6. Uses spores to reproduce
7. Fungi needs a warm, moist places to grow. They thrive on moist foods, damp tree barks, and wet bathroom tiles.
8. The largest known organism on Earth is actually underground fungus that covers an area as large as 1000 football fields!!
9. Fuzzy molds are loosely packed vs. mushrooms with caps and stalks where the hyphae are so tightly packed that they look solid.
10. Hyphae attaches to food source and releases ooze to decompose food. Then the hyphae acts like a straw and transports the food to the fungus.
11. **Fungi reproduce sexually when environmental conditions are unfavorable**
12. **No male or female** fungi
13. Two mating types: **plus (+) and minus (-)**
14. **Fertilization** occurs when **(+) hyphae fuse with (-) hyphae to form a 2n** or diploid **zygote**
15. Some fungi show **dimorphism** (ability to change their form in response to their environmental conditions)
16. The sexual (Perfect, Meiotic) state is referred to the teleomorph
17. The asexual (imperfect, mitotic) state is termed as anamorph

Albugo

Classification

Division: Mastigomycotina

Sub division: Diplomastigomycotina

Class: Oomycetes

Order: Pernosporales

Family: Albuginaceae

Genus: *Albugo*

***Albugo* is the only one genus of the family Albuginaceae and represented by 18 spp. in India and 25 spp. throughout world.**

5

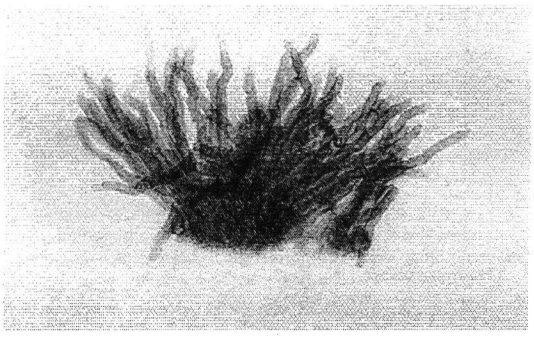
Occurrence:

- The fungus occurs in higher plants as an obligate endoparasite and causes the well-known 'white rust' disease.
- In Latin 'Albus' means 'white'.
- This disease commonly found amongst Brassicaceae family members include cabbage, cauliflower, radish, mustard and turnip.
- The fungus attacks all parts except root.
- The disease appears in the form of white, shining, irregular patches or pustules on the aerial parts especially the leaves and hence named 'white rust'.

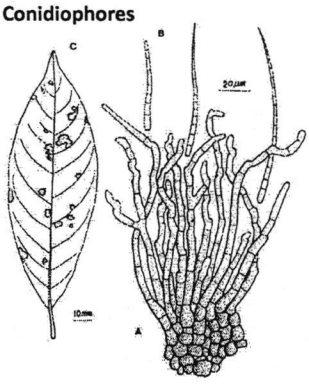
6

PTO

Stroma & Conidiophores

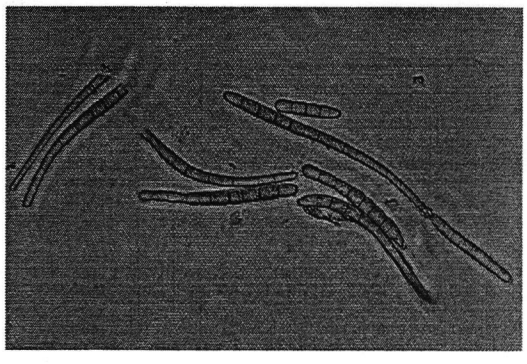


Stroma & Conidiophores

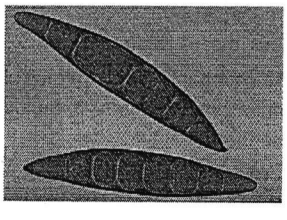


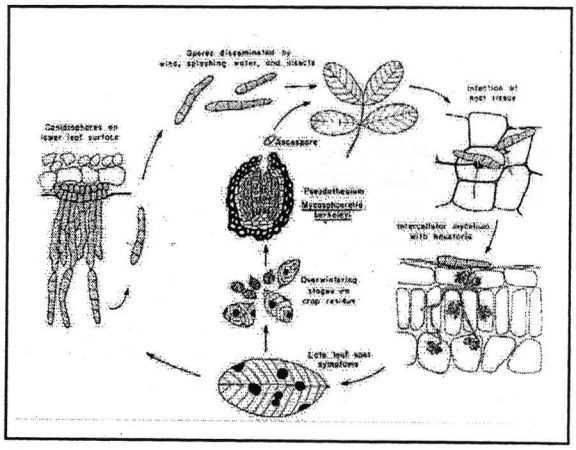
- Conidiophore produces conidia at apex pushed to a side and the tip of the conidiophore resumes its growth.
- Later a new conidium is produced at apex. Conidia falls off and spread in air.
- Conidium is inversely clavate (rounded at base and tapering towards apex) and straight or slightly curved.
- It is generally 1 –7 septate, long.
- Conidia are hyaline (colourless) or pale yellow to slightly olivaceous.
- On detachment from conidiophore, the conidia leave a scar at the place of attachment.
- The conidia are dispersed by wind or rain splash.
- They germinate under favourable condition (24 28°C) by giving rise germ tubes.
- Each germ tube ultimately develops into a new mycelium.

Cercospora: Conidia



Cercospora: Conidia





B.Sc. FY
Semester - I
Bridge Lecture

Teacher - Dr. V. C. Khilare

16-Sep-19

01

BRIDGE LECTURE FOR B.SC. FY (BOTANY)

Dr. V. C. Khilare
Associate Professor

02

Botany is important...

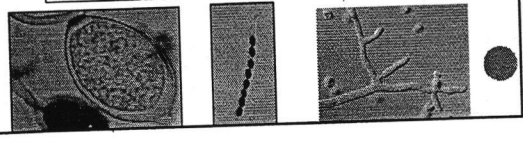
Botany is important primarily because

- **it is the scientific study of plants,**
- **used in many aspects of human life.**
- **Plant study for their knowledge of characteristics**
- **traits of crops,**
- **plants and flowers to influence the fields of medicine, science and cosmetics.**
- **plants support basic daily functions of human life by providing food and nutrition.**

03

WHAT ARE FUNGI?

- A **eukaryotic, heterotrophic** organism devoid of chlorophyll that obtains its nutrients by **absorption,** and reproduces by **spores.**
- The primary carbohydrate storage product of fungi is **glycogen.**
- Most fungi have a **thallus** composed of **hyphae** (sing. **hypha**) that elongate by **tip growth**



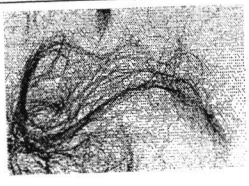
04

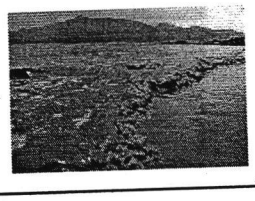
What is algae?

- Algae are a large and successful group of organisms, which flourish in the sea, in fresh-water and in damp places on land.
- Most algae contain green chlorophyll, and can produce foods, such as sugars, from the sun.
- They have been classified in a separate kingdom called Protista.
- They are the base of the aquatic food chain.
- Algae growth is a natural occurrence in all water bodies.
- Algae thrives on hot weather when it reproduces more rapidly. It is stimulated by nutrients.

05

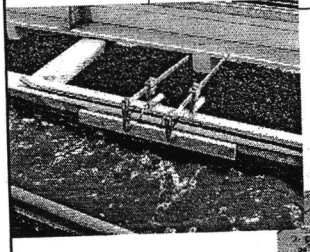
- The algae with about 14,000 species belonging to about 950 genera; are one of the big plant groups.

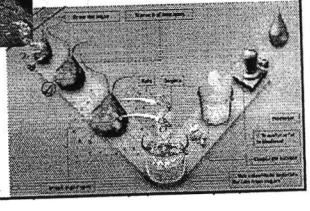




06

The algae used as fuel





27

Career Opportunities and Job Prospects

- Moreover the application of plant sciences improves the yield and supply of medicines, foods, fibers, building materials and other plant products.
- The knowledge of **plant sciences** is essential for development and management of forests, parks, waste lands, sea wealth etc.
  Few of the **industries** which one can work with are:
- Chemical Industry
- Food Companies
- Arboretum

28

Career Opportunities and Job Prospects

- Competitive Exams. MPSC, UPSC
- Forest Services
- Biotechnology Firms
- Tissue Culture
- Oil Industry
- Land Management Agencies
- Seed And Nursery Companies
- Plant Health Inspection Services
- National Parks
- Biological Supply Houses
- Plant Resources Laboratory
- Educational Institutions
- Forensic Departments

29

Top Most Influential People in Botany /Agriculture/Farming History

George Shull (1874-1954)

- **A botanist by training at Cold Spring Harbor, Long Island New York.**
- **The father of hybrid corn.**
- **Shull devoted 30 years of his life to corn breeding.**
- **He served as a Professor of Botany and Genetics at Princeton University**

30

Barbara McClintock (1902-1992)

- She won a Nobel Prize in 1983 for her study of corn chromosomes, which revolutionized the field of cytogenetics.
- She specialized in cytogenetics.
- She discovered the role of "controlling elements" in genetic regulation and transposition.

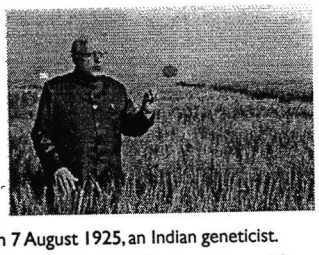
31

Norman Borlaug (1914 –2009)

- Awarded the Nobel Peace Prize in 1970 for his work on the world's food supply,
- Borlaug is known the world over for his highly successful wheat breeding and wheat research programs in Mexico.

32

M.S. Swaminathan (07.08.1925)



- Born on 7 August 1925, an Indian geneticist.
- Swaminathan is known as "Indian Father of Green Revolution" for his leadership and success in introducing and further developing high-yielding varieties of wheat in India.

B.Sc. SY Paper VII (2018-19)

Semester - III (General Taxonomy)

(Teacher - Dr V C Khilare)

16-Sep-19

(01)

Binomial Nomenclature

It is the system of naming plants on the scientific basis is known as plant nomenclature.

The earliest names were polynomials, composed of several words.

Nomenclature is needed for identity of plants. If there were no names for all how strange life would be in such a condition?

Therefore nomenclature for everything is needed.

In the present botanical world, the nomenclature involves the principles governed, formulated and adopted by **International Botanical Congress** (IBC).

The rules developed by IBC are listed formally in a code known as **International Code of Botanical Nomenclature** (ICBN).

(02)

Binomial system of nomenclature:

- Linnaeus employed the binomial system of nomenclature in the first edition of his ***Species Plantarum*** published in 1753.
- According to the system of nomenclature the name of the plant consists of two Latin words, the first representing the genus and the second the species.
- For example, the botanical name of Mango is ***Mangifera indica***.
- The first word ***Mangifera*** designates the genus of plant and the second word ***indica*** represents particular species of that genus.
- The scientific names always-printed in italics and hand written and typed names are always underlined. The generic name starts with a capital letter, whereas the specific name with a small letter.
- There is only one scientific name for a plant, which is known as its legitimate name.

(03)

Concept of Genus, Species and Epithet

Concept of Genus

- In biology, a **genus** (plural: **genera**) is a low-level taxonomic rank used in the biological classification of living and fossil organisms, which is an example of definition by genus and differentia.
- Genera and higher taxonomic levels such as families are used in biodiversity studies, particularly in fossil studies since species cannot always be confidently identified and genera and families typically have longer stratigraphic ranges than species
- The term comes from Latin genus "descent, family, type, gender", cognate with Greek:– *genos*=race.
- The composition of a genus is determined by a taxonomist.
- The standards for genus classification are not strictly codified, and hence different authorities often produce different classifications for genera.
- In the hierarchy of the binomial classification system, genus comes above species and below family.

(04)

Concept of Species:

- In biology, a **species** is one of the basic units of biological classification and a taxonomic rank.
- A species is often defined as a group of organisms capable of interbreeding and producing fertile offspring. While in many cases this definition is adequate, more precise or differing measures are often used, such as similarity of DNA, morphology or ecological niche. Presence of specific locally adapted traits may further subdivide species into sub species.
- Species that are believed to have the same ancestors are grouped together, and this group is called a genus. A species can only belong to one genus that it was grouped into. All species are given a two part name (called a 'binomial name' – 'bi' for two, 'nomial' for name).

(05)

- The first part of a binomial name is the generic name, the genus of the species. The second part is either the specific name (a term used only in zoology, never in botany, for the second part of a binomial) or the specific epithet (the term always used in botany, which can also be used in zoology). For example, *Boa constrictor*, which is commonly called by its binomial name, and is one of five species of the *Boa* genus. The first part of the name is capitalized, and the second part has a lower case. The two part of the name is written in italics.

(06)

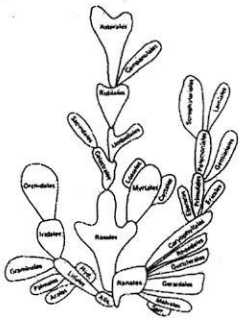
Concept of Epithet: (विशेष उल्लेख करणे)

- The name of a species is a binomial and consists of a generic name and a specific epithet. A specific epithet is the second part of the binomial. It must always used with a generic name to form the binary combination for that species. The specific epithets are formed from nouns, adjectives, plant parts, colour, geography, etc. and may join these words with a large number of prefixes and suffixes.
- Some Latin prefixes of numbers are as: uni –(L.): *uniflorus* (one-flowered)
- Common suffixes used as: -aceus: *crustaceus*, alis: *digitalis*, estris: *campestris*

PTO

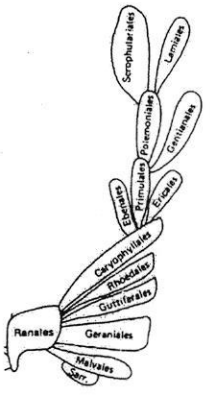
57

Bessey's Cactus



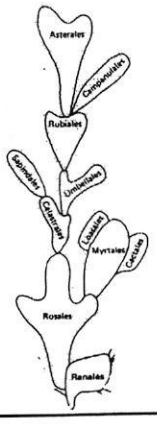
58

- **First Line:** In the first line hypogynous condition remain unchanged. Rhoeadales and Sarraceniales evolved parallely from Ranales. Development of gynophore in Capparidaceae shows a definite relation between Parietales and Rhoeadales. Malvales evolved through Bombacaceae. There are some definite relationship between Malvales and Geraniales. Geraniales are also related to Sapindales, and Sapindales to Rhamnales. Fusion of sepals, petals carpels and epipetalous condition in Solanaceae is also related with Labiateae. Labiateae is the most advanced family in this line.



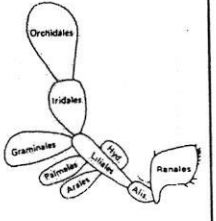
59

- **Second Line:** A change is observed from hypogyny to epigyny through perigyny. The change from hypogyny to epigyny is seen clearly in Rosales. The formation of hypanthodium shows a change of perigyny into epigyny in Myrtales. Epigyny and syncarpy in Umbellales show advancement over Myrtales. Umbellales are related to Rubiales through the characters such as Umbel-like inflorescence, suppression of calyx, epigyny. Campanulales are present at the top in this line with presence of pappus, irregular flowers and fusion of floral parts.



60

- **Third Line:** It shows a few resemblances between monocotyledons (Alismataceae) and dicotyledons (Ranunculaceae). Liliales and Ranales differ in the number of floral parts and fusion of carpels. Epigynous condition of Iridaceae and Amaryllidaceae is an advancement over Liliales. Here are some reports that Gramineae is originated from Liliaceae. But the reduction in number of stamens and carpels, loss of perianth parts indicates that Gramineae is more advanced than Liliaceae. Orchidaceae possess insect-pollinated, irregular and showy flowers, and thus the most advanced family of monocotyledons.



61

- <u>Classification of Angiosperms</u>
- Various attempts were made to classify the plants fall in one of the following three categories.
- Artificial systems
- Natural systems
- Phylogenetic system
- **1) Artificial classification system:** In the period 300 B.C. to 1830 the classification of plants was artificial. The artificial systems propounded by early herbalist were based on one or few characters like habit and floral characters. Some important workers in artificial systems are **Theophrastus, Dioscorides, Caesalpino, Bauhin, John Ray, and Carolus Linnaeus.** The system of Linnaeus, which largely depended on the number of stamens and carpels in the flower. It was very simple and convenient system became popular. It remained dominant over 75 years until it was replaced by the systems of **de Jussieu** and **de Candolle.**

62 (Last Slide)

- **2) Natural Classification Systems:** In Natural system plants were classified depending upon their natural affinities. Some important workers in natural systems are **de Jussieu, de Candolle** & <u>**Bentham and Hooker.**</u>
-
- **3) Phylogenetic Classification Systems:** In these systems plants are classified based on genetic and phylogenetical (evolutionary) approach. The most widely known phylogenetic systems are those of <u>**Engler and Prantl**</u>, **Hutchinson, Takhtajan** and **Cronquist.**

B.Sc. SY Paper - VII

Semester - III (Angiosperms - Families)

(Teacher - Dr. V.C. Khilare)

16-Sep-19

(01)

Syllabus

Study of the following families: systematic position (30 Lect.) salient features, floral formula, floral diagram, common examples and their economic importance

1. **Annonaceae**
2. **Malvaceae**
3. **Leguminosae (Papilionaceae)**
4. **Caesalpiniaceae**
5. **Mimosaceae**
6. **Apocynaceae**
7. **Solanaceae**
8. **Acanthaceae**
9. **Lamiaceae (Labiatae)**
10. **Nyctaginaceae**
11. **Liliaceae**
12. **Poaceae (Gramineae)**

(02)

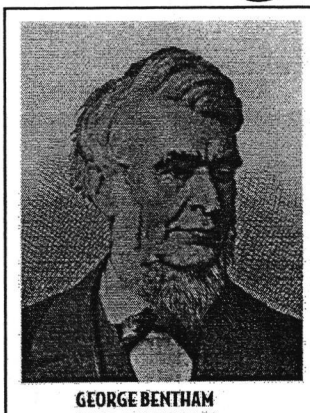
1. **Salient features, origin and evolution of Angiosperms**
2. **Bentham and Hooker's system of classification upto series level, its merits and demerits**
3. **Taxonomy in relation to anatomy, embryology, palynology, ecology and cytology**
4. **Concept of Binomial Nomenclature and its advantages**
5. **Concept of genus, species and epithet.**
6. **Herbaria and Botanical Gardens.**

(03)

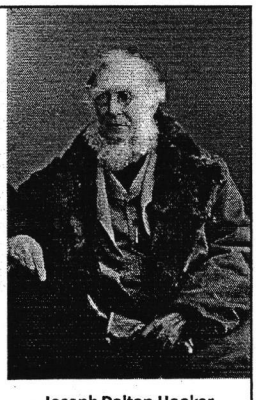
Bentham and Hookers Classification

- **George Bentham (1800-1884)**
- **Joseph Dalton Hooker (1817-1911)**
- The two British Botanists who were associated with the Royal Botanical Garden, Kew, England wrote a book 'Genera Plantarum' (1862-1883) wherein they presented their outstanding system of classification. This was the greatest taxonomic work. This system is still used and followed in several herbaria of the world. It is supposed to be the best system for students.

(04)



GEORGE BENTHAM
(1800–1884, British)



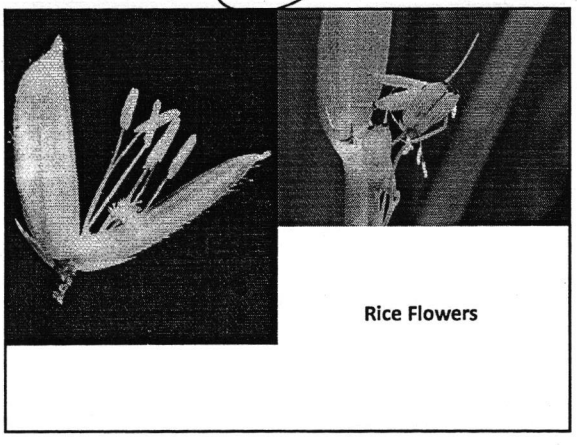
Joseph Dalton Hooker

(05)

(06)

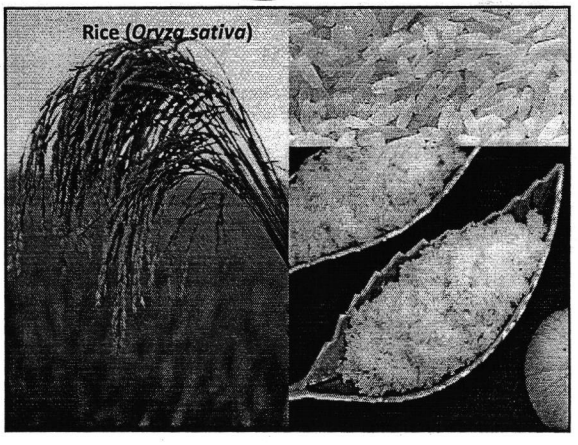
PTO

417

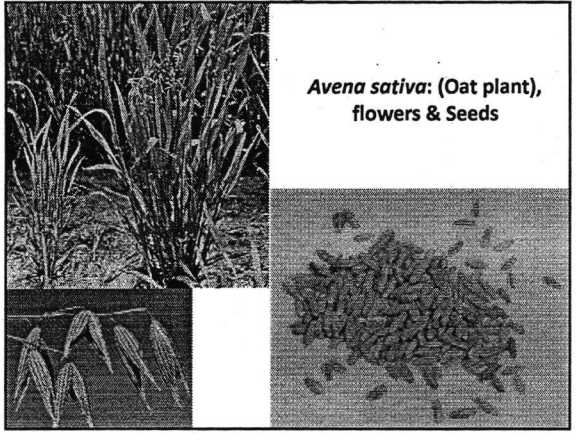


Rice Flowers

418

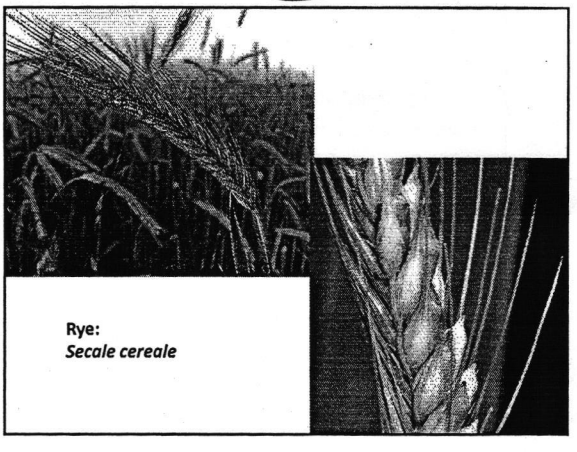


419



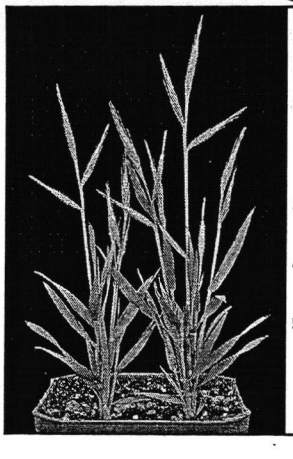
Avena sativa: (Oat plant), flowers & Seeds

420



Rye:
Secale cereale

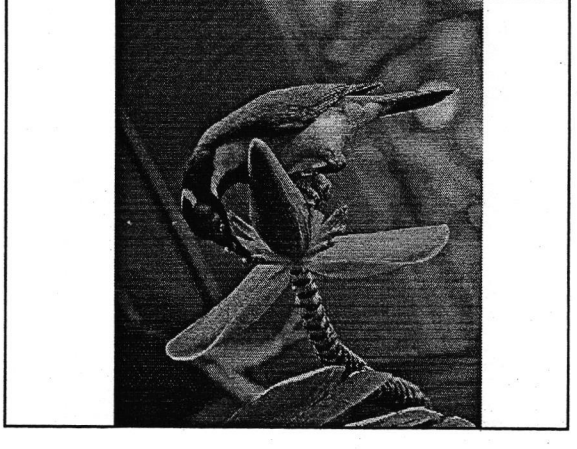
421



Brachypodium distachyon

1. It has little or no direct agricultural significance
2. It has several advantages as an experimental model organism for understanding the genetic, cellular and molecular biology of temperate grasses.
3. The relatively small size of its genome makes it useful for genetic mapping and sequencing.
4. It has about 272 million base pairs and with five chromosomes, it has a small genome for a grass species.
5. The small size and rapid life cycle are also advantages.

422 (Last slide)



B.Sc TY
Semester - V
Paper - XVI (A)
(Biodiversity)

(2018-19)

16-Sep-19

Teacher - Dr. V C Khilare

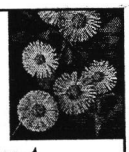
01

Syllabus

1. Biodiversity :
   i. Definition, concept, origin and evolution
2. Types of biodiversity:
   i. Species, genetic, ecological, cropland and agricultural diversity;
   ii. biodiversity in India; endemism and hot spots; threatened species,
   iii. threats to biodiversity
3. Conservation of biodiversity:
   i. Major causes for loss of biodiversity, listing of threatened biodiversity;
   ii. threatened categories – extinct, endangered, vulnerable, rare and indeterminate. Conservation measures: – ex-situ, and in-situ; biodiversity conservation in India.
4. Phytotaxonomy: Classification of Anglosperms with special reference to
   i. Linnaeus,
   ii. A. P. de Candole,
   iii. Bentham and Hooker.

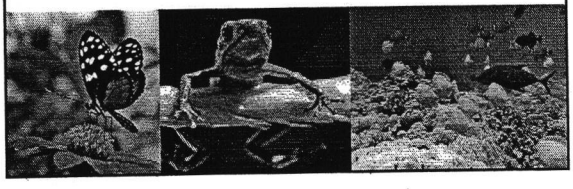
02

What is Biodiversity ?



- Refers to the numbers, variety and variability of living organisms and ecosystem.
- Includes all terrestrial, marine an other aquatic organisms.
- Covers diversity within species, between species as well as variations among ecosystems.

Bio Diversity BC
CONSERVING THE VARIETY OF LIFE



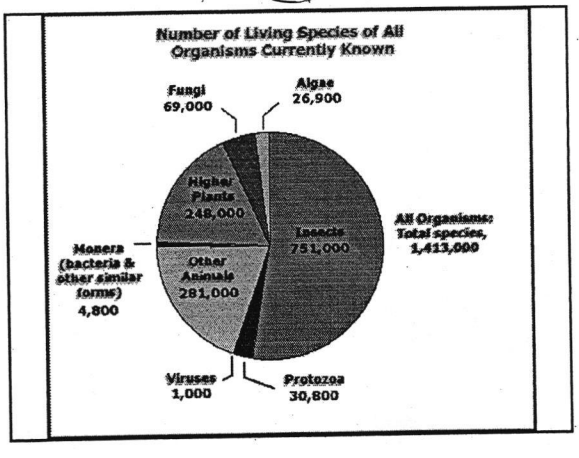
03

Biodiversity

Biodiversity Definition, Concept, Origin & Evolution

1. Biodiversity is defined as "richness of species (microorganisms, plants and animals) occurring in a given habit"
2. The term 'Biodiversity' was coined as a counteraction of 'biological diversity' in 1985 by a biologists E.O. Wilson
3. Biodiversity is the natural biological capital of the earth.
4. It is a synonymous with life on earth
5. Today's biodiversity is a product of 3.5 billion (350 crores) years
6. The biodiversity exists in 8 groups and 193 biogeographical sub-groups. Each biogeographical sub-group is composed of ecosystem. These communities

04



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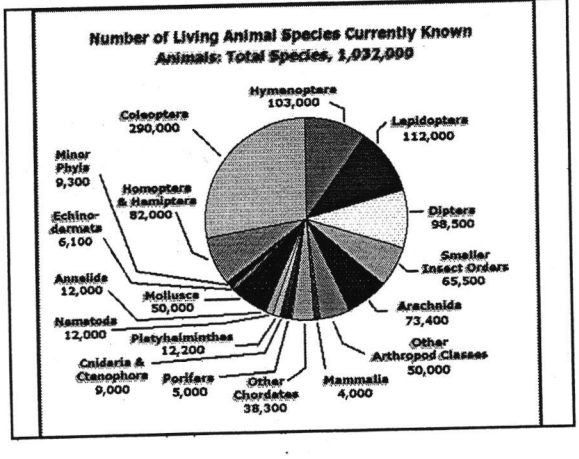

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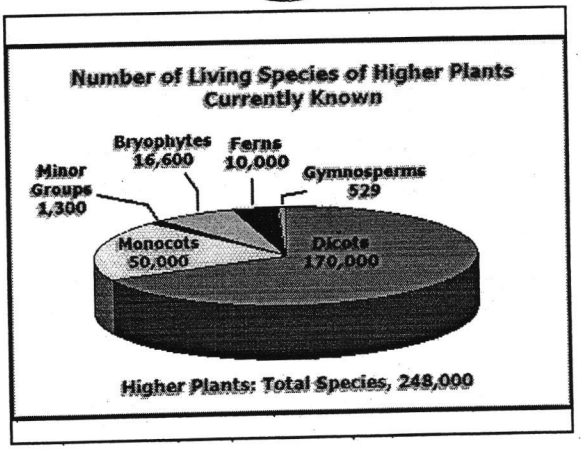

76

लोकसत्ता 16.3.2014

कासवांची तस्करी सशाच्या चपळाईने...

77

'जायंट सॉफ्ट शिल्ड टर्टल' जगभरात फक्त चारच

कासवांच्या अनेक प्रजाती पृथ्वीवरून नामशेष होणार?

78

ग्लोबल वॉर्मिंग, किनाऱ्यालगतची वाढती लोकसंख्या; माशांच्या बेसुमार शिकारीमुळे कोरल रीफ नष्ट होण्याच्या मार्गावर

महासागरी जीवनरेषांच्या अस्तित्वाला मोठा धोका

79

धोका | केंद्रीय प्रदूषण मंडळाचा धक्कादायक अहवाल; महानगरपालिकेला नोटीस

गोदावरी नदीला औरंगाबादकर देतात ९० टक्के प्रदूषित पाणी

दिव्य मराठी
24.06.2015

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दै. महाराष्ट्र टाईम्स 27.08.2015

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आणखी आठ पक्ष्यांचे अस्तित्व धोक्यात

'कॉन्झर्व्हेशन ऑफ नेचर'कडून यादी प्रसिद्ध

B.Sc. TY
Semester- V & VI
Papers XVI & XX (A)
Teacher- Dr. V.C. Khilare

16-Sep-19

01

Phytotaxonomy-I

Classification systems of Angiosperms with special reference to:

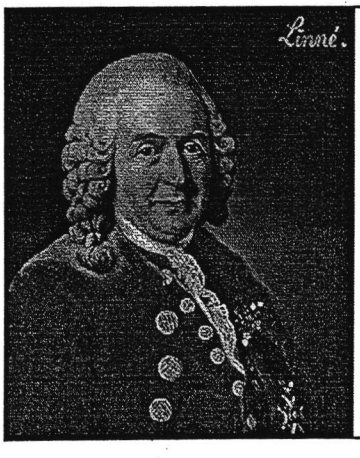
1. **Carolus Linnaeus**
2. **A.P. de Candolle**
3. **Bentham and Hooker**

02

1. Classification by Carolus Linnaeus

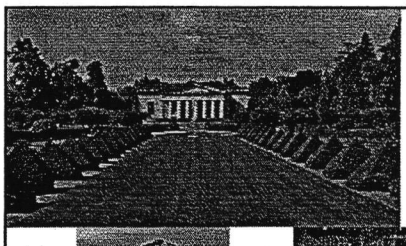
- **Carolus Linnaeus (1707-1778)** a great Swedish naturalist, is rightly known as the 'Father of Modern Botany'.
- He became interested in the study of natural history since his childhood.
- In 1730 he published **Hortus Uplandicus** wherein he enumerated the plants of **Uppsala Botanic Garden** in Sweden. Later, in 1737, he published his famous book **Hortus Cliffortianus**, based on the collection of plants in the garden of George Clifford at Hartecamp.

03



Carolus Linnaeus (1707-1778)

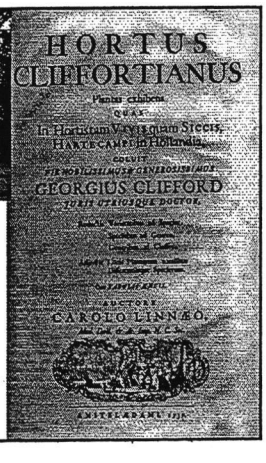
04



Uppsala Botanic Garden, Sweden.

05

Garden of George Clifford, Hartecamp



06

- His **'Genera Plantarum'** and **'Classes Plantarum'** appeared in 1737 and 1738 respectively.
- One more book **'Philosophia Botanica'** appeared in 1751 which contained a revised version of his system published previously in **'Classes Plantarum'** (1738) and **'Systema Natvrae'** (1735).
- His **'Species Plantarum'** was published in 1753, a work where some 7300 species were described and arranged according to his **sexual system** of classification.
- In this book Linnaeus introduced the consistent use of the **binomial system** of plant names.

59

- **Sub-class 2. Ranunculidae**
- Superorder IV. Ranunculanae
- Order 9. Ranunculales, 10. Papaverales, 11. Sarraceniales
- **Sub-class 3. Hamamelidane**
- Superorder V. Hamamelidanae
- Order 12. Trochodendrales, 13. Circidiphyllales, 14. Eupteleales, 15. Didymelales, 16. Hamameliadales, 17. Eucommiales 18. Urticales, 19. Barbeyales, 20. Casuarinales, 21. Fagales, 22. Balanopales 23. Leitneriales.
- Superorder VI. Juglandanae
- Order 24. Myricales, 25. Juglandales

60

- **Sub-class 4. Caryophyllidanae**
- Superorder VII. Caryophyllanae
- Order 26. Caryophyllales, 27. Polygonales
- Superorder VIII. Plumbaginanae
- Order 28. Plumbaginales
- **Sub-class 5. Dillenlidae**
- Superorder IX. Dillenianae
- Order 29. Dilleniales, 30. Paeonales, 31. Theales, 32. Vioales, 33. Begoniales, 34. Capparales, 35. Tamaricales, 36. Salicales
- Superorder X. Ericanae
- Order 37. Ericales, 38. Ebnales, 39. Primulales
- Superorder XI. Malvanae
- Order 40. Malvales, 41. Euphorbiales, 42. Thymeleales

61

- **Sub-class 6. Rosidae**
- Superorder XII. Rosanae
- Order 43. Saxifragales, 44. Rosales, 45. Fabales, 46. Connariales, 47. Podostemales, 48. Nepenthales
- Superorder XIII. Myrtanae
- Order 49. Myrtales
- Superorder XIV. Rutanae
- Order 50. Rutales, 51. Sapindales, 52. Geraniales, 53. Polygalales
- Superorder XV. Aralianae
- Order 54. Cornales, 55. Apiales
- Superorder XVI. Celastranae
- Order 56. Celastrales, 57. Santalales, 58. Balanophorales, 59, Rhamnales, 60. Elaeagnales.
- Superorder XVII. Proteanae
- Order 61. Proteales

62

- **Sub-class 7. Asteridae**
- Superorder XVIII. Gentiananae
- Order 62. Gentianales, 63. Oleales, 64. Dipsacales, 65. Loasales
- Superorder XIX. Laminae
- Order 66. Polemoniales, 67. Lamiales, 68. Scrophulariales
- Superorder XX. Asteranae
- Order 69. Campanuales, 70. Calcycerales, 71. Asterales.

63

- CLASS: LILIOPSIDA (MONOCOTYLEDONS)
- **Sub-class 1. Alismalidae**
- Superorder I. Alismatanae
- Order 1. Alismatales, 2. Najadales
- **Sub-class 2. Lilliidae**
- Superorder II. Triuridanae
- Order 3.Triuridales
- Superorder III. Lilianae
- Order 4. Liliales, 5. Smilacales, 6. Burmanniales, 7. Orchidales, 8. Bromeliales
- Superorder IV. Juncanae
- Order 9. Juncales, Order 10. Cyperales
- Superorder V. commelinanae
- Order 11. Commelinales, 12. Eriocaulales, 13. Restionales, 14. Hydatellales, 15. Poales.
- Superorder VI. Zingiberane
- Order 16. Zingiberales
- **Sub-class 3. Arecidae**
- Superorder VII. Arecanae
- Order 17. Arecales, 18. Cyclanthales, 19. Pandanales, 20. Typhales
- Superorder VIII. Aranae
- Order 21. Arales

64 Last slide

- **Merits of Takhtajan system of classification:**
- Dicots are discussed prior to monocots
- Dicots starts with Magnoliales which are universally considerd to be the most primitive angiosperms
- Families are small homogenous units made up of closely relared genera
- Division of dicots into traditional groups of Engler & Prantls i.e. Archychlamydae & Metachlamydae has been abolished in this sytem
- Alismatales considered most primitive living monocots
- **Demerit of Takhtajan system of classification:**
- Narrow defined taxa (plants) splits the related groups

B.Sc. TY
Semester - V & VI
Angiosperms families
Teacher Dr. V. V. Khilare

16-Sep-19

01

1. Family: Magnoliaceae

Classification:
Division – Angiosperms
Class – Dicotyledons
Sub-class – Polypetalae
Series – Thalamiflorae
Order – Ranales (Magnoliales)
Family – Magnoliaceae

02

- **Distinguishing characters:**
  Trees and shrubs, with two ranked stipulate leaves and bisexual, fragrant flowers of large size; perianth usually trimerous, whorled or spiral; stamens and carpels numerous; fruit an etario of follicle or berries
- **Distribution :**
- The family has approximately 225 species in 7 genera. The family ranges across eastern North America, Mexico and Central America, the West Indies, tropical South America, southern and eastern India, Sri Lanka, Indochina, Malaysia, China, Japan, and Korea. A total of 30 species recorded from India.

03

Vegetative characters:

Habit: Trees or shrubs – 60 ft. (Tulip tree), high, few are climbers (*Schizandra* & *Kadsura*). Oil sacs are present in stem and leaves.

Root: Tap-root, branched

Stem: Erect, woody, branched.

Leaf: Alternate, simple, entire, commonly ever-green, coriaceous, stipules large (*Magnolia*) covering younger leaves.

04

Floral characters:

Inflorescence: Solitary terminal or axillary.

Flower: Largest and most showy of the woody families, sometimes 10 inch in diameter *(Magnolia fraseri)*, Complete, regular, actinomorphic, unisexual (*Drimys*), usually bisexual, hypogynous, aromatic.

Perianth: Tepals 9 to many, free, all alike and petaloid or three outer ones green (*Liriodendron*); arranged in whorls of three, imbricate and cyclic (*Magnolia* and *Michelia*) or acyclic (spiral), arranged on an elongated semi-elongated convex torus, free, interior. In *Illicium* all perianth leaves are spiral and differentiated

05

in to sepals and petals.

Androecium: Stamens many, free, often spirally arranged in a beautiful series, filaments short or absent, anther lobes linear, with prolonged connective.

Gynoecium: Carpels numerous, free, superior, arranged spirally on a cone shaped elongated thalamus (gynophore), rarely carpels are fused (*Zygogynum*); ovules 1 or 2 or more in each carpel; marginal.

Fruit: An aggregate of berries or follicles. Samara in *Liriodendron*

Seeds: Large, abundant endosperm, testa is decorative.

06

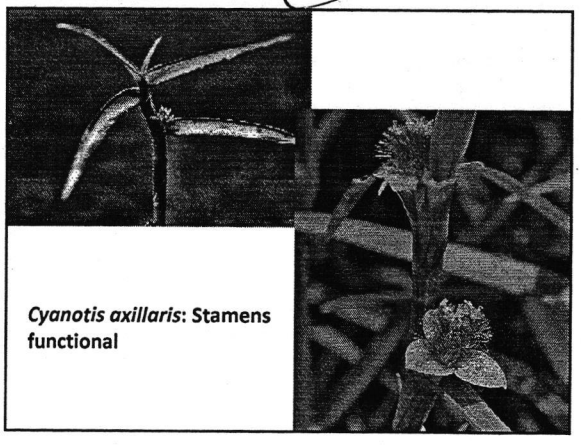
Floral formula:

⊕, ,P 9 or ∞ , C5 A∞,G ∞

Economic important plants:

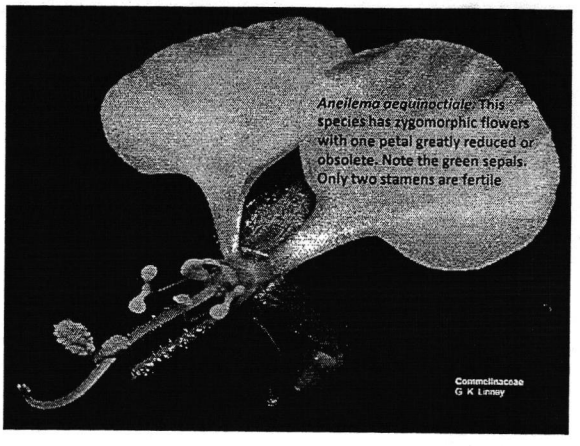
1. ***Michelia champaca***: Cultivated for its sweet fragrant flowers, dried roots are purgative, flowers and fryuits are carminative in renal and venereal diseases like gonorrhoea. The flowers beaten up with oil are applied to fetid discharge from nostrils.
2. ***Illicium verrin:*** A native of China a source of volatile oil obtained from the fruit, used medicinally and in liquors.

615



***Cyanotis axillaris*: Stamens functional**

616



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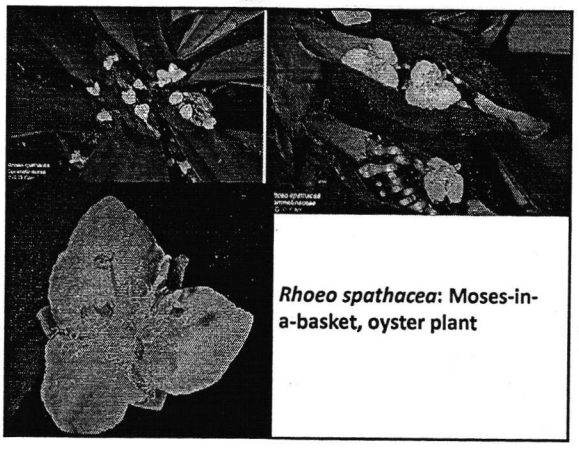
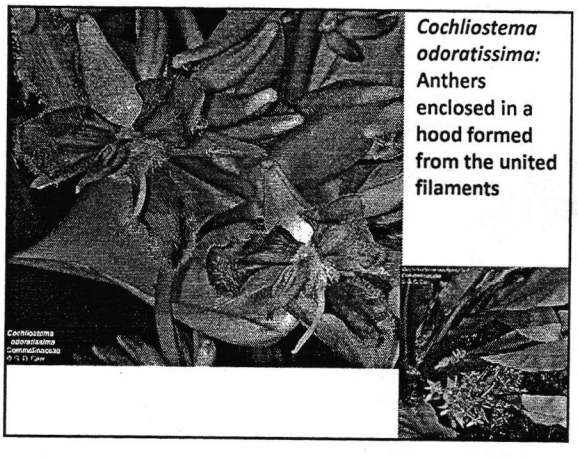


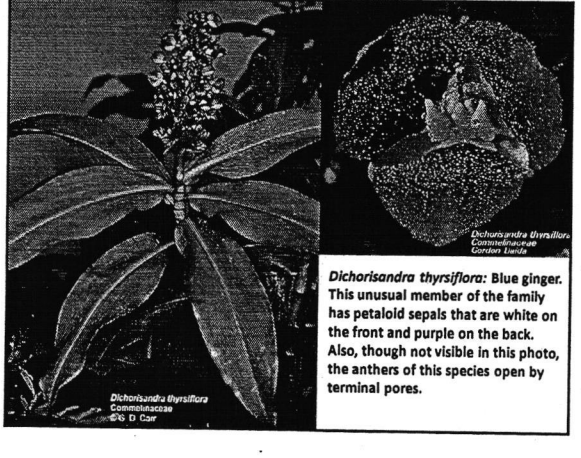
***Rhoeo spathacea*: Moses-in-a-basket, oyster plant**

618



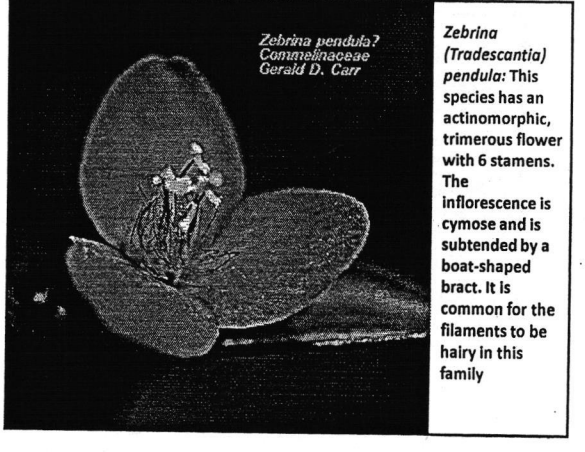
Cochliostema odoratissima: **Anthers enclosed in a hood formed from the united filaments**

619



Dichorisandra thyrsiflora: **Blue ginger. This unusual member of the family has petaloid sepals that are white on the front and purple on the back. Also, though not visible in this photo, the anthers of this species open by terminal pores.**

620 last slide



Zebrina (Tradescantia) pendula: **This species has an actinomorphic, trimerous flower with 6 stamens. The inflorescence is cymose and is subtended by a boat-shaped bract. It is common for the filaments to be hairy in this family**

BSc FY - Semester - II - Botany

Paper - IV - Diversity of Cryptogams - II

TEACHER - DR M P KULTHE (Bryophytes)

(01)

Dr. Babasaheb Ambedkar Marathwada University,
Aurangabad
B. Sc. FY
Botany (Semester –II)

Paper-IV -Diversity of Cryptogams-II

Teacher- Dr. Mahesh P. Kulthe
Assistant Professor
Department of Botany
Vasantrao Naik Mahavidyalaya
Aurangabad-431003

(02)

Unit-I Bryophytes

- Term Bryophytes given by Braun (1864).
- Bryophyte is a traditional name used to refer to all land plants that do not have true vascular tissue and are therefore called "non-vascular plants".
- They have no wood to lend them structural support, nor do they have large leaves or showy cones or flowers.

(03)

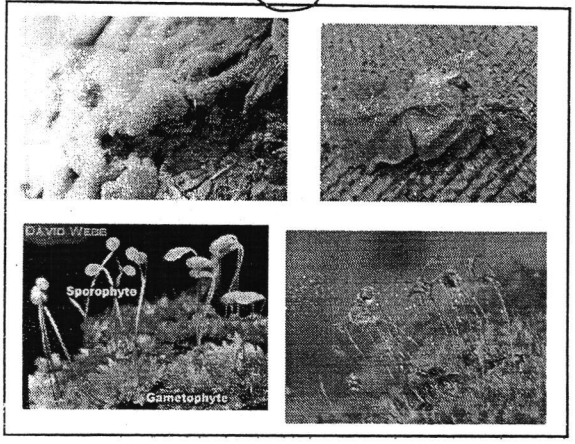
- Liverworts, hornworts, and mosses, Lack vascular tissues, No lignified tissues.
- Have rhizoids, Gametophyte generation is dominant.
- They are amphibians, grow in two well defined habitats-water & land.
- It is a group of simplest and primitive plant where sufficient moisture to sustain plant life.
- They occupy position between Thallophytes and Pteridophytes.

(04)

General Characters of bryophytes

- Gametophytic & sporophytic phases are present in the lifecycle and both are morphologically different (heteromorphic).
- Gametophytic phase is dominant (Conspicuous), long lived, independent, green and few centimeters to 70 cm in length.
- Sporophytic phase is short lived and completely dependent upon gametophyte.

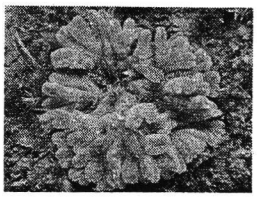
(05)



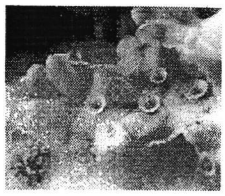
(06)

- In primitive form (Riccia, Marchantia), the gametophyte is prostrate & thalloid, in mosses the plant body is erect and with stem and leaves.

Riccia



Marchantia



B.Sc FY - Semester-II - Botany

Paper - IV - Diversity of cryptogams - II (Pteridophytes)

TEACHER - Dr M. P. KULTHE

01

Dr. Babasaheb Ambedkar Marathwada University,
Aurangabad
B. Sc. FY
Botany (Semester –II)

Paper-IV -Diversity of Cryptogams-II

Teacher- Dr. Mahesh P. Kulthe
Assistant Professor
Department of Botany
Vasantrao Naik Mahavidyalaya
Aurangabad-431003

02

Unit-II Pteridophytes

Learning objectives:

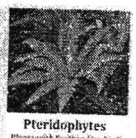
- What are Pteridophytes?
- Characteristics of Pteridophytes
- Morphology of Pteridophytes
- Reproduction of Pteridophytes
- Homosporous and Heterosporous Pteridophytes
- Megaspore and Microspores
- Gametophytes of Pteridophytes
- Fertilization
- Zygote and Embryo of Pteridophytes
- Life Cycle and Alternation of Generation

03

General Characters of Pteridophytes

Pteridophytes: the ferns

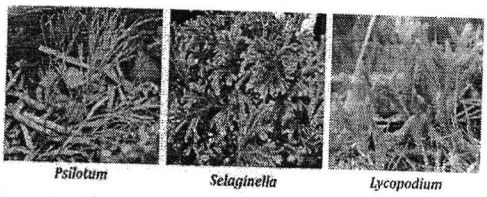
- Plant with feather like leaves
- *Pteron* = feathers; *phyton* = plant
- **Vascular cryptogams:** cryptogams with vascular system
- Includes primitive living and fossil vascular plants
- Represented by 400 genera and 10500 species (living and fossil)
- Plant body is **sporophytic**, differentiated into **stem, root and leaves**
- Mature sporophyte is nutritionally **independent** of gametophyte



Pteridophytes
Plants with feather-like leaf

04

- Show much variation in form, size, and habitat
- Small annuals (*Azolla, Salvinia*) to large perennial trees (*Angiopteris*)
- Most of the living Pteridophytes are terrestrial

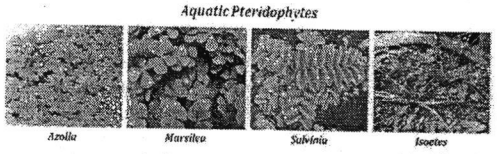


Psilotum *Selaginella* *Lycopodium*

05

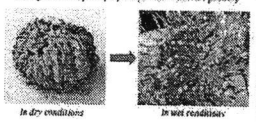
- Some members are aquatic (*Azolla, Marsilea, Isoetes, Salvinia*)
- Few are xerophytes (*Selaginella rupestris*)

Aquatic Pteridophytes



Azolla *Marsilea* *Salvinia* *Isoetes*

Selaginella lepidophylla (Resurrection plant)

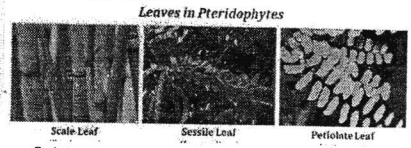


In dry conditions *In wet conditions*

06

- Stem and roots have permanent growing apex
- Most of them having herbaceous stem
- Leaves:
  - Scaly in *Equisetum*
  - Small sessile in *Lycopodium, Selaginella*
  - Large, petiolate compound in Ferns

Leaves in Pteridophytes



Scale Leaf — *Equisetum*
Sessile Leaf — *Selaginella*
Petiolate Leaf — *Adiantum*

B.Sc SY - Semester - IV - Botany

Paper - XI - Gymnosperms & Utilization of Plants

TEACHER - DR M P KULTHE (Gymnosperms)

(01)

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

B. Sc. SY

Botany (Semester –IV)

Paper-XI –Gymnosperms and Utilization of Plants

Teacher- Dr. Mahesh P. Kulthe
Assistant Professor
Department of Botany
Vasantrao Naik Mahavidyalaya
Aurangabad-431003

(02)

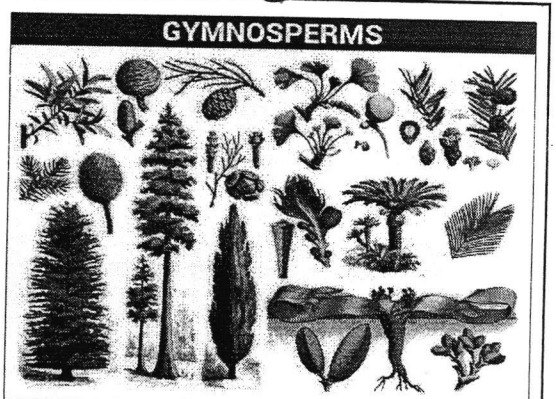
Unit- I Gymnosperms

- The Gymnosperms are a group of seed-producing plants that includes conifers, cycads, *Ginkgo, and gnetophytes.*
- The term "gymnosperm" comes from word gymnospermos, meaning "naked seeds", after the unenclosed condition of their seeds (called ovules in their unfertilized state).
- Gymnosperm seeds develop generally on the surface of scale- or leaf-like appendages of cones.

(03)

- There are between 700 and 900 extant* or currently living species of Gymnosperms.
- It is widely accepted that the gymnosperms originated in the late Carboniferous Period. Early characteristics of seed plants were evident in fossil progymnosperms of the late Devonian period around 380 million years ago.
- Extant is a term commonly used in biology to refer to taxa (such as species, genera or families) that are still in existence (living). The term extant contrasts with extinct.

(04)



(05)

- Conifers are by far the most abundant extant group of gymnosperms with six to eight families, with a total of 65-70 genera and 600-630 species (696 accepted names).
- Conifers are woody plants and most are evergreens.
- The leaves of many conifers are long, thin and needle-like with a waxy coating, others species, including most Cupressaceae and
- some Podocarpaceae, have flat, triangular scale-like leaves.
- Cycads are the next most abundant group of gymnosperms, with about 130 species. The other extant groups are the 75 - 80 species of Gnetales and one species of Ginkgo

(06)

- There exist a set of standard feature or characteristics that help to identify gymnosperms. Here are some of the peculiar characteristics of gymnosperms:
- Gymnosperms do not have an outer-covering or shell around their seeds.
- Gymnosperms are heterosporous which means that they produce different male and female spores. The microspores develop into pollen grains and the megaspores are in an ovule.

BSc SY - Semester - IV - Botany

Paper - XI - Gymnosperms & Utilization of Plants

(Unit - II - Utilization of Plants)

TEACHER - DR M P KULTHE

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

B. Sc. SY

Botany (Semester –IV)

Paper-XI –Gymnosperms and Utilization of Plants

Teacher- Dr. Mahesh P. Kulthe
Assistant Professor
Department of Botany
Vasantrao Naik Mahavidyalaya
Aurangabad-431003

(01)

Unit-II Utilization of Plants

- Utilization of plants deals with application of botanical knowledge to the well-being of mankind.
- The primary necessities of man are threefold, food, clothing and shelter.
- The most essential need of man is food. It comes from plants in the form of cereals (Rice, Wheat, Maize, Barley etc.), millets (Sorghum, Pearl millet, finger millet etc), pulses, vegetables and fruits.

(02)

- To meet an increasing demand for food and clothing an application of the knowledge of botany is of great importance for the better utilization of plant products.

1) Food plants (Cereals and millets)

Cereals:

- Most important source of food for man.
- Constitute most important group of plants.
- Belongs to the family Graminae.
- There are six true cereals- Rice, Wheat, Maize, Barley, Oat and Rye.

(03)

Millets:

- Also called as small grains.
- Cultivated in India from prehistoric times.
- Some of commonly called grown millets are, Sorghum, pearl millets and finger millets.

2) Legumes and nuts

Legumes:

- Legumes / pulses are nest in importance to the cereals as source of food.
- Belongs to family Leguminoceae.
- Contains more proteins than any other vegetable products.

(04)

- Carbohydrates and fats are also present.
- Pulses forms an important item in Indian population.
- Important pulses are, gram, black gram, pea, pigeon pea, lentil etc.

Nuts:

- It is one celled, one seeded dry fruit, hard pericarp.
- Chest nut, pea nut, almond, coconut, cashew nut, walnuts etc.
- Nuts makes a valuable food material-high protein and fat content.

(05)

Vegetables:

- This term applies to edible plants which store up reserved food in root, stem, leaves and fruits.
- Which are eaten cooked/ raw as salad.
- Vegetable ranks next to cereals as source of carbohydrate.
- It's nutritive value is tremendous due to mineral salts and vitamins.

Fruits:

- Seed bearing portion of plants, consists of ripened ovary and it's contents.
- Mango, banana, guava, fig, papaya, pineapple, apple, pear, strawberry, grape etc.

(06)

BSc TY - Semester - V - Botany

Paper - XV - Cell Biology & Molecular Biology

TEACHER - DR. M.P. KULTHE (Unit I - Cell Biology)

(01)

Dr. Babasaheb Ambedkar Marathwada University,
Aurangabad
B. Sc. TY
Botany (Semester –V)

Paper-XV –Cell Biology and Molecular Biology

Teacher- Dr. Mahesh P. Kulthe
Assistant Professor
Department of Botany
Vasantrao Naik Mahavidyalaya
Aurangabad-431003

(02)

Unit-I 1. Cell

- **Definition of Cell Biology:** - "Biological science deals with the study of structure, function, molecular organization, reproduction and genetics of cells is known as cell biology /cytology."
- **Cytology:** - Deals with the light microscopically visible structures.
- **Cell physiology:** - Deals with the biochemistry, biophysics & functions of cells.
- **Cell biology:** - Interpreted the cell in terms of molecules (Nucleic acids & protein)

(03)

- Recently both cytology and cell Biology are used as synonyms.
- Robert Hook- discovered the cell (Cork cell) for the first time in 1665.
- Definition of Cell: - "A unit of biological activity delimited by semi- permeable membrane & capable of self reproduction in a medium free of other lives system."

(Exception: -Viruses, because they have no semi-permeable membrane & cannot divide out side the living cell.)

(04)

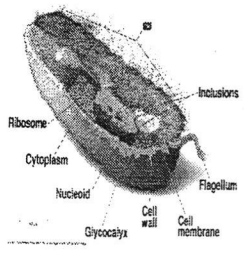
Basic types of cell: -

Sr. No.	Prokaryotic cell	Eukaryotic cell
	E.g. Bacteria & Cyanophyceae	E.g. Higher Organisms
1	Nucleus not well organized (Disorganized)	Nucleus is well organized (Presence of Nuclear envelop, pores, chromatin network, nucleolus)
2	Cell membrane performs function of respiration	Mitochondrion performs the function of respiration
3	Cell organelles absent	Cell organelles present
4	DNA necked & circular	DNA is linear & associated with proteins to form Chromosomes
5	Nucleolus is absent	Nucleolus is present
6	Flagella with (9+2) absent	Flagella with (9+2) present
7	Ribosomes-70s (50s, 30s)	Ribosomes-80s (60s, 40s)
8	Ribosomes are free in cytoplasm	Mostly ribosomes are attached to E.R.
9	No spindle formation	Spindles formed during cell division

(05)

Prokaryotic & Eukaryotic Cells: An Overview

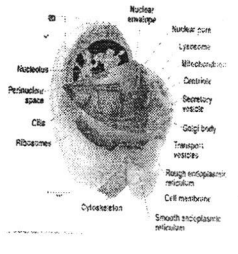
- Prokaryotes
  - Do not have membrane surrounding their DNA
  - lack a nucleus
  - Lack various internal structures bound with phospholipid membranes
  - Are small, ~1.0 µm in diameter
  - Have a simple structure
  - Composed of bacteria and archaea



(06)

Prokaryotic & Eukaryotic Cells: An Overview

- Eukaryotes
  - Have membrane surrounding their DNA
  - Have a nucleus
  - Have internal membrane-bound organelles
  - Are larger, 10-100 µm in diameter
  - Have more complex structure
  - Composed of algae, protozoa, fungi, animals, and plants



BSc TY - Semester - V - Botany
Paper - XV - Cell Biology & Molecular Biology

TEACHER - DR M P KULTHE (Molecular Biology)

01

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad
B. Sc. TY
Botany (Semester –V)

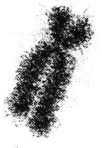
Paper-XV –Cell Biology and Molecular Biology

Teacher- Dr. Mahesh P. Kulthe
Assistant Professor
Department of Botany
Vasantrao Naik Mahavidyalaya
Aurangabad-431003

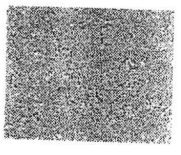
02

What Cellular Structure Holds the Genetic Information?

- Chromosomes
  - Contain the genetic material: DNA, RNA



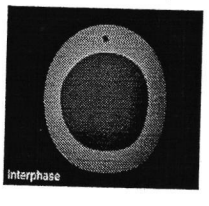
- Chromatin
  - Is the chromosomal material in its decondensed, threadlike state.



03

Mitosis

- Form of asexual reproduction.
- Occurs when organism grows or replaces damaged cells.
- Prior to mitosis, cell undergoes replication.
  - Process in which chromatin is copied.
- Produces diploid cells.



04

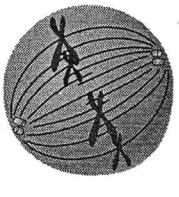
Prophase

- Start of mitosis
- Chromatin condenses into rod-like chromosomes
  - Each chromosome consists of sister chromatids, connected at the centromere
- Nuclear membrane disappears

05

Metaphase

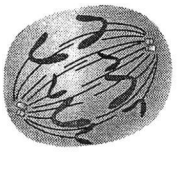
- Chromosomes align themselves in flat plane at cell equator.



06

Anaphase

- Centromeres split.
- Sister chromatids-now chromosomes- are pulled to opposite poles of the cell.



BSc TY – Semester - VI - Botany
Paper - XIX - Genetics & Biotechnology

TEACHER – DR. M. P. KULTHE

(01)

Dr. Babasaheb Ambedkar Marathwada University,
Aurangabad
B. Sc. TY
Botany (Semester –VI)

Paper-XIX –Genetics and Biotechnology

Teacher- Dr. Mahesh P. Kulthe
Assistant Professor
Department of Botany
Vasantrao Naik Mahavidyalaya
Aurangabad-431003

(02)

Genetics: what is it?

- What is genetics?
  - "Genetics is the study of heredity, the process in which a parent passes certain genes onto their children."
- What does that mean?
  - Children inherit their biological parents' genes that express specific traits, such as some physical characteristics, natural talents, and genetic disorders.

2

(03)

Genetic Concepts

- **Heredity** describes how some traits are passed from parents to their children.
- The traits are expressed by **genes**, which are small sections of DNA that are coded for specific traits.
- Genes are found on **chromosomes**.
- Humans have two sets of **23** chromosomes—one set from each parent.

3

(04)

Gregor Mendel

The Father of Genetics

(05)

1. Who was Gregor Mendel?

- He was an Augustinian monk who later became the abbot of his monastery.

The Abbey of Saint Thomas and its Church in the year 1926.

(06)

2.When & where was he born?

- He was born in 1822 in what is now the Czech Republic.

(C.H.B) Jambdhade - 9561626284

Academic Year 2018:19
Multimedia Use Record

दिनांक		
11-8-18		
11-8-18	Mrs. Manisha H. Ghogare (FYBSc)	12 to 2.10
13-8-18	Mrs. Manisha H. Ghogare (TYBSc)	2.10 to 3.15
20-8-18	Mrs. Manisha H. Ghogare (FYBSc)	2.10 to 3.15
30-8-18	Mrs. Manisha H. Ghogare (FYBSc)	2.10 to 3.40
31/08/18	Dr. Jokare B.K (Hindi)	9.40 to 11:00
31/09/18	Prof. Salpute Madam (Account)	11:45 to 12:30
3-9-18	Mrs M.H. Ghogare (TYBSc)	2.10 to 3.10
6-9-18	Dr. Savita Lathe (B.C.S)	
8-9-18	Mrs. Manisha H. Ghogare (SYBSc)	2.10 to 3.10
12-9-18	Pawar Ravindra V (mcvc 11th 12th class)	11:45 to 12:45
14-9-18	TT	
19-9-18	Mr pawar Ravindra V.	TT
21-9-18	Pawar R.V	TT
~~24-9-18~~	~~Mrs. Mrs Ghogare~~	~~wd off~~
24-9-18	Dr J.V. Bharad	11:40 to 12.20
24-9-18	Sr. comp. dept:	12:20 to 1:15
25-9-18	Dr. J.V. Bharad	10.45 to 12.15
25-9-18	Mrs. M.H. Ghogare (TYBSc)	12.30 to 1.30
26.9.18	Dr. J.V. Bharad	10.45 to 12.15
26.9.18	Dr. J.J. Chamargore	12.30 to 1.20
27-9-18	Dr. J.V. Bharad	10.45 to 12.15
27.9.18	Dr J.J. Chamargore	12.30 to 1.20
28-9-18	Dr J.V. Bharad	10.45 to 12.15
28.9.18	Dr. J.V. Bharad	11.10 to 11.50
29.9.18	Dr. J.J. Chamargore	12.15 to 1.30

Designation :	**Designation :**
Signature:	**Signature:**

Vasantrao Naik Mahavidyalaya, Aurangabad

IQAC

Academic Year:- 2018-19

Name of Activity :- ~~Multimedia Hall~~ ICT : Lecture on 8-9-18 Videos shown SYBSC

Department:- Physics

Name of Faculty Member:- Mrs. M. H. Ghogare

Sign.

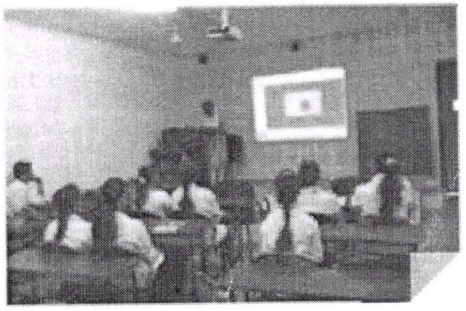
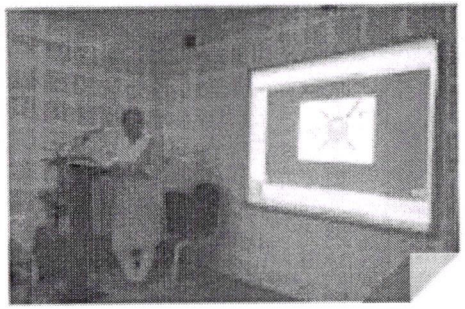
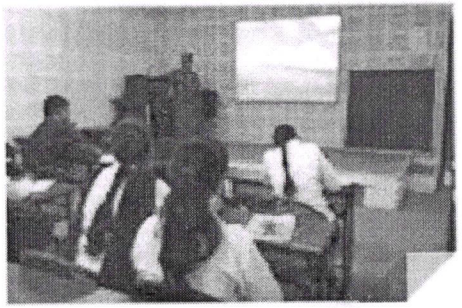
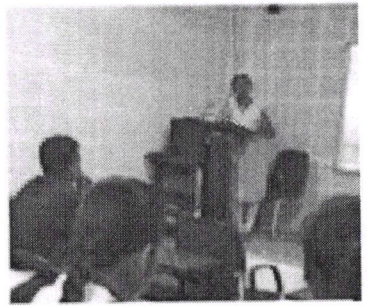
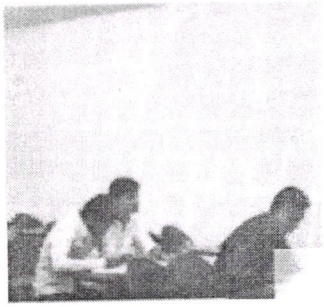
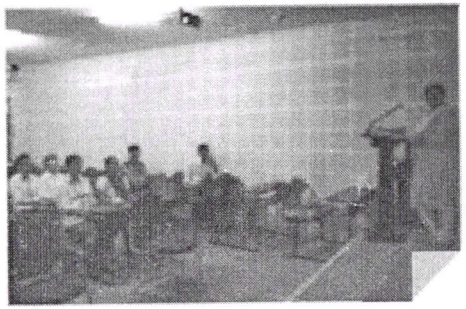
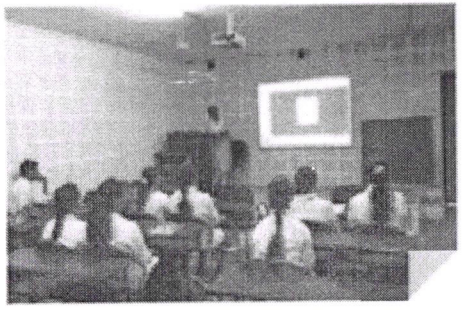
Whether any Agency Involved In Activity (Name) :-

Brief description of the Activity

Sr. No.	Name of Student	Class	Roll No.	Sign
1	Barkha Ishwar Gupta	B.Sc.SY	27	Gupta.
2	Rajni Rajesh Gupta	B.Sc(SY)	33	Rajni
3	Sujit. Shivram Kankony	B.Sc(SY)	36	
4.	Datta Tejmbak Deokhale	B.Sc(S.Y)	26	Deokhale
5	Pranjal Pralhad Dhawale	B.Sc(SY)	25	Pranjal
6	Anuj Vilas Deshpande	BSc(SY)	31	Anuj
07	~~32~~ Shubham Rameshwar Kale	BSc SY	32	
08	~~37~~ Vaibhav S. Shingare.	BSc SY	37	
09	~~29~~ shyam. s. sonwane.	BSc SY	29	

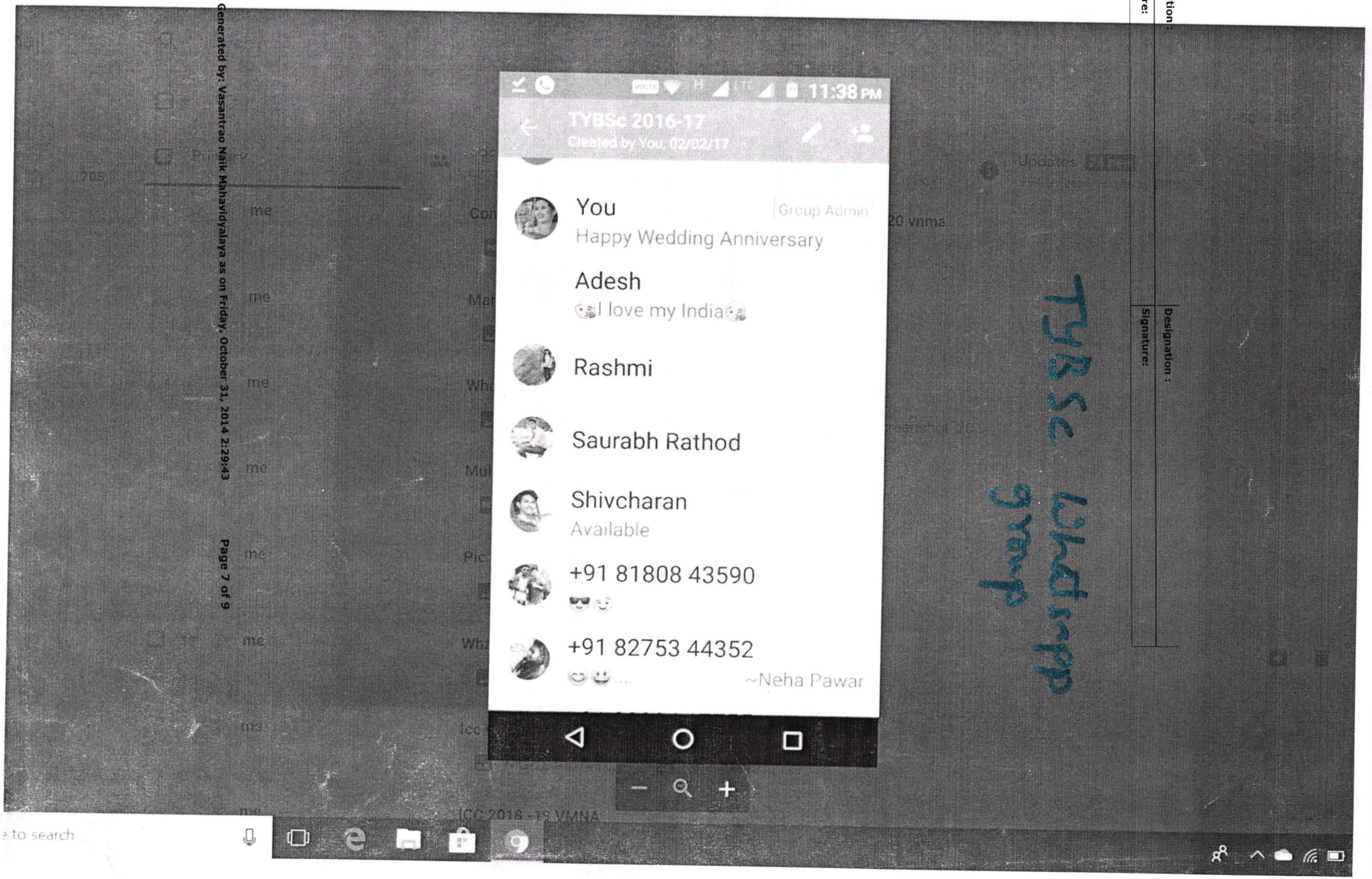
Sr. No.	Name Of Student		Roll No.	Sign

Dept. of Physics


Use of Multimedia for Teaching using ICT.

Whatsapp group
Screen Shots


11:38 PM
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Signature:
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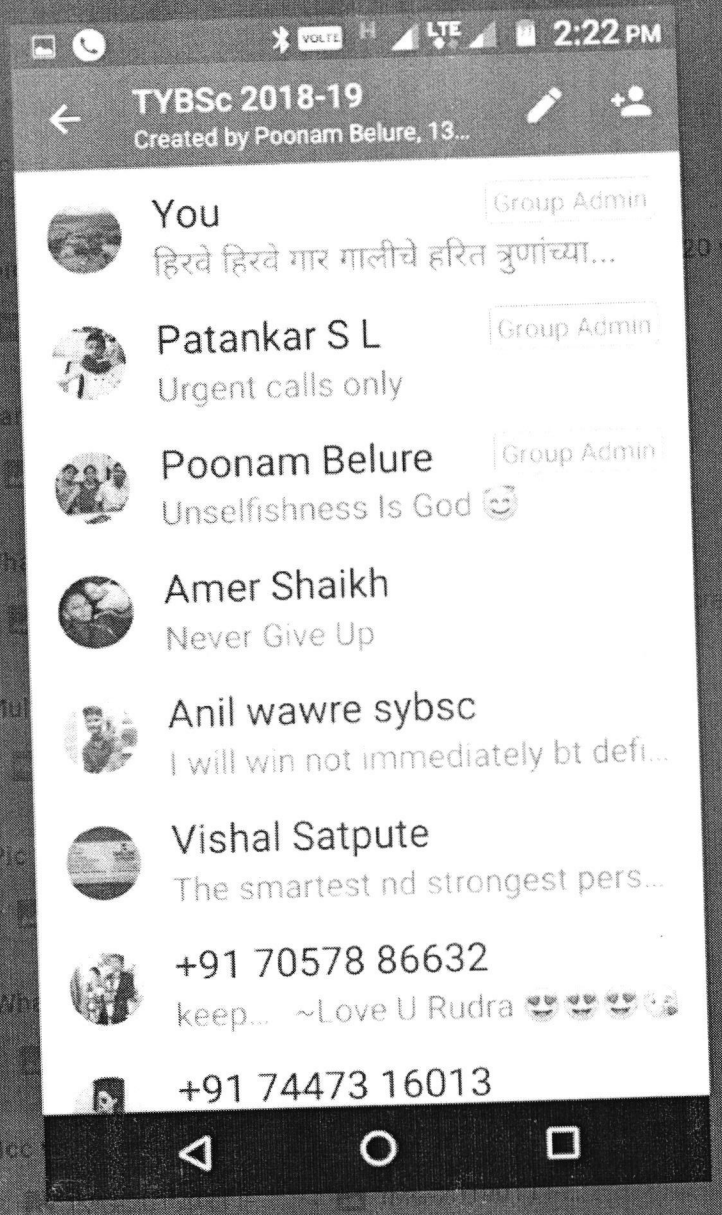
Report Generated by: Vasantrao Naik Mahavidyalaya as on Friday, October 31, 2014 2:29:43 PM
Page 7 of 9



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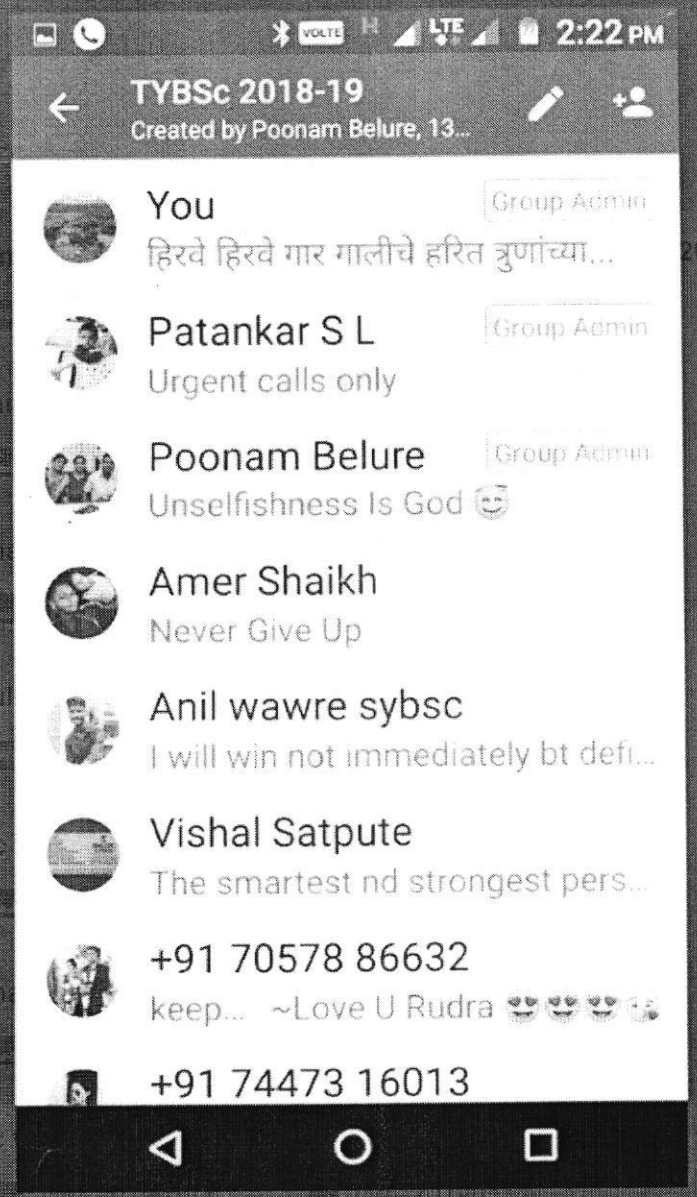

Departmental

Library 2018:19

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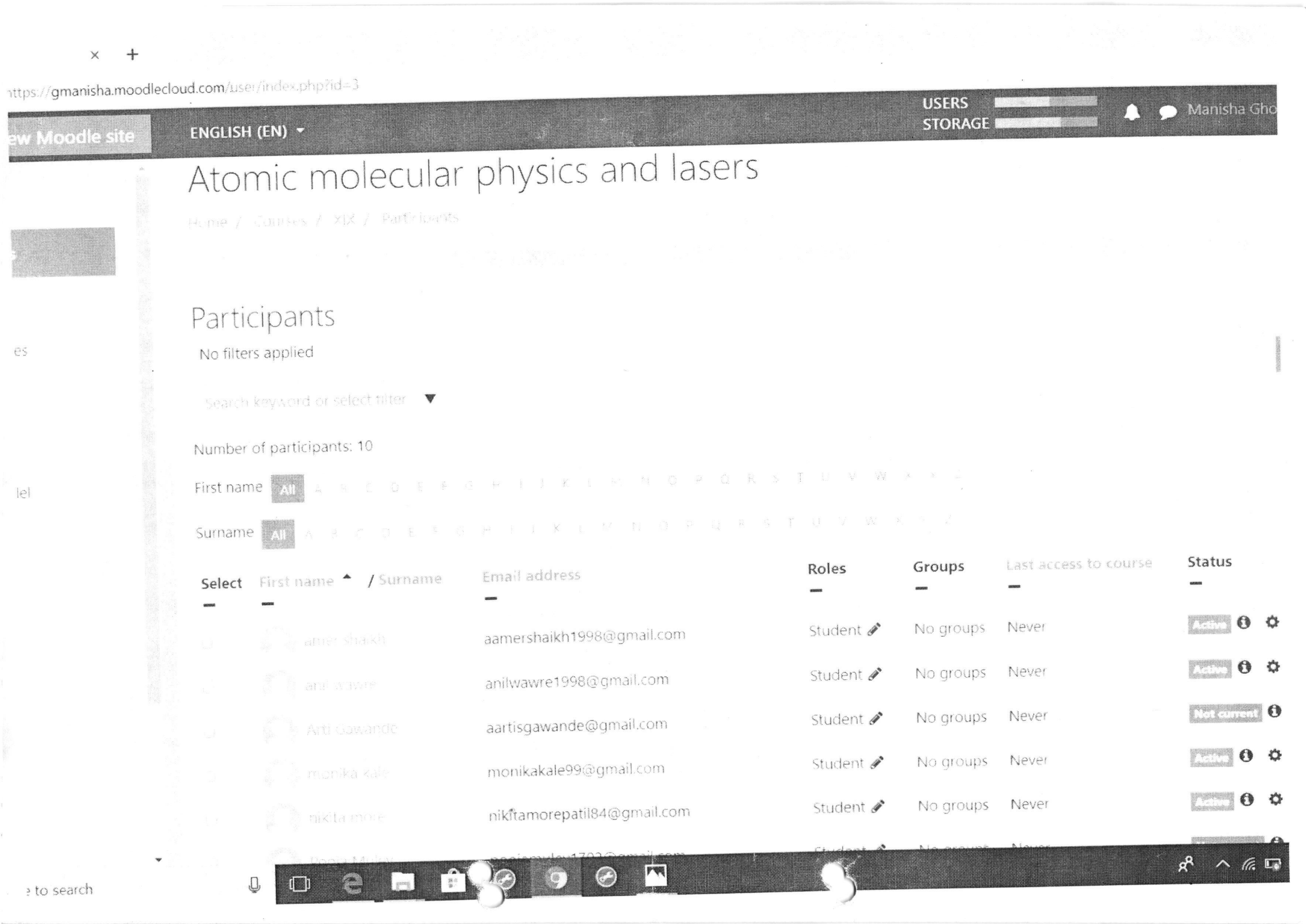
Moodlecloud Screenshots with Tests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Participants
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Search keyword or select filter
Number of participants: 10
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Surname All
Select
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Email address
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Groups
Last access to course
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Student
No groups
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Active
anilwawre1998@gmail.com
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Atomic molecular physics and lasers

Home / Courses / XIX

TYBSc moodleund

Announcements

Atomic model

The Atom Models

Thomson Model

Rutherford Model

Bhor's model

Video

Test 1 : The Atom Model

Multiple choice quiz

Problems based on Unit 1 Molecular Physics

e to search

Atomic molecular physics and lasers

Test 1 : The Atom Model

Attempts: 3

What to include in the report

Attempts from: enrolled users who have attempted the quiz

Attempts that are: ✔ In progress ✔ Overdue ✔ Finished ✔ Never submitted

☐ Show at most one finished attempt per user (Highest grade)

Show only attempts: ☐ that have been regraded / are marked as needing regrading

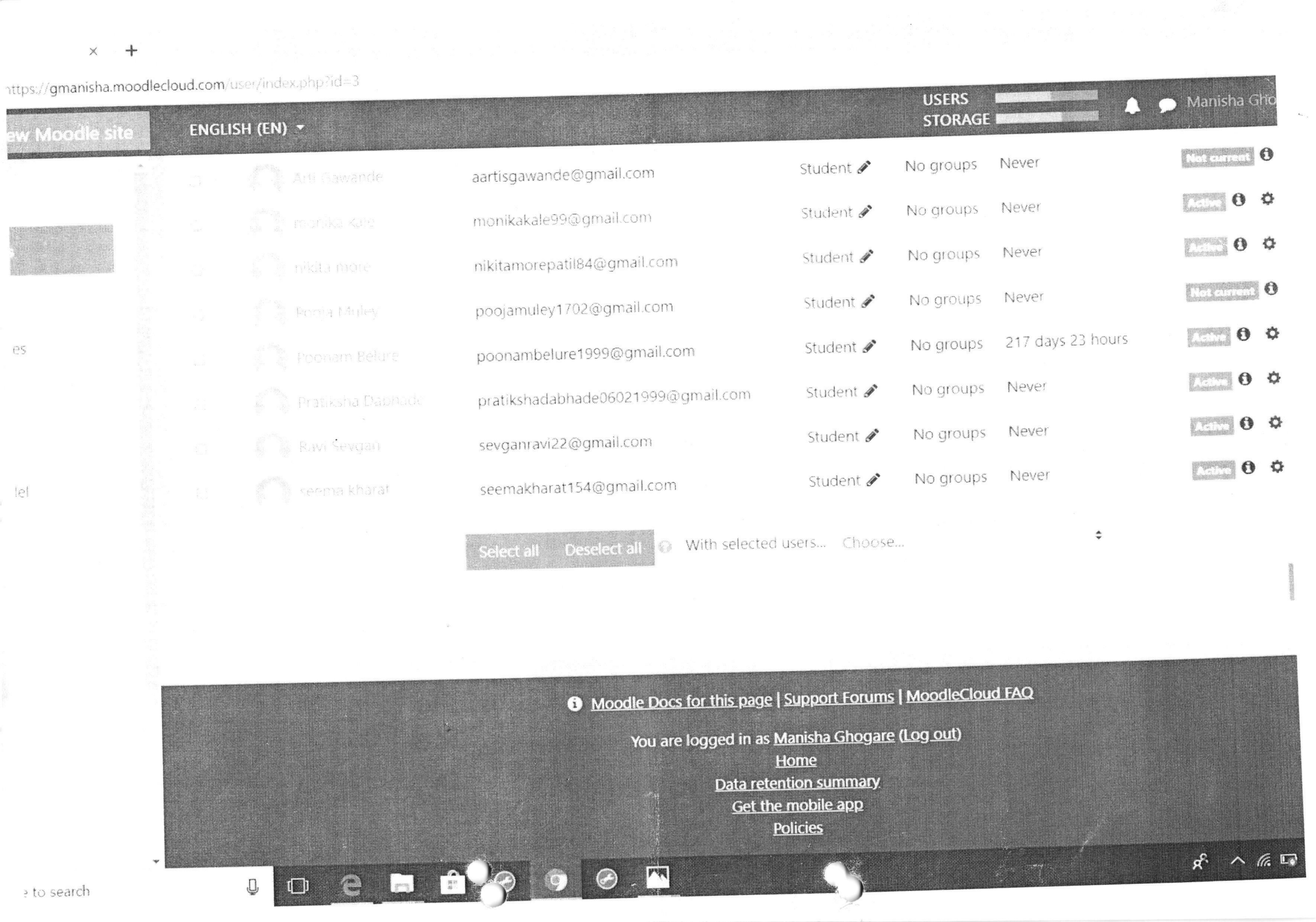
Display options

Page size: 30

Marks for each question: Yes

Show report

TYBSc Test 1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Manisha Gho
aartisgawande@gmail.com
Student
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monikakale99@gmail.com
Student
No groups
Never
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nikitamorepatil84@gmail.com
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poojamuley1702@gmail.com
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pratikshadabhade06021999@gmail.com
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sevganravi22@gmail.com
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seemakharat154@gmail.com
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No groups
Never
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Atomic molecular physics and lasers

TYBSc Test 2

Problems based on unit 3.Molecular Physics

All students are requested to solve these problems on separate paper and submit it to me as soon as possible.

1. Calculate reduced mass of CO molecule.

given: mass of carbon =1.99 into 10 rest to minus 26Kg

mass of oxygen = 2.66 into 10 rest to minus 26 Kg

2 . The force constant of the bond in CO molecule is 1956N/m.Calculate frquency of vibration of molecule.

given :reduced mass of CO =1.16 into 10 rest to minus 26.

3. calculate frequency of oscillation of Hydrogen molecule if its force constant is 4.8 into 10 rest to 2 N/m and reduced mass of H is 1.67 into 10 rest to minus 27

Grading summary

Hidden from students	No
Participants	8

Model

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Showing graded and ungraded attempts for each user. The one attempt for each user that is graded is highlighted. The grading method for this quiz is Highe

Reset tab

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	First name / Surname	Email address	State	Started on	Completed	Time taken	Grade/5.00	Q. 1 /1.00	Q. 2 /1.00	Q. 3 /1.00	Q. 4 /1.00
	Pratiksha Dabhade Review attempt	pratikshadabhade06021999@gmail.com	Finished	30 December 2018 1:39 PM	30 December 2018 1:44 PM	4 mins 39 secs	3.00	✓ 1.00	✓ 1.00	✓ 1.00	✗ 0.00
	Pratiksha Dabhade Review attempt		In progress	30 December 2018 1:45 PM	-	-	-				
	monika kale Review attempt	monikakale99@gmail.com	In progress	18 January 2019 2:12 PM	-	-	-				
	Overall average						**3.00 (1)**	1.00 (1)	1.00 (1)	1.00 (1)	0.00 (1)

Select all / Deselect all Regrade selected attempts Delete selected attempts

TYBSc Test 2

Overall number of students achieving grade ranges

Participants

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Academic Year : 18:19
FYBSc. Moodlecloud
Scalar - Triple product

Electricity And Magnetism

Vector algebra

Scalar triple product

multiple choice question

Jump to...

Gauss divergence

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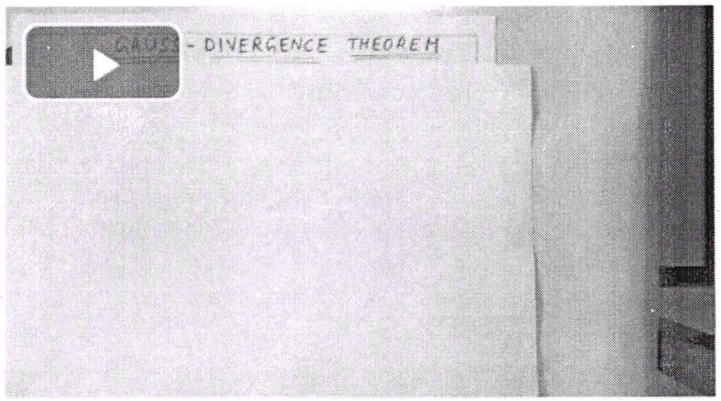
FYBSC

Electricity And Magnetism

Gauss divergence theorem



◄ Vector algebra Jump to... Problems based on Chapter 2 ►

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My new Moodle site

Physics

FYBSc Gravitation

This experiment shows how gravitation is same for bodies having different weights.

Available courses

Mechanics,properties of matter and sound

Unit 1: Gravitation

Unit 2: Elasticity

Unit 3: Viscosity and Surface Tension

Unit 4: Ultrasonic and Acoustics

Electricity And Magnetism

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Unit 4: Ultrasonic and Acoustics

Electricity And Magnetism

Magnetism

Atomic molecular physics and lasers

Introduction to Moodle

Teacher: Manisha Ghogare

This tiny course can help you get started if you are new to Moodle.

It's been hidden so that only you, as the site administrator, can see it.

Vasantrao Naik Mahavidyalaya, Aurangabad

Form No.:

IQAC

Test/ Tutorial
Attendance Sheet

Name of Teacher: M.S. M.H. Ghugare **Class:** FYBSc

Subject: Physics (Electricity & Magnetism) **Paper No.:** V

Academic Year: 2018-19 **Date:** 14-1-19 **Sign:**

Problem Assignment given on Moodle cloud

R.No	Name of Student	Signature	R.No	Name of Student	Signature
115	Gayatri R. Kharad	Gkharad			
111	Ruchita Ahire.	Ruchita			
116	Diksha Mankari	Dmankari			
117	Diksha Sasane	Dsasane			
109	Karan Suradkar	Ksuradkar			
107	Kunal Salve.	salve145			
106	samadhan Pophale	Sapophale			
98	Sandeep Yadav	Sandeep			
79	Nikita Jawale	Nikita			
97	Anurag Singh	Anurag			
104	Viraj A. Makariye	Viraj			
130	Pournima Sonune	Psonune			
87	Patil Akshay	Akshay			
105	Avinash mate	Avi			
34	Preeti U. Bayas	Preeti			
114	Sapna Ramnath Jadhav	Sjadhav			
119	Payal Gawai				
	Kajal R Maher	Kajal			

FYBSc Tut 1

Electricity And Magnetism

VECTOR ALGEBRA TEST 1 : 22-12-2018

Hi all ,

This is first multiple choice question test.

Try to solve it.

Grading method: Highest grade

Attempts: 29

Summary of your previous attempts

Attempt	State	Review
Preview	In progress	

Continue the last attempt

TEST 1 : 22-1 ×

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		diksha sasane Review attempt	dikshasasane5@gmail.com	Finished	8 February 2019 5:25 AM	8 February 2019 5:26 AM	57 secs	10.00	7.14	0.71	0.71	0.71
		uddesh kanoje Review attempt	uddeshkanoje@gmail.com	In progress	10 February 2019 6:46 AM	-	-	-	-	-	-	-
		ajay nindane Review attempt	ajaynindane2000@gmail.com	In progress	11 March 2019 1:38 PM	-	-	-	-	-	-	-
		Overall average						**7.58 (23)**	5.28 (23)	0.56 (23)	0.56 (23)	0.53 (23)

Select all / Deselect all Regrade selected attempts Delete selected attempts

Overall number of students achieving grade ranges

Participants

5

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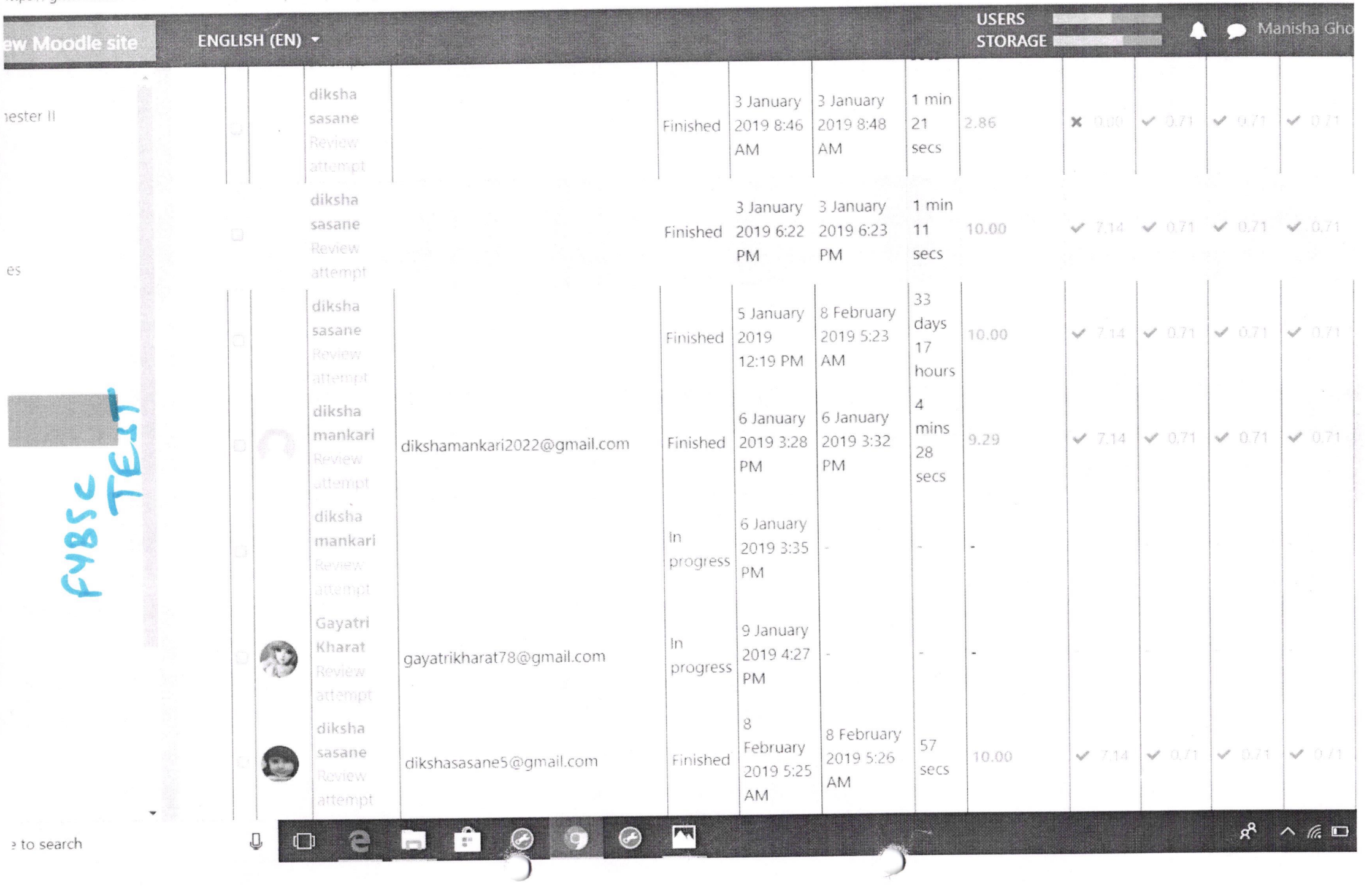
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Manisha Gho
diksha sasane Review attempt
Finished
3 January 2019 8:46 AM
3 January 2019 8:48 AM
1 min 21 secs
2.86
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diksha sasane Review attempt
Finished
3 January 2019 6:22 PM
3 January 2019 6:23 PM
1 min 11 secs
10.00
7.14
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diksha sasane Review attempt
Finished
5 January 2019 12:19 PM
8 February 2019 5:23 AM
33 days 17 hours
10.00
7.14
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diksha mankari Review attempt
dikshamankari2022@gmail.com
Finished
6 January 2019 3:28 PM
6 January 2019 3:32 PM
4 mins 28 secs
9.29
7.14
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diksha mankari Review attempt
In progress
6 January 2019 3:35 PM
-
-
-
Gayatri Kharat Review attempt
gayatrikharat78@gmail.com
In progress
9 January 2019 4:27 PM
-
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diksha sasane Review attempt
dikshasasane5@gmail.com
Finished
8 February 2019 5:25 AM
8 February 2019 5:26 AM
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TEST 1 : 22-1 ×

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	diksha mankari Review attempt	dikshamankari2022@gmail.com	Finished	1 January 2019 11:11 AM	1 January 2019 11:13 AM	2 mins 23 secs	9.29	✓ 7.14	✓ 0.71	✓ 0.71	✗ 0.00
	avinash mate Review attempt	avinashmate1212@gmail.com	Finished	1 January 2019 11:14 AM	1 January 2019 11:16 AM	1 min 52 secs	1.43	✗ 0.00	✗ 0.00	✓ 0.71	✗ 0.00
	diksha mankari Review attempt	dikshamankari2022@gmail.com	Finished	1 January 2019 11:14 AM	1 January 2019 11:15 AM	1 min 14 secs	10.00	✓ 7.14	✓ 0.71	✓ 0.71	✓ 0.71
	avinash mate Review attempt	avinashmate1212@gmail.com	Finished	1 January 2019 11:21 AM	1 January 2019 11:25 AM	3 mins 57 secs	1.43	✗ 0.00	✓ 0.71	✗ 0.00	✗ 0.00
	avinash mate Review attempt		Finished	1 January 2019 11:26 AM	1 January 2019 11:28 AM	1 min 56 secs	1.43	✗ 0.00	✓ 0.71	✗ 0.00	✗ 0.00
	Gayatri Kharat Review attempt	gayatrikharat78@gmail.com	Finished	2 January 2019 8:57 AM	2 January 2019 8:58 AM	58 secs	2.86	✗ 0.00	✓ 0.71	✓ 0.71	✓ 0.71
	diksha sasane Review attempt	dikshasasane5@gmail.com	Finished	2 January 2019 9:36 PM	2 January 2019 9:39 PM	3 mins 42 secs	9.29	✓ 7.14	✗ 0.00	✓ 0.71	✓ 0.71

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FYBSc Test

	sandeep yadav Review attempt	sandeepyadavram1231@gmail.com	Finished	26 December 2018 6:52 PM	26 December 2018 6:53 PM	1 min 21 secs	9.29	✓ 7.14	✓ 0.71	✓ 0.71	✗ 0.00
	sandeep yadav Review attempt		Finished	26 December 2018 6:54 PM	26 December 2018 6:56 PM	1 min 41 secs	10.00	✓ 7.14	✓ 0.71	✓ 0.71	✓ 0.71
	diksha mankari Review attempt	dikshamankari2022@gmail.com	Finished	27 December 2018 6:05 AM	1 January 2019 11:10 AM	5 days 5 hours	2.14	✗ 0.00	✗ 0.00	✓ 0.71	✓ 0.71
	Gayatri Kharat Review attempt	gayatrikharat78@gmail.com	Finished	28 December 2018 12:31 AM	30 December 2018 4:11 AM	2 days 3 hours	8.57	✓ 7.14	✓ 0.71	✗ 0.00	✓ 0.71
	Gayatri Kharat Review attempt		Finished	30 December 2018 4:12 AM	30 December 2018 4:13 AM	53 secs	10.00	✓ 7.14	✓ 0.71	✓ 0.71	✓ 0.71
	Gayatri Kharat Review attempt		Finished	30 December 2018 4:19 AM	30 December 2018 4:21 AM	2 mins 47 secs	10.00	✓ 7.14	✓ 0.71	✓ 0.71	✓ 0.71
	Gayatri Kharat Review attempt		Finished	30 December 2018 6:16 AM	30 December 2018 6:18 AM	2 mins 18 secs	10.00	✓ 7.14	✓ 0.71	✓ 0.71	✓ 0.71
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First name / Surname	Email address	State	Started on	Completed	Time taken	Grade/10.00	Q. 1 /7.14	Q. 2 /0.71	Q. 3 /0.71	Q. 4 /0.71
samadhan pophale Review attempt	samapophale2@gmail.com	In progress	22 December 2018 11:28 PM	-	-	-	-	-	-	-
kunal salve Review attempt	salvekunal199@gmail.com	Finished	23 December 2018 2:14 PM	25 December 2018 2:49 PM	2 days	8.57	✓ 7.14	✗ 0.00	✗ 0.00	✓ 0.71
sandeep yadav Review attempt	sandeepyadavram1231@gmail.com	Finished	24 December 2018 6:56 PM	26 December 2018 6:48 PM	1 day 23 hours	8.57	✓ 7.14	✗ 0.00	✓ 0.71	✗ 0.00
kunal salve Review attempt	salvekunal199@gmail.com	Finished	25 December 2018 2:49 PM	25 December 2018 2:59 PM	9 mins 47 secs	9.29	✓ 7.14	✓ 0.71	✗ 0.00	✓ 0.71
kunal salve Review attempt		Finished	25 December 2018 3:00 PM	25 December 2018 3:01 PM	1 min 1 sec	10.00	✓ 7.14	✓ 0.71	✓ 0.71	✓ 0.71

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Electricity And Magnetism

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FYBSc Test 1

VECTOR ALGEBRA TEST 1 : 22-12-2018

Attempts: 28

What to include in the report

Attempts from: enrolled users who have attempted the quiz

Attempts that are: ✔ In progress ✔ Overdue ✔ Finished ✔ Never submitted

☐ Show at most one finished attempt per user (Highest grade)

Show only attempts: ☐ that have been regraded / are marked as needing regrading

Display options

Page size: 30

Marks for each question: Yes

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Electricity And Magnetism

Problems based on Chapter 2 Electrostatics

1.Find electric field at a distance 1m from a point charge 1c in air.(April 2014)

2.Calculate the electric displacement if the electric field strength inside the dielectric is 10 multiply by 10 to the power minus 10 N/msquare and electric polarizatic (Oct/Nov 2014)

3. Two charges 1.4 into 10 power minus 10 and 1.2 into 10 power minus 10 seperated by a distance of 0.6 Angstorm. Calculate the force between them.(March201

4.Calculate the field and potential due to a dipole of dipole moment 4 into 10 power minus 10 c/m at a distance 1m from its center and its axis.(Nov 2017)

5 Electric field in the dielectric is 10 to the power 7 v/m and dipole moment induced in each atom is 3.2 into 10 power minus 31 coulmb meter.If there are 4.2 into atoms per unit volume calculate electric displacement.(Oct 2016)

Grading summary

Hidden from students	No
Participants	16
Submitted	0

FYBSc Test 2

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This Page is Designed For Informative use of teachers ,students and researches

About Zoology

"Branches or types are characterized by the plan of their structure, Classes, by the manner in which that plan is executed, as far as ways and means are concerned, Orders, by the degrees of complication of that structure, Families, by their form, as far as determined by structure, Genera, by the details of the execution in special parts, and Species, by the relations of individuals to one another and to the world in which they live, as well as by the proportions of their parts, their ornamentation, etc." — Louis Agassiz, Essay on Classification

Latest Research and Reviews

- Research | 01 May 2017 | OPEN The Nephila clavipes genome highlights the diversity of spider silk genes and their complex expression Benjamin Voight and colleagues report the annotated genome of the golden orb-weaver spider. They describe 28 spider silk genes (spidroins), characterize their expression in distinct silk gland types and identify non-spidroin genes with expression patterns suggesting potential roles in silk production. Paul L Babb, Nicholas F Lahens, Sandra M Correa-Garhwal, David N Nicholson, Eun Ji Kim, John B Hogenesch, Matjaž Kuntner, Linden Higgins, Cheryl Y Hayashi, Ingi Agnarsson & Benjamin F Voight

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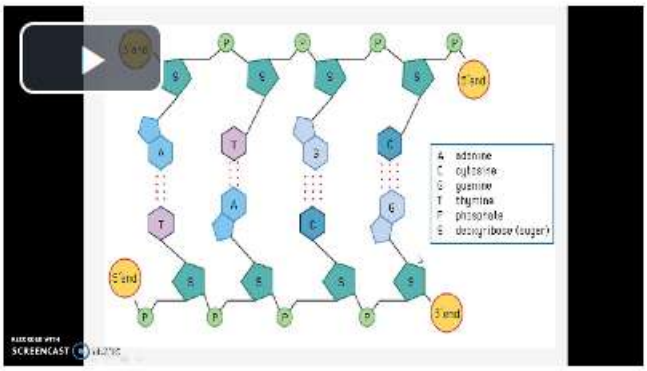

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discovery

methods

structure

dimensions

functions

Animal Physiology

Digestion, respiration, circulation, nerve physiology, muscle physiology, excretion, reproduction are the lessons in this paper.

GENETICS I

This chapter includes inheritance, gene interaction, cytoplasmic inheritance, mutation etc.

FDP201x.....Chromosome Structure and Function

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CELL BIOLOGY

This course contains three units:

First Unit: ultrasructure of Eukaryotic cell (Animal cell)

Second Unit: Organization of cell

Third Unit: Methods in cell biology

Question **1**

Not yet answered

Marked out of 1.00

Flag question

Edit question

AQ.01. Out of the following statement, which is correct for semiconservative nature of DNA?

More than one option is correct.

Select one or more:

- a. Two strands of DNA act as a template for replication
- b. DNA makes its own copies
- c. It takes part in transcription
- d. Both the strands act as template

Next page

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Editing quiz: LbD quiz

Questions: 5 | Quiz open (closes 13/01/19, 18:09)

Maximum grade 10.00 Save

Repaginate Select multiple items

Total of marks: 5.00

Shuffle

Page 1 Add

1	**What is the radius of DNA?** What is the radius of DNA? LBD ACTIVITY Q1		1.00
2	**Which of the below is correct for Chargaff rule** Which of the below is correct fo...		1.00
3	**Which form of DNA is left handed?** Which form of DNA is left handed? LBD AC...		1.00
4	**DNA plays an important role in** DNA plays an important role in LBD ACTIVITY Q...		1.00
5	**Central Dogma shows which steps of below** Central Dogma shows which steps ...		1.00

Add

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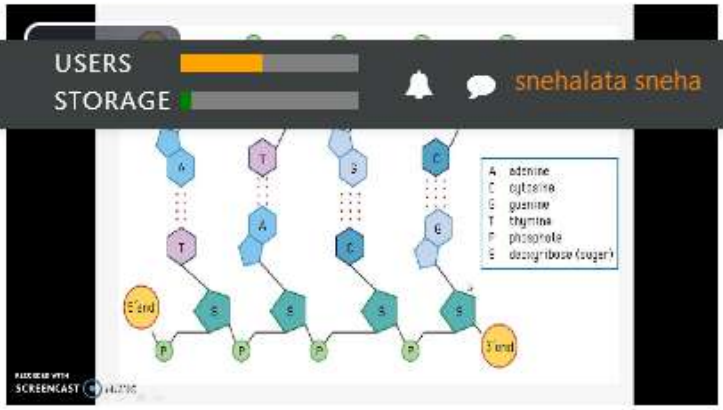

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What are the requirements to construct DNA molecule in the laboratory

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Standard forum for general use

Attachments and word count

Maximum attachment size

500KB

Maximum number of

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13 December 2018 18 49 Enable

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13 January 2019 18 49 Enable

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0 minutes Enable

When time expires

Open attempts are submitted automatically

Submission grace period

0 minutes Enable

Grade

Grade category

Uncategorised

Grade to pass

0.00

Attempts allowed

Unlimited

Grading method

Highest grade

Timing

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Grade

Grade category Uncategorised

Grade to pass 0.00

Attempts allowed 2

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Overview

Submitted answers: 0
Questions: 0

Answer the questions

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ppt on digestion

the attached ppt is taken from below source
http://www1.mahopac.k12.ny.us/mhs/teachers/.../AP%20PowerPoints/chapter%2041.ppt

Quiz 1

Quiz 1

QUIZ 2

Respiration

Respiration video source from NPTEL, PROF.DAS SIR

You cannot add or remove questions because this quiz has been attempted. (Attempts: 1)

Questions: 3 | This quiz is open

Maximum grade 10.00 Save

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Total of marks: 3.00

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Page 1

1 **Mitosis occurs in** Mitosis occurs in 1.00

Page 2

2 **Meiosis is a** Meiosis is a 1.00

Page 3

3 **Down syndrome is changes on** Down syndrome is changes on 1.00

Elements of Heredity and Variation

Definition of Genetics and Variation

Mendels Laws of heredity

Below video source : (Examrace) https://www.youtube.com/watch?v=oMvQSF2iVAk

Mendels Laws

Quiz 1

QUIZ 2

CONCEPT OF ORGANIC EVOLUTION

QUIZ ON LAMARCKISM

THE QUIZ WILL BE ON THEORIES PROPOSED BY LAMARCK

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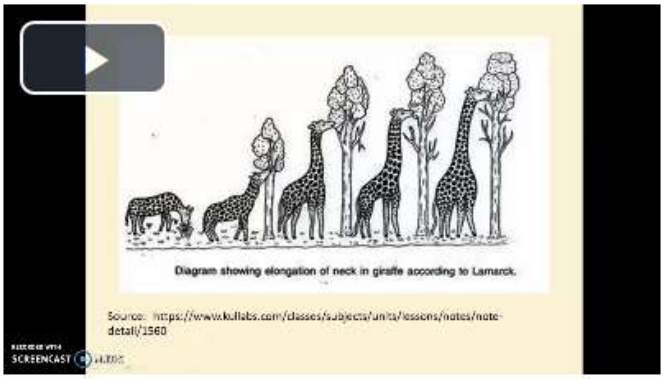

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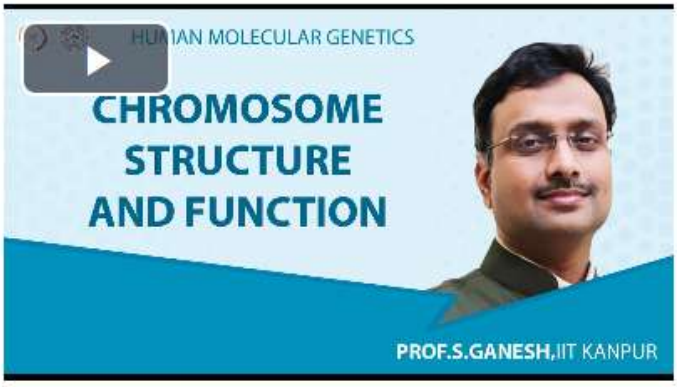

This video delivered by Prof.S.Ganesh on Chromosomal Studies

Timestamp of RS1: 00:03:06

RS1 question: The study of arrangement of chromosomes according to the shape and size is called as

a. Genetics

b. Cytogenetics

c. Karyotype

d. Biology

Timestamp of RS2: 00:02:42

Smallest chromosome set is on number-----in karyotype

a. 22

b. 1

c. 4

d. 5

Timestamp of RS3: 00:03:06

Meiosis occurs in

a. Germ cells

b. somatic cells

c. nail cells

d. none

Timestamp of RS4: 00:24:06

Klienfelters syndrome has an ------- chromosomne

a. Additional chromosome

b. Less chromosomes

c. No Somatic chromosomes

d. No gamete cells

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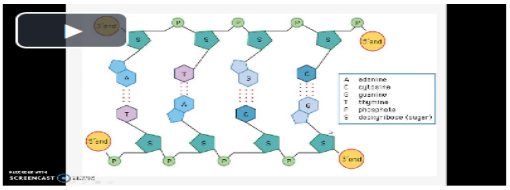
Biophysical study of DNA



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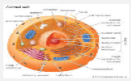

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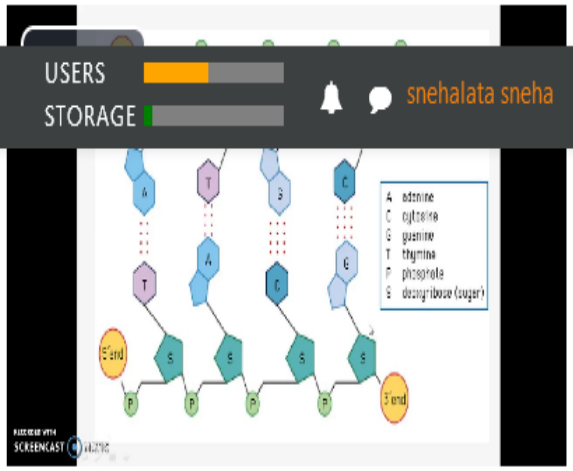

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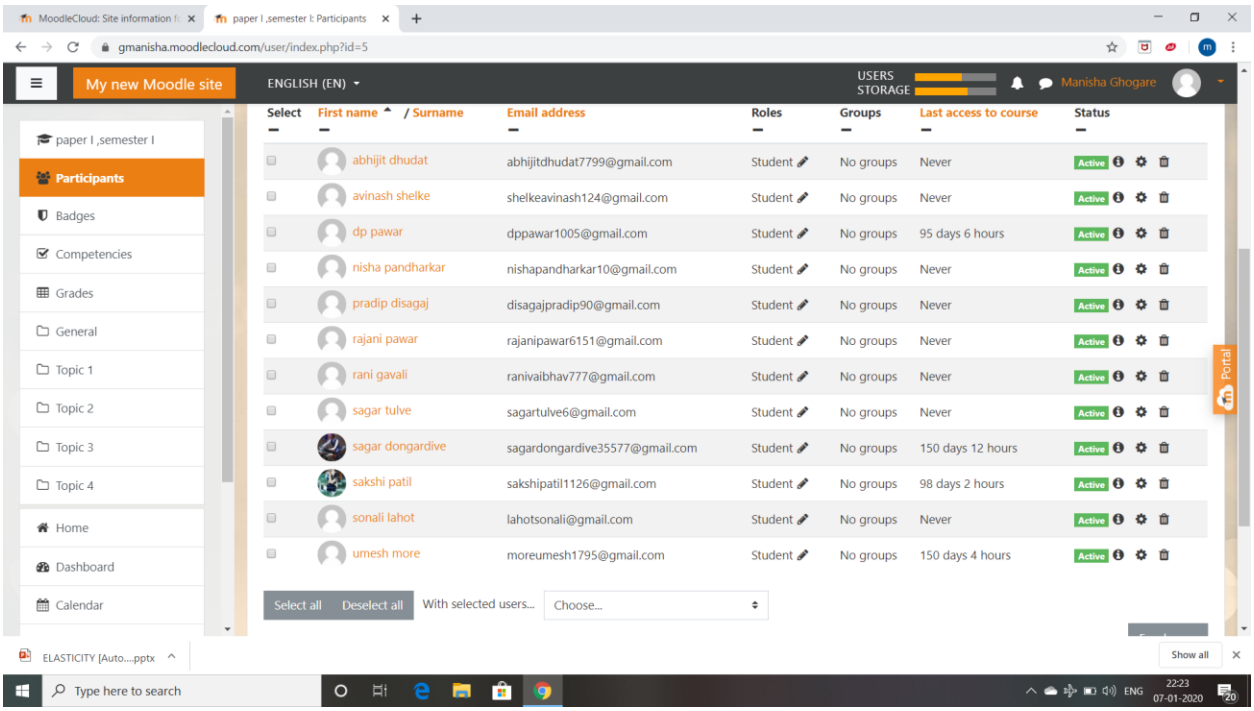
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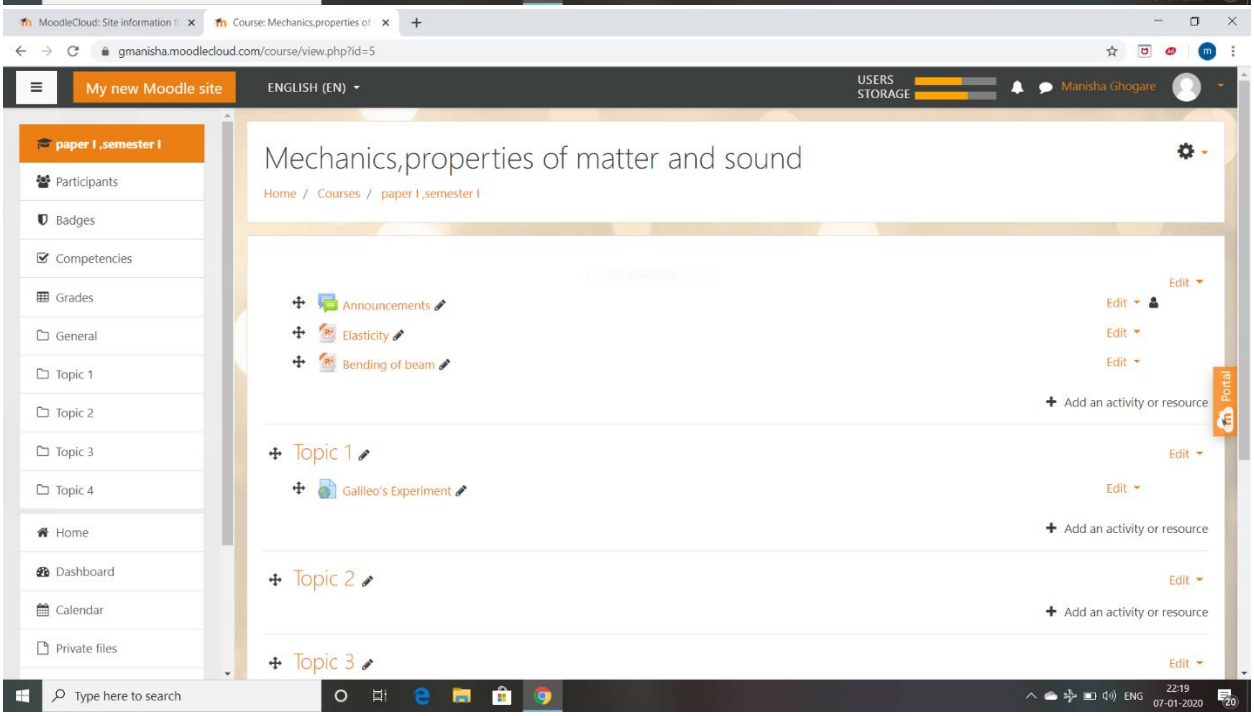
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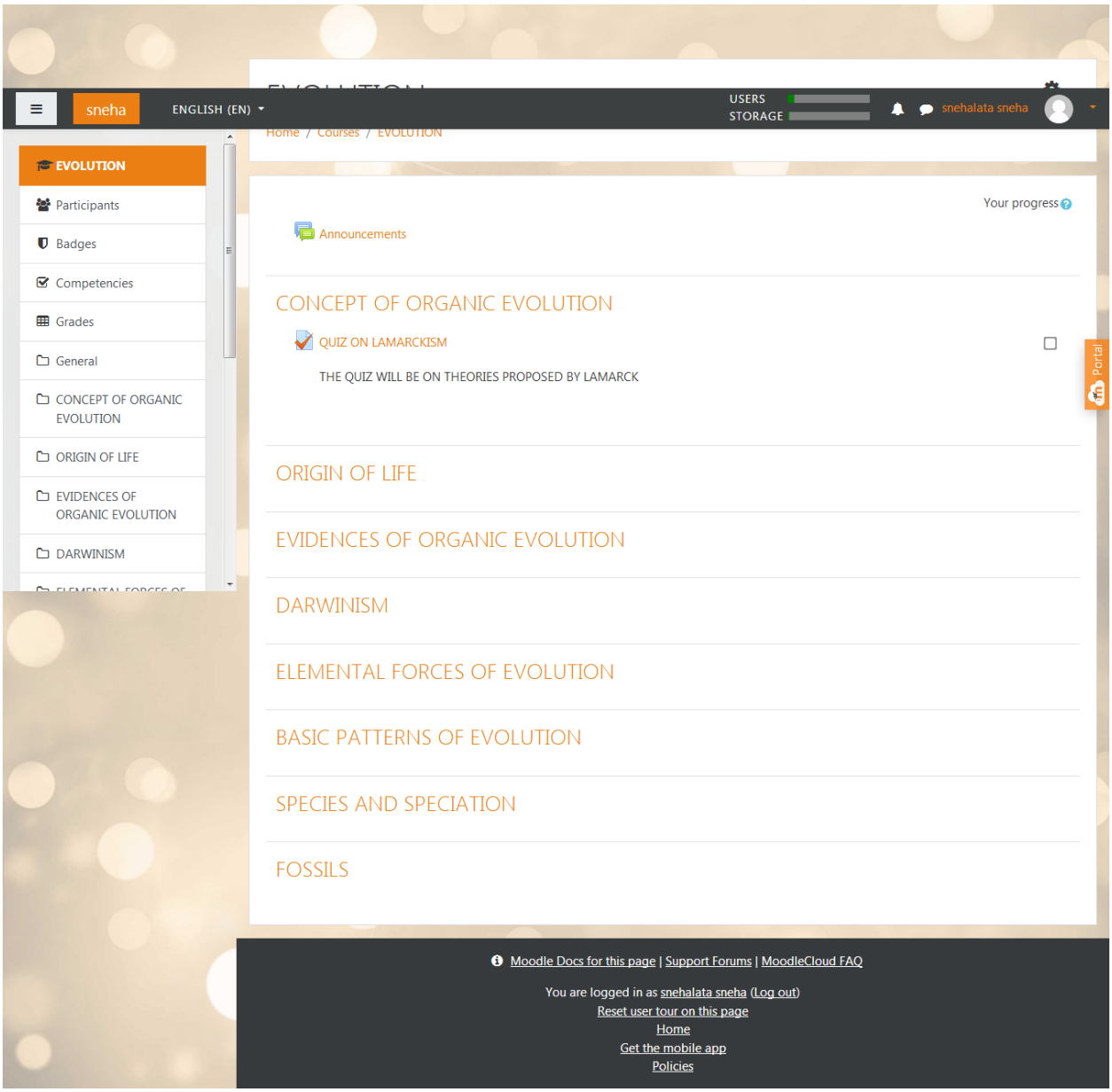
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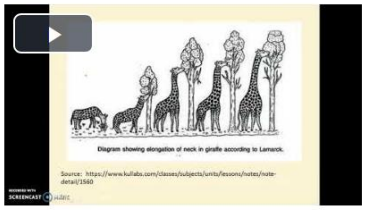

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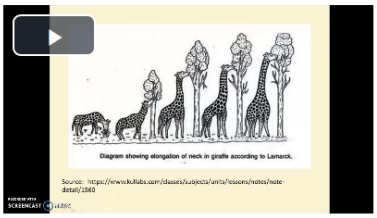

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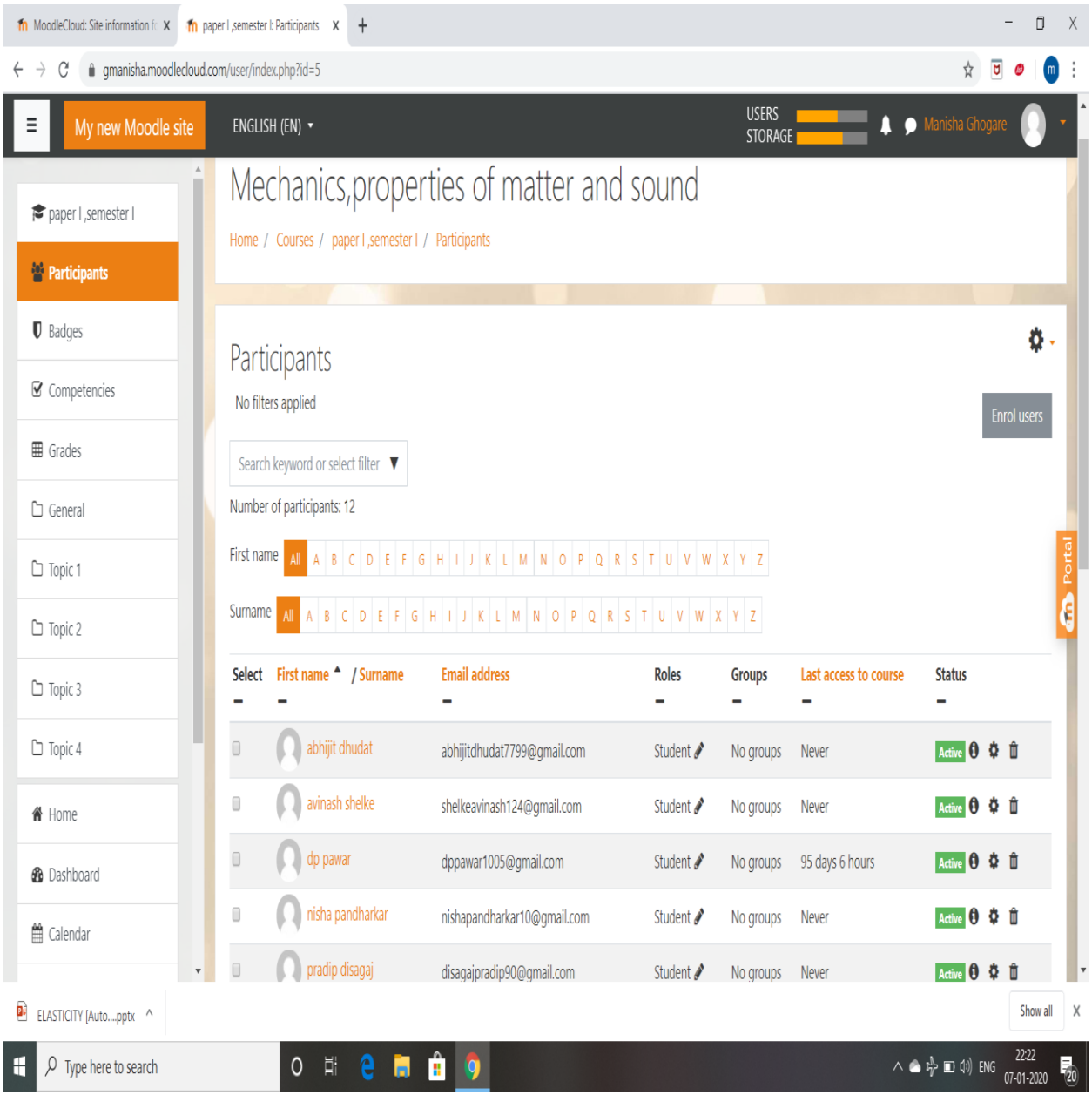
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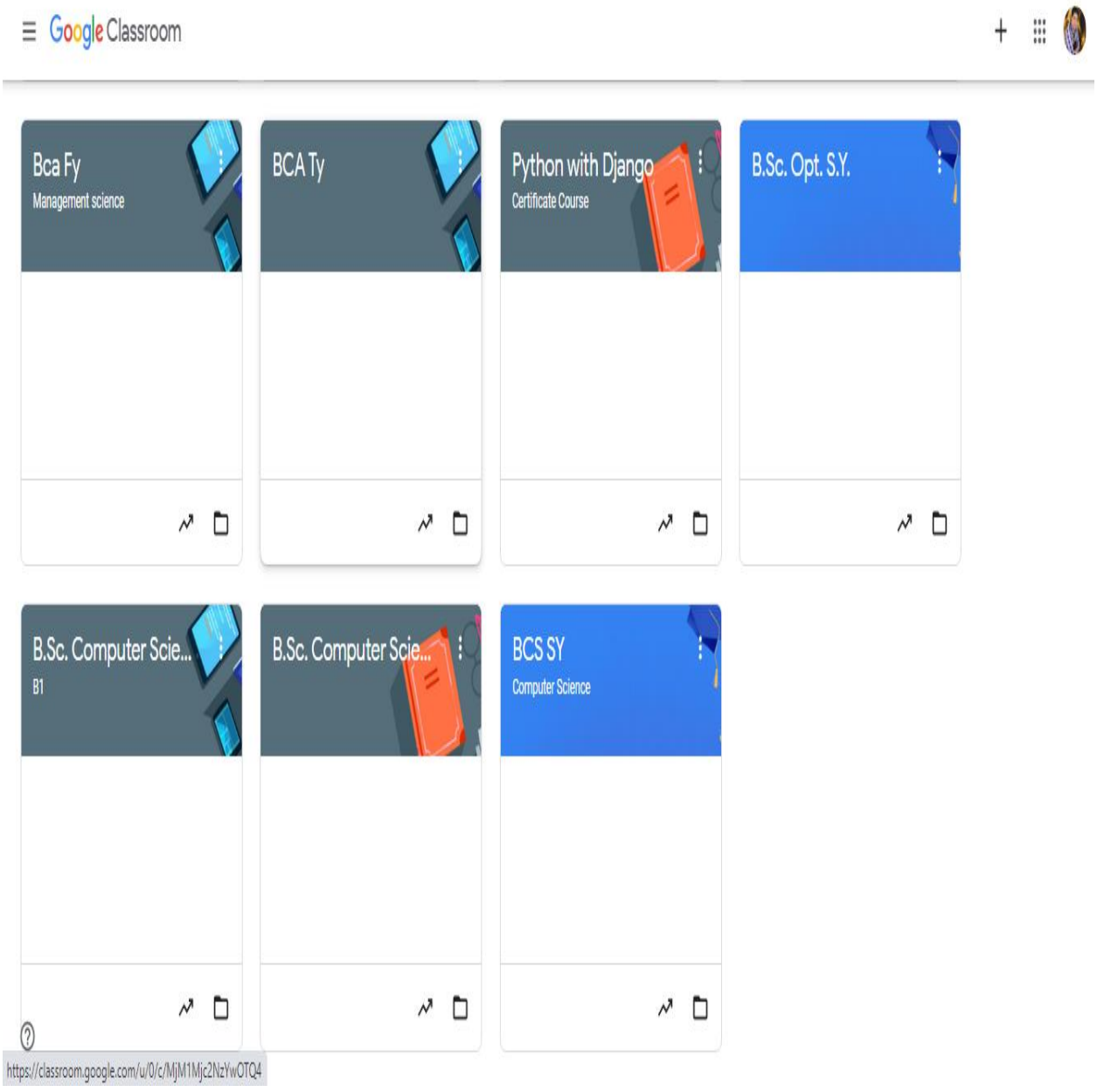

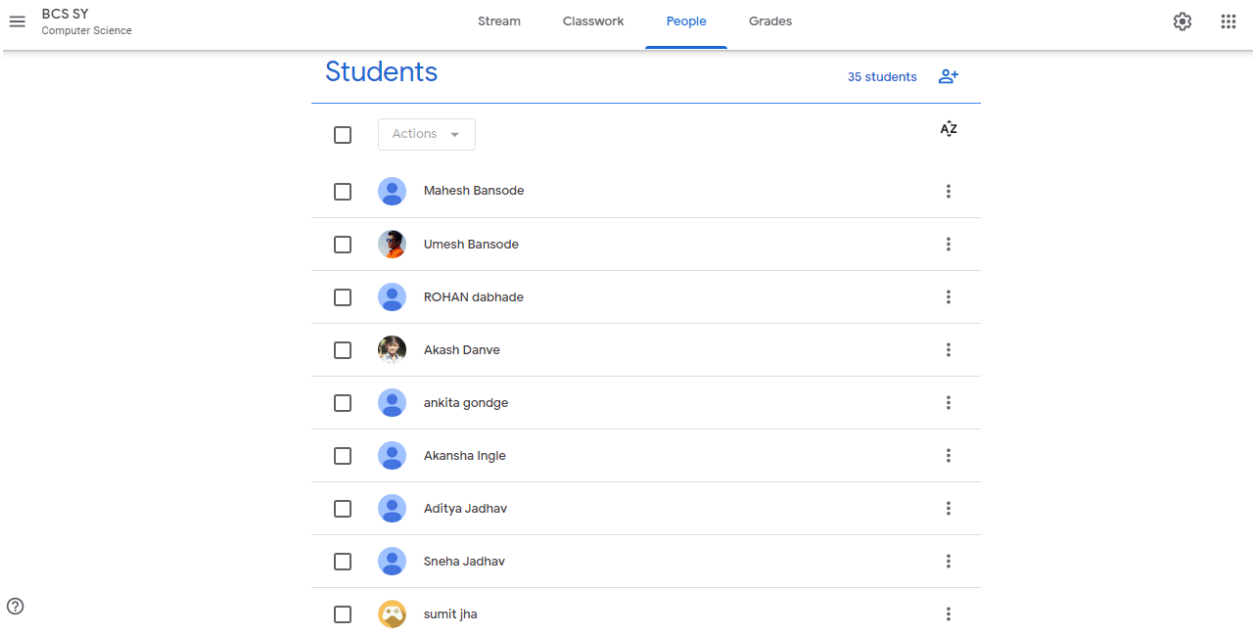
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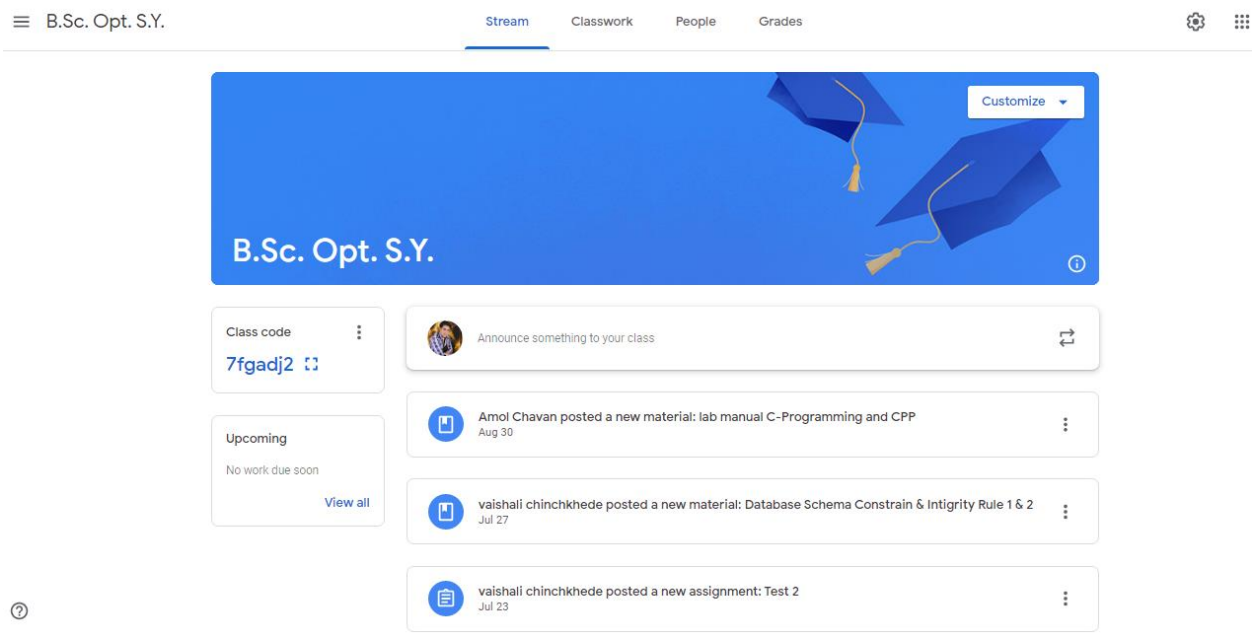
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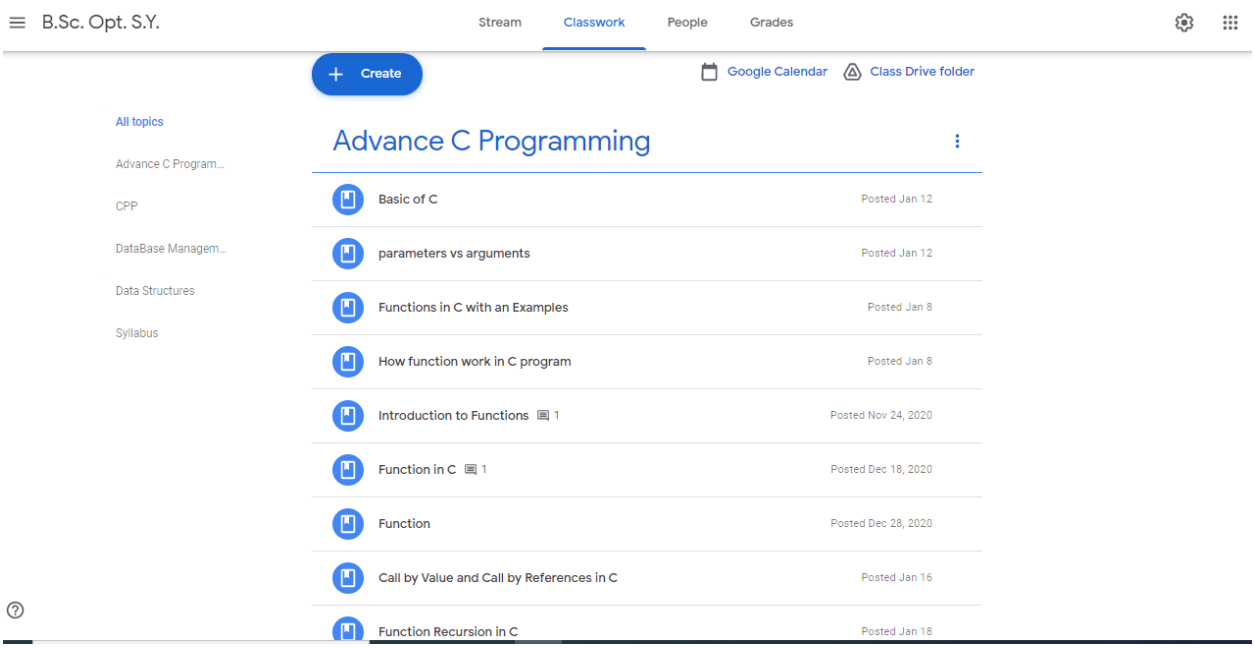
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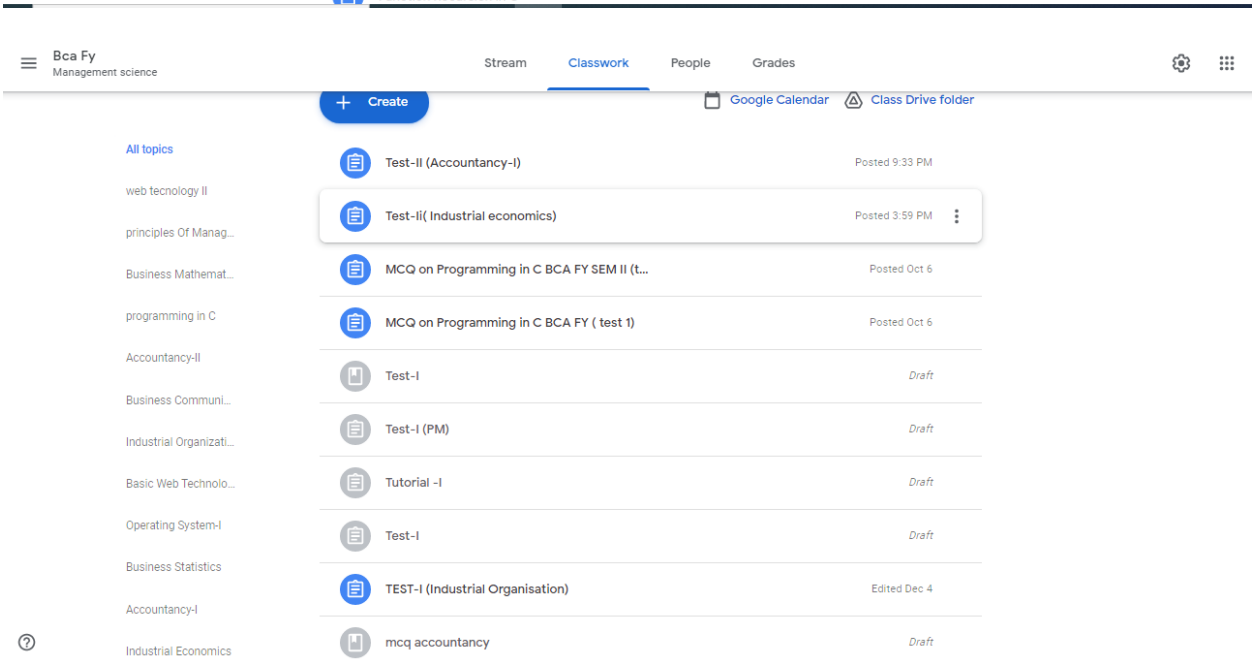
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MCQ on Programming in C BCA FY SEM II (t...
Posted Oct 6
MCQ on Programming in C BCA FY (test 1)
Posted Oct 6
Test-I
Draft
Test-I (PM)
Draft
Tutorial -I
Draft
Test-I
Draft
TEST-I (Industrial Organisation)
Edited Dec 4
mcq accountancy
Draft

Bca Fy
Management science

Stream | Classwork | People | Grades

Class code
piz47r4

Upcoming
No work due soon
View all

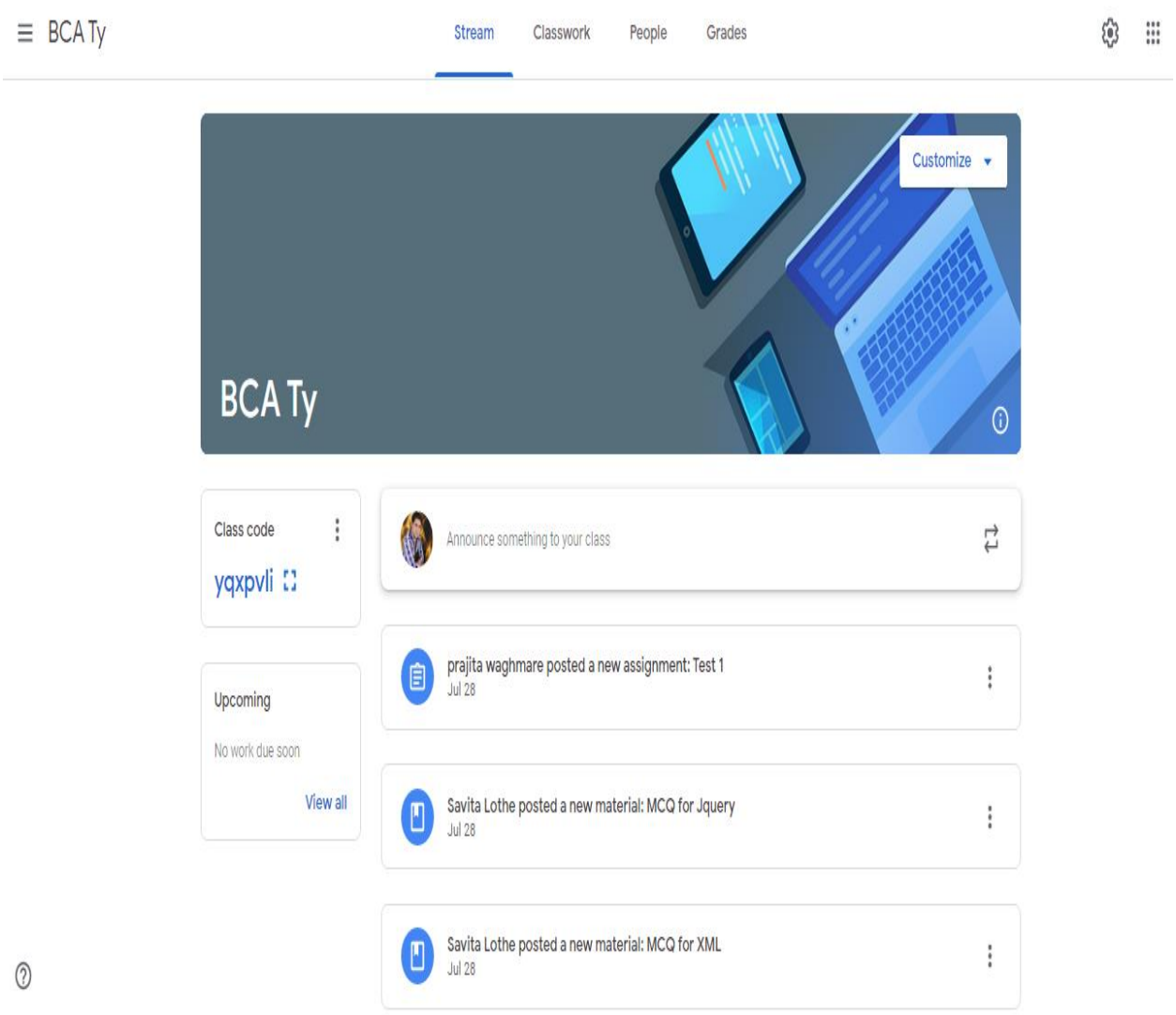
Announce something to your class

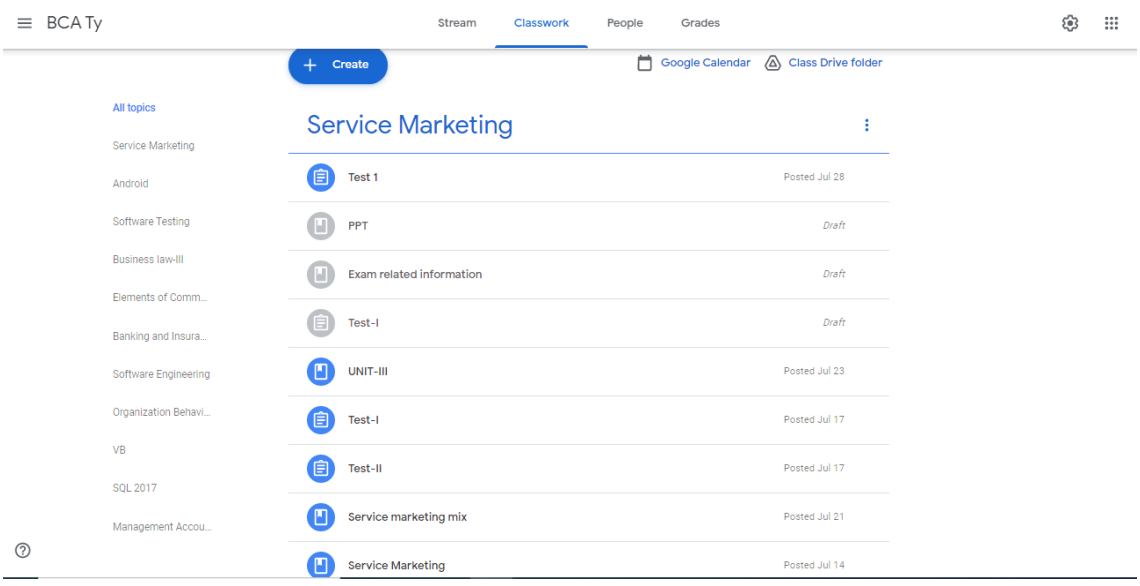
Renuka Mahadane posted a new assignment: Test-I(Industrial economics)
3:59 PM

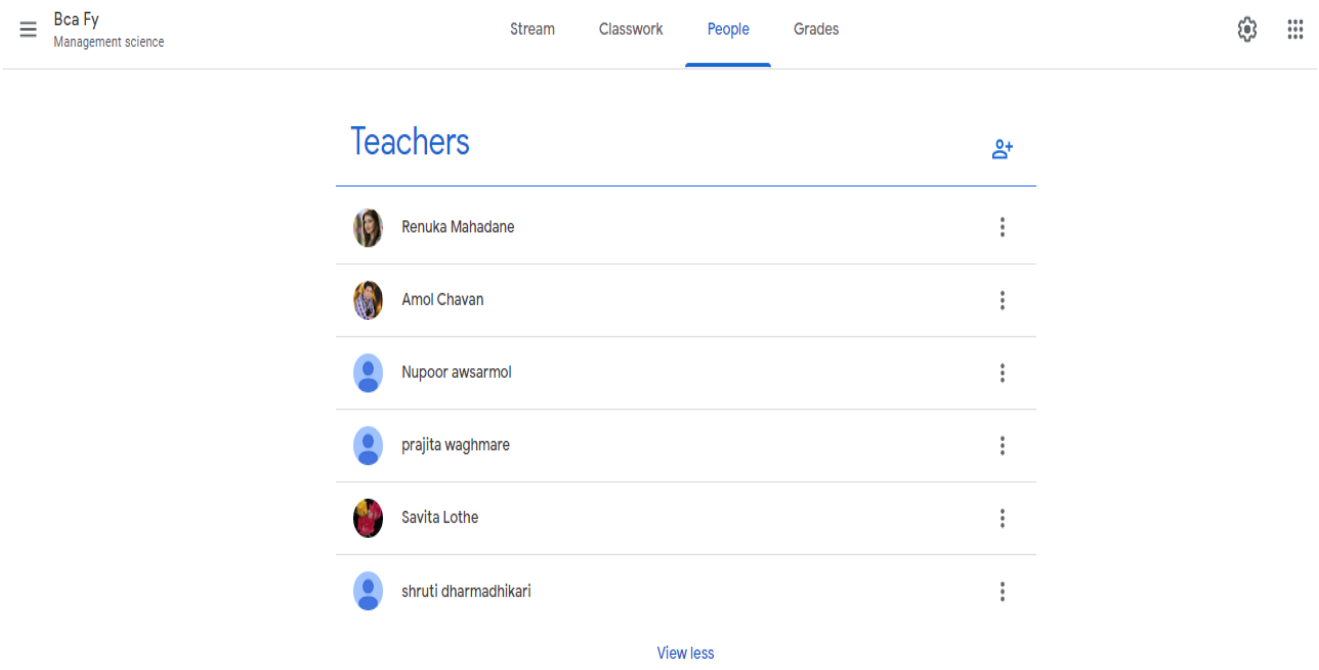
Renuka Mahadane posted a new assignment: Test-I (Industrial Economics)
Yesterday

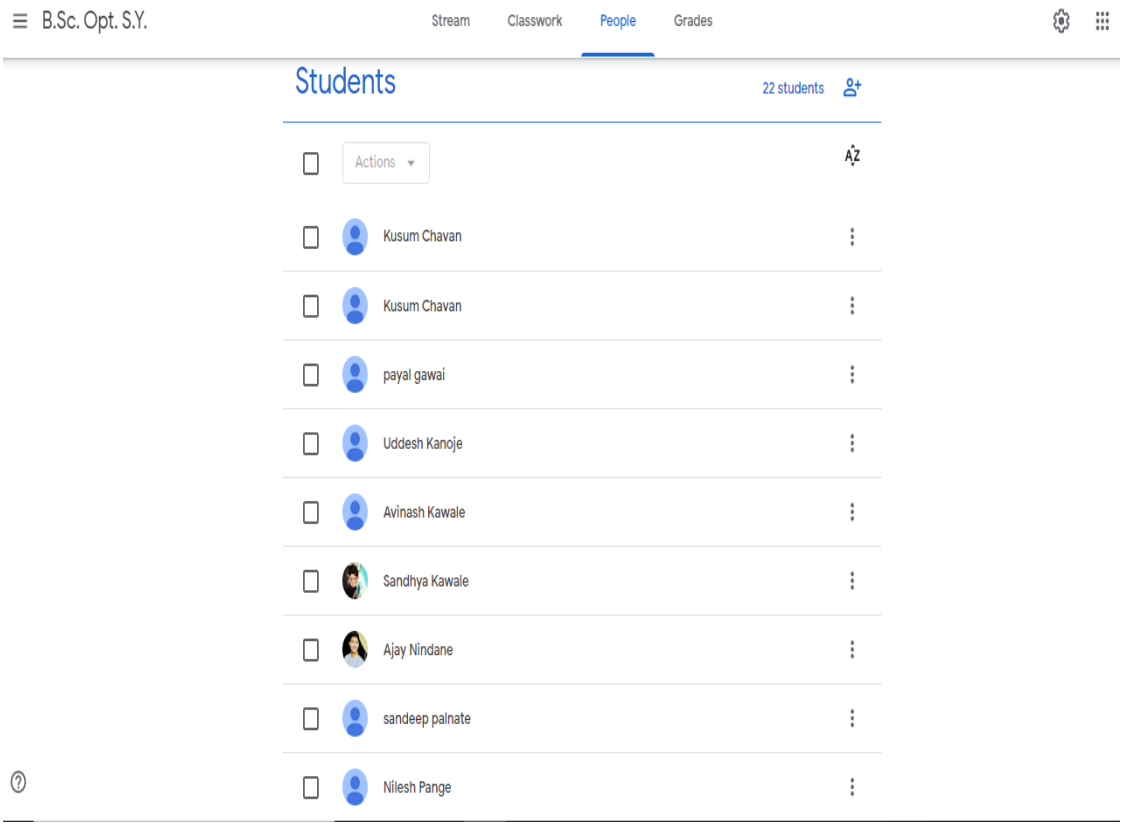
Renuka Mahadane posted a new assignment: Test-II(accountancy-I)
Yesterday

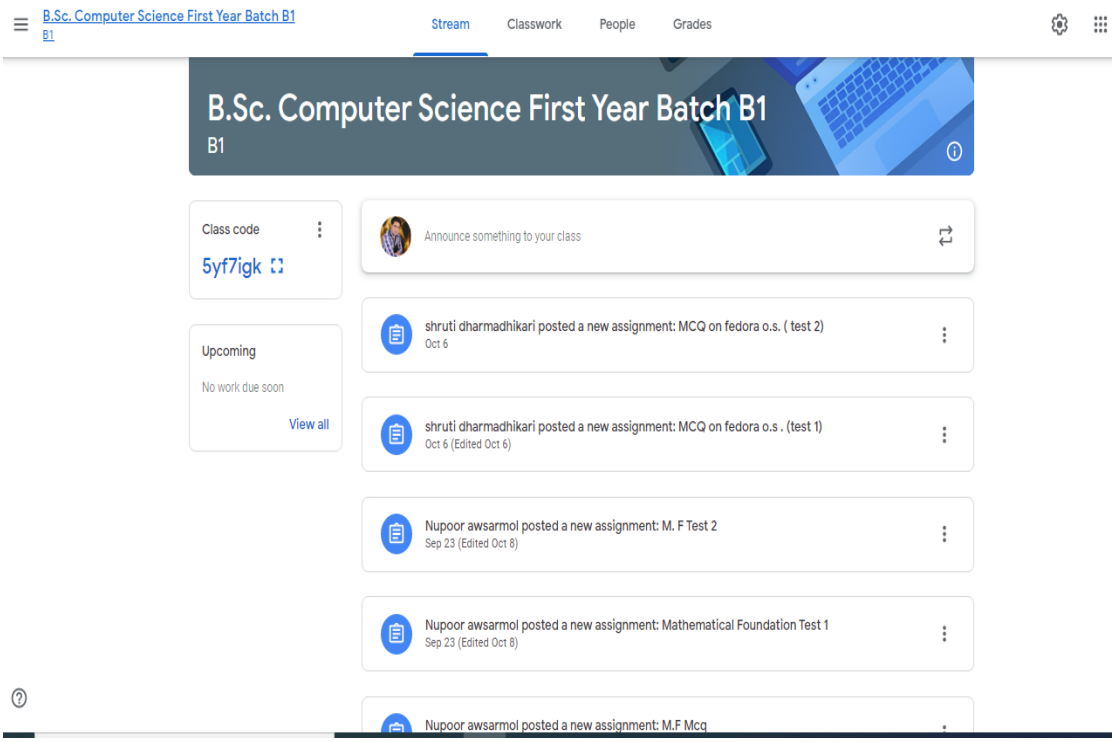
Renuka Mahadane posted a new assignment: Test-I(Accountancy-I)
Dec 6

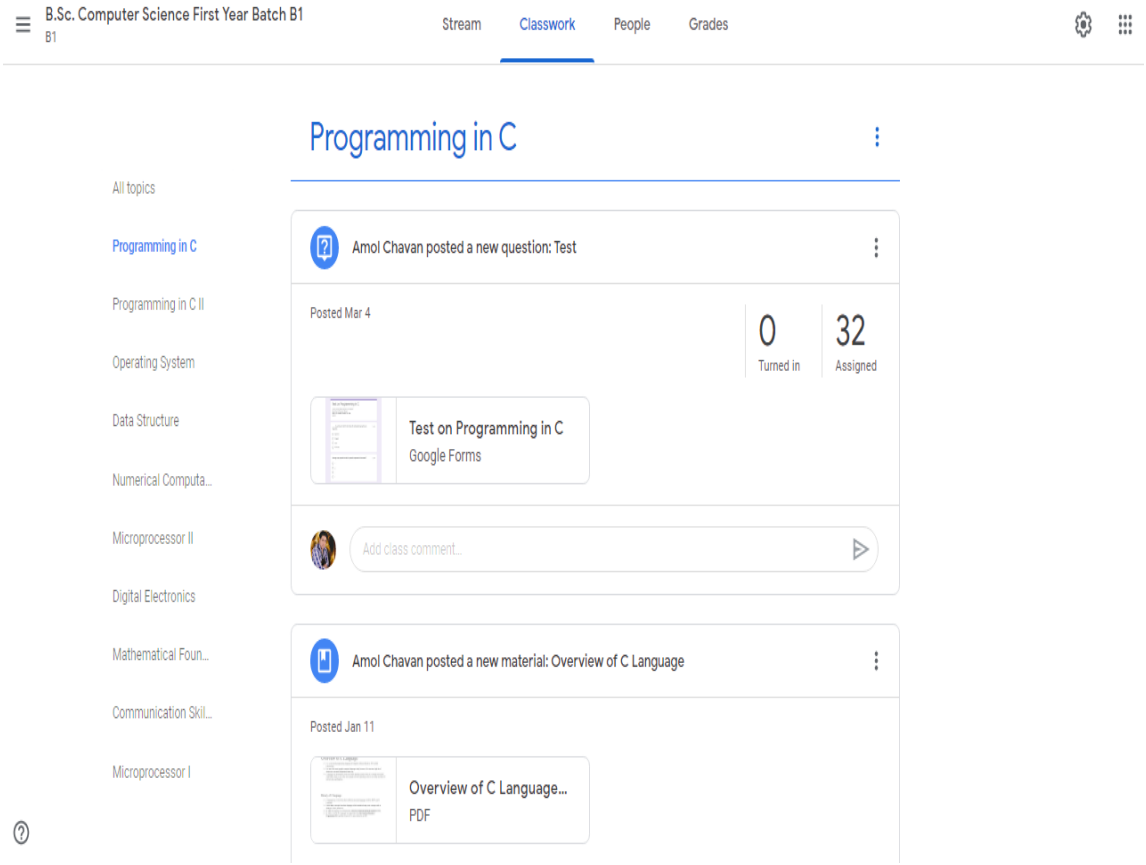

BCA Ty
Stream
Classwork
People
Grades
Customize
BCA Ty
Class code
yqxpvli
Announce something to your class
Upcoming
No work due soon
View all
prajita waghmare posted a new assignment: Test 1
Jul 28
Savita Lothe posted a new material: MCQ for Jquery
Jul 28
Savita Lothe posted a new material: MCQ for XML
Jul 28

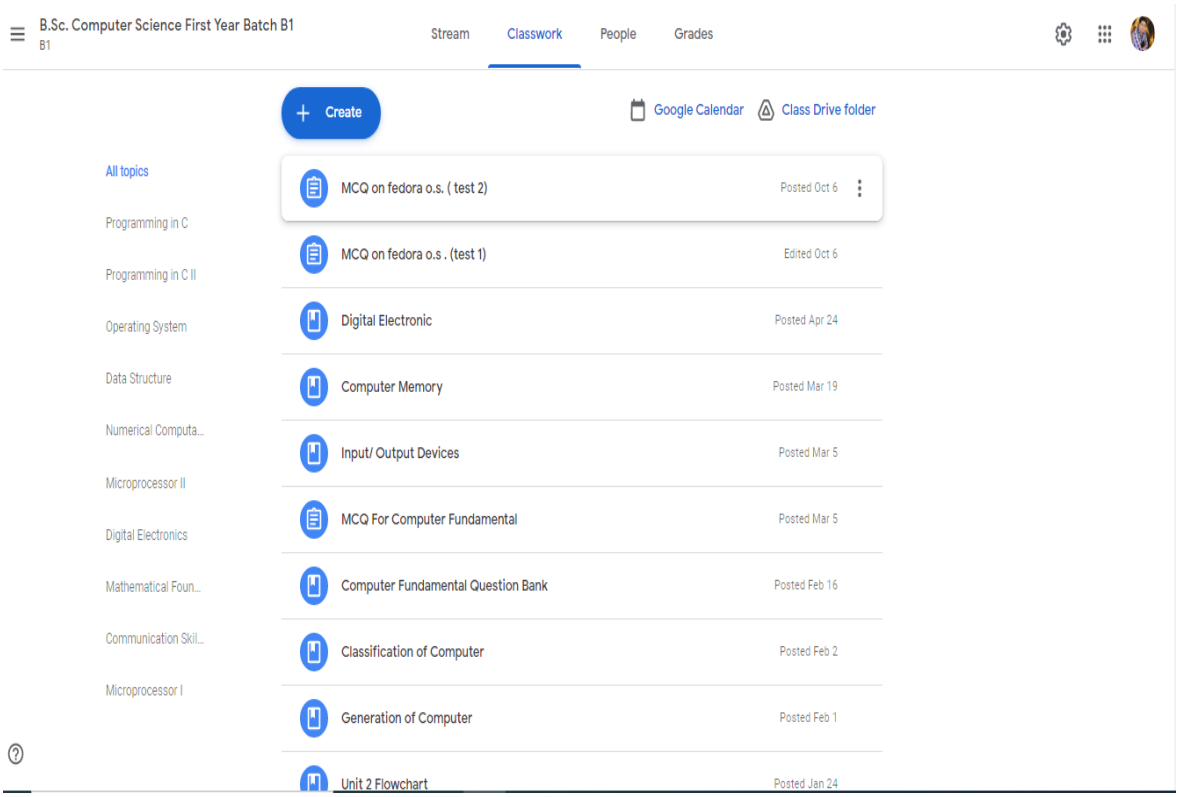

BCA Ty
Stream
Classwork
People
Grades
Create
Google Calendar
Class Drive folder
All topics
Service Marketing
Android
Software Testing
Business law-III
Elements of Comm...
Banking and Insura...
Software Engineering
Organization Behavi...
VB
SQL 2017
Management Accou...
Service Marketing
Test 1
Posted Jul 28
PPT
Draft
Exam related information
Draft
Test-I
Draft
UNIT-III
Posted Jul 23
Test-I
Posted Jul 17
Test-II
Posted Jul 17
Service marketing mix
Posted Jul 21
Service Marketing
Posted Jul 14

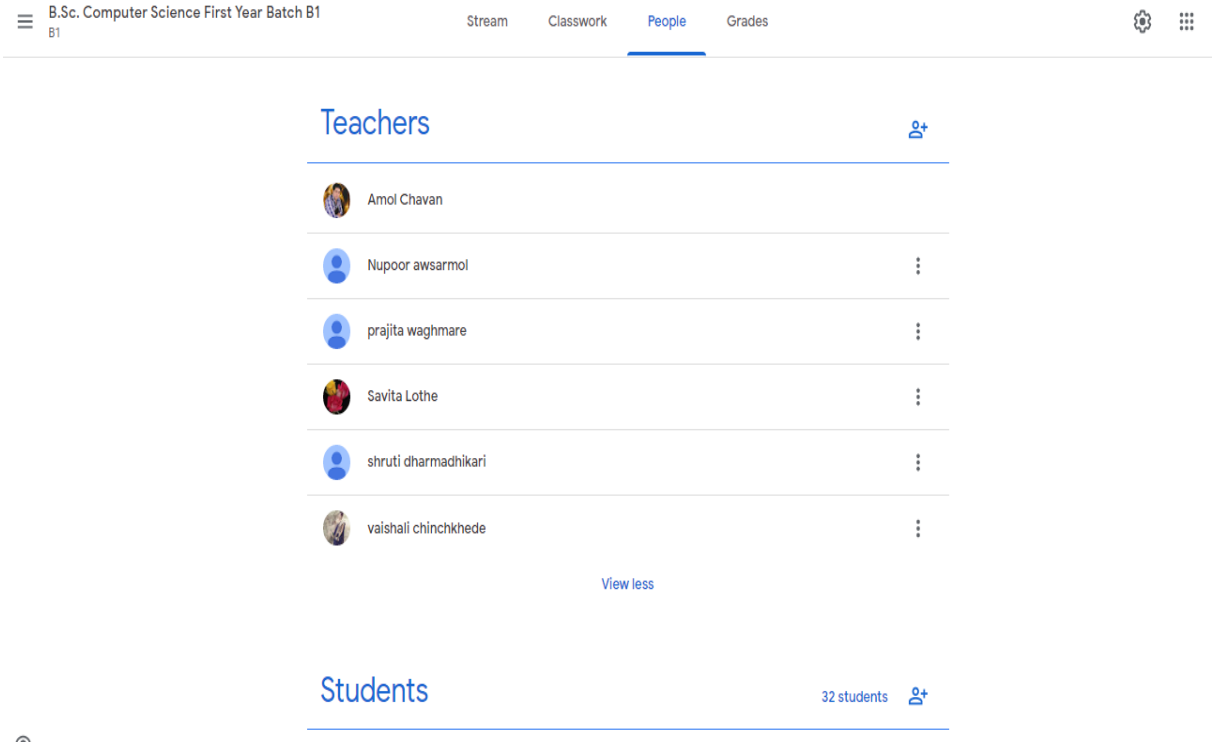

Bca Fy
Management science
Stream
Classwork
People
Grades
Teachers
Renuka Mahadane
Amol Chavan
Nupoor awsarmol
prajita waghmare
Savita Lothe
shruti dharmadhikari
View less


B.Sc. Opt. S.Y.
Stream
Classwork
People
Grades
Students
22 students
Actions
Kusum Chavan
Kusum Chavan
payal gawai
Uddesh Kanoje
Avinash Kawale
Sandhya Kawale
Ajay Nindane
sandeep palnate
Nilesh Pange


B.Sc. Computer Science First Year Batch B1
B1
Stream
Classwork
People
Grades
B.Sc. Computer Science First Year Batch B1
B1
Class code
5yf7igk
Upcoming
No work due soon
View all
Announce something to your class
shruti dharmadhikari posted a new assignment: MCQ on fedora o.s. (test 2)
Oct 6
shruti dharmadhikari posted a new assignment: MCQ on fedora o.s . (test 1)
Oct 6 (Edited Oct 6)
Nupoor awsarmol posted a new assignment: M. F Test 2
Sep 23 (Edited Oct 8)
Nupoor awsarmol posted a new assignment: Mathematical Foundation Test 1
Sep 23 (Edited Oct 8)
Nupoor awsarmol posted a new assignment: M.F Mcq


B.Sc. Computer Science First Year Batch B1
B1
Stream
Classwork
People
Grades
Programming in C
All topics
Programming in C
Programming in C II
Operating System
Data Structure
Numerical Computa...
Microprocessor II
Digital Electronics
Mathematical Foun...
Communication Skil...
Microprocessor I
Amol Chavan posted a new question: Test
Posted Mar 4
0
Turned in
32
Assigned
Test on Programming in C
Google Forms
Add class comment...
Amol Chavan posted a new material: Overview of C Language
Posted Jan 11
Overview of C Language...
PDF


B.Sc. Computer Science First Year Batch B1
B1
Stream
Classwork
People
Grades
Create
Google Calendar
Class Drive folder
All topics
Programming in C
Programming in C II
Operating System
Data Structure
Numerical Computa...
Microprocessor II
Digital Electronics
Mathematical Foun...
Communication Skil...
Microprocessor I
MCQ on fedora o.s. (test 2) Posted Oct 6
MCQ on fedora o.s . (test 1) Edited Oct 6
Digital Electronic Posted Apr 24
Computer Memory Posted Mar 19
Input/ Output Devices Posted Mar 5
MCQ For Computer Fundamental Posted Mar 5
Computer Fundamental Question Bank Posted Feb 16
Classification of Computer Posted Feb 2
Generation of Computer Posted Feb 1
Unit 2 Flowchart Posted Jan 24


B.Sc. Computer Science First Year Batch B1
B1
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People
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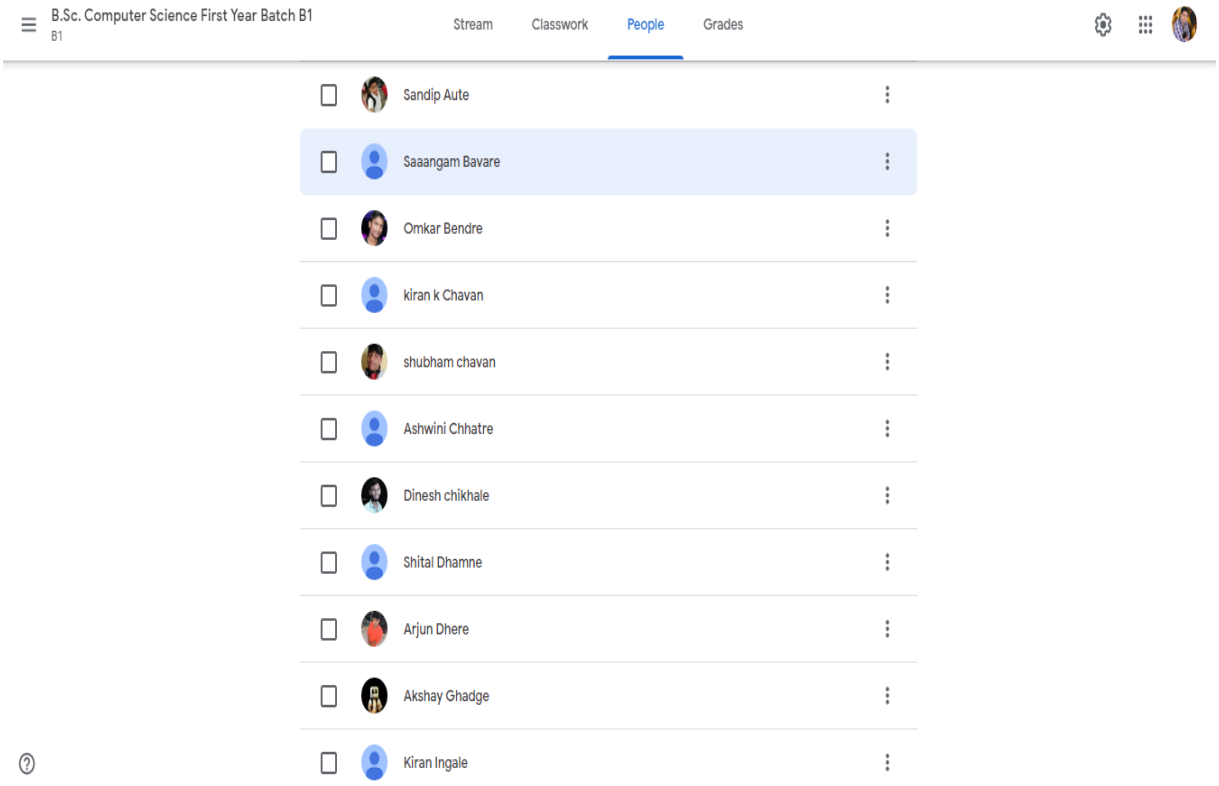
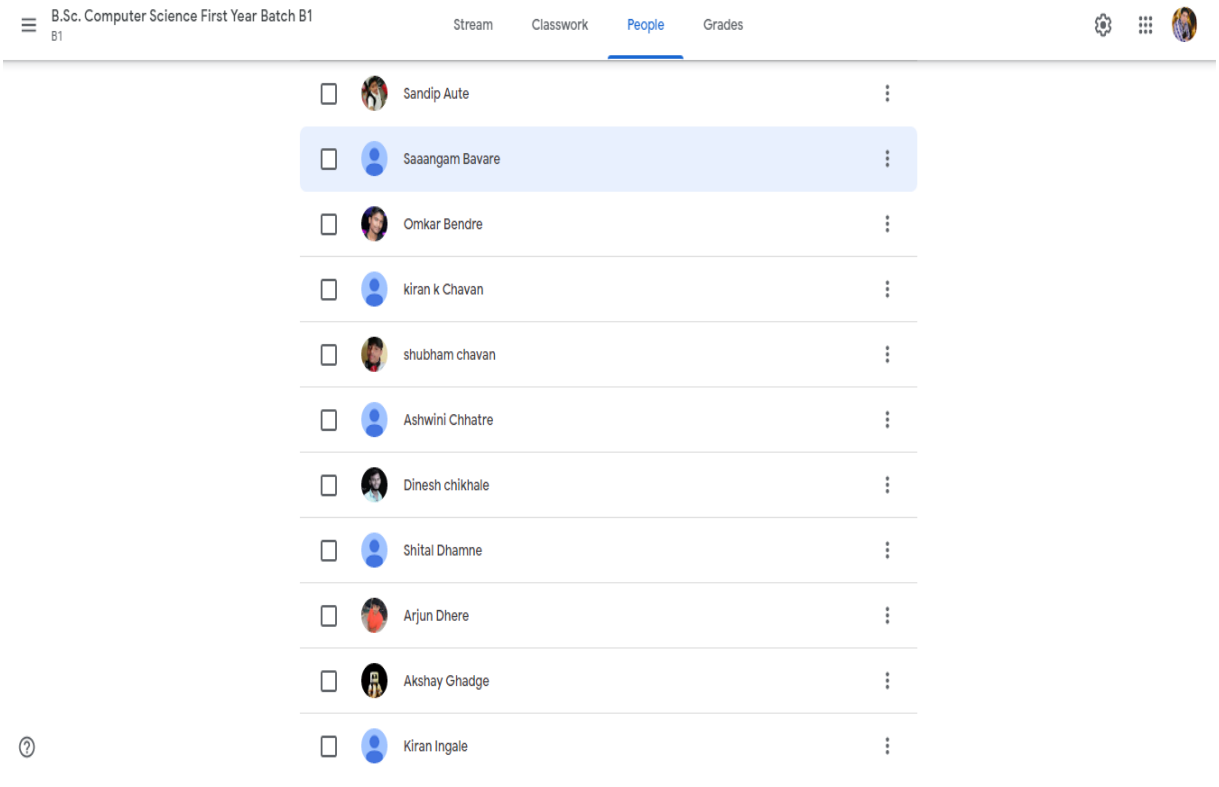
Teachers
Amol Chavan
Nupoor awsarmol
prajita waghmare
Savita Lothe
shruti dharmadhikari
vaishali chinchkhede
View less
Students
32 students


B.Sc. Computer Science First Year Batch B1
B1
Stream
Classwork
People
Grades
Sandip Aute
Saaangam Bavare
Omkar Bendre
kiran k Chavan
shubham chavan
Ashwini Chhatre
Dinesh chikhale
Shital Dhamne
Arjun Dhere
Akshay Ghadge
Kiran Ingale


B.Sc. Computer Science First Year Batch B1
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Saaangam Bavare
Omkar Bendre
kiran k Chavan
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Arjun Dhere
Akshay Ghadge
Kiran Ingale