



**REVISED**

**M.Sc. 4<sup>th</sup> Sem.(CBCS) SUMMER, 2023**  
**(410 To 428 & 431 )**

**RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY**  
**M.Sc. 4Th SEMESTER (CBCS) EXAMINATION OF SUMMER, 2023**

**=: PROGRAMME ( WRITTEN ) :=**

**TIME : - 2.30. P.M. To 5.30. P.M.**

Sr. No	Subject	Day Date Paper	Saturday 10-06-2023 I	Tuesday 13-06-2023 II	Thursday 15-06-2023 III	Saturday 17-06-2023 IV
1.	Physics		Nuclear and Particle Physics	Solid State Physics	<b>Core Elective</b> 1. Materials Science – II 2. X-rays – II 3. Nanoscience and Nanotechnology – II 4. Atomic and Molecular Physics– II 5. Applied Electronics – II 6. Methods of Theoretical Physics –II 7. Nonlinear Dynamics-II	<b>FOR FOUNDATION COURSE OPTIONAL – AS PER ENCLOSED LIST OF FOUNDATION COURSES OF 42 SUBJECTS</b> Spectroscopic Application <b>OR</b> Optics and Optical Instruments <b>Subject Centric Core</b> 1. Nonlinear Geophysics 2. Experimental Techniques In Physics 3. Communication Electronics 4. Electro Acoustics
2.	Chemistry		Special I – Inorganic / Organic / Physical / Analytical	Special II – Inorganic / Organic / Physical / Analytical	Elective –Nuclear / Environmental / Polymer / Medicinal	<b>FOR FOUNDATION COURSE OPTIONAL – AS PER ENCLOSED LIST OF FOUNDATION COURSES OF 42 SUBJECTS</b> Applied Anal. Chemistry-II <b>Core Subject Centric- Spectroscopy-II</b>
3.	Bio-Chemistry		Advanced Clinical Biochemistry	Advanced Immunology	<b>Elective</b> A) Toxicology (Clinical Research) <b>OR</b> B) Nutrition (Applied Nutritional Biochemistry)	<b>FOR FOUNDATION COURSE OPTIONAL – AS PER ENCLOSED LIST OF FOUNDATION COURSES OF 42 SUBJECTS</b> Enzymology <b>Core Subject Centric</b> Bioresearch Techniques II
4.	Microbiology		Virology(VIR)	Microbial Fermentation Technology (MFT)	<b>Elective :- Any One Of The Following</b> 1) Microbial Diversity, Evolution and Ecology (MDEE) 2) Bioinformatics (BIF)	<b>FOR FOUNDATION COURSE OPTIONAL – AS PER ENCLOSED LIST OF FOUNDATION COURSES OF 42 SUBJECTS</b> 1. Advance Microbiology <b>Core Subject Centric</b> Vaccines And Delivery System
5.	Botany		Cell and Molecular Biology-II	Plant Biotechnology and Plant Breeding	<b>Elective</b> 1) Molecular Biology and Plant Biotechnology 2) Reproductive Biology of Angiosperms 3) Advanced Psychology and Hydrobiology 4) Mycology and Plant Pathology 5) Palaeobotany 6) Palynology 7) Plant Physiology	<b>FOR FOUNDATION COURSE OPTIONAL – AS PER ENCLOSED LIST OF FOUNDATION COURSES OF 42 SUBJECTS</b> 1) Applied Botany <b>Core Subject Centric- Plant Resources</b>

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6.	Zoology	Biotechnique, Biostatistics ,Ethology,Toxicology and Bioinformatics	<b>Special Group – Paper – II Elective</b> Entomology Fish and Fisheries Mammalian Reproductive Physiology (MRP) Animal Physiology Cell Biology Fresh Water Zoology Aquaculture Environmental Biology Sericulture	<b>Special Group – Paper – III Elective</b> Entomology Fish and Fisheries Mammalian Reproductive Physiology(MRP) Animal Physiology Cell Biology Fresh Water Zoology Aquaculture Environmental Biology Sericulture	<b>FOR FOUNDATION COURSE OPTIONAL – AS PER ENCLOSED LIST OF FOUNDATION COURSES OF 42 SUBJECTS</b> Applied Zoology Applied and Industrial Entomology Applied Fresh Water Fisheries Applied Human Physiology <b>Core Subject Centric -2</b> Chronobiology & Radiation Biology	
7.	Environmental Science	Air and Noise Pollution Control Technology	Solid and Hazardous Waste Management	<b>Elective - I</b> Environment Impact Assessment and Legislation <b>Elective –II</b> Environmental Management	<b>FOR FOUNDATION COURSE OPTIONAL – AS PER ENCLOSED LIST OF FOUNDATION COURSES OF 42 SUBJECTS</b> Fundamentals of Environmental Science-II <b>OR</b> <b>Core Subject Centric</b> Disaster Management	
8.	Statistics	Multivariate Analysis	Computational Statistics	<b>Elective</b> Operation Research (OLD) Reliability Theory Data Mining Time Series Analysis Industrial Statistics (NEW)	<b>FOR FOUNDATION COURSE OPTIONAL – AS PER ENCLOSED LIST OF FOUNDATION COURSES OF 42 SUBJECTS</b> Applied Statistics Bio-Statistics <b>Core Subject Centric</b> Industrial Statistics (OLD) Actuarial Statistics Stochastic Models In Finance Statistical Pattern Recognition Operation Research (NEW)	
09.	Mathematics	Dynamical Systems	Partial Differential Equations	Advanced Numerical Methods	<b>FOR FOUNDATION COURSE OPTIONAL – AS PER ENCLOSED LIST OF FOUNDATION COURSES OF 42 SUBJECTS</b> 1. Elementary Discrete Mathematics - I 2. Fuzzy Mathematics II (Old Course) 3. Linear Programming (Old Course) <b>Core (Subject Centric) .Operations Research II</b> <b>Paper V:- Tuesday, 20-06-2023</b> <b>Core Elective Paper (opt any one of the following)</b> 1. Fluid Dynamics – II 2. Cosmology 3. Cryptography 4. Operator theory 5. Algebraic Topology-II	
10.	Electronics	Electromagnetic Fields and Antennas	Digital Communications	<b>Elective</b> 1. Microwave and Optical Communication 2. Computer Communication	<b>FOR FOUNDATION COURSE OPTIONAL – AS PER ENCLOSED LIST OF FOUNDATION COURSES OF 42 SUBJECTS : Pc and Pc Interfacing</b> <b>Core (Subject Centric)</b> Mobile and Satellite Communication	

Sr. No	Subject	Day Date Paper	Saturday 10-06-2023 I	Tuesday 13-06-2023 II	Thursday 15-06-2023 III	Saturday 17-06-2023 IV
11.	Computer Science	Data Mining	Artificial Intelligence & Expert System	<b>Elective</b> Design and Analysis of Algorithm Embedded System Pattern Recognition	<b>FOR FOUNDATION COURSE OPTIONAL – AS PER ENCLOSED LIST OF FOUNDATION COURSES OF 42 SUBJECTS</b> Advances in Information Technology Enterprise Resource Planning Supply Chain Management Total Quality Management Banking Operation And Services Information Security And Cyber Law <b>Subject Centric</b> 1. Parallel Computing 2. Mobile and Cyber Forensics	
12.	Molecular Biology and Genetic Engineering	Plant & Animal Tissue Culture	Recombinant DNA Technology-II	<b>Elective</b> A) Plant Genetic Engineering II B) Molecular Diagnostics Methods- II C) Bioinformatics and Datamining II	<b>FOR FOUNDATION COURSE OPTIONAL – AS PER ENCLOSED LIST OF FOUNDATION COURSES OF 42 SUBJECTS</b> Recombinant DNA Technology And Plant Genetic Engineering <b>Core Subject Centric</b> Applied Genetics	
13.	<b>M.Sc. Tech.</b> Applied Geology	Mineral Exploration (4)	Elements of Mining and Drilling Techniques(3+1)	Geomorphology, Remote Sensing and GIS(1+2+1)	Fuel Geology (Coal, Petroleum and Nuclear) (2+1+1)	
14.	Information Technology	Data Warehousing and Data Mining	Artificial Intelligence and Expert System	<b>Core Elective</b> 1. Design and Analysis of Algorithm 2. Cloud Computing 3. Mobile Computing	<b>FOR FOUNDATION COURSE OPTIONAL – AS PER ENCLOSED LIST OF FOUNDATION COURSES OF 42 SUBJECTS</b> 1. Advances in Information Technology 2. Banking Operations and Services 3. Information Security and Cyber Law <b>Core Subject Centric</b> 1. Enterprise Computing 2. Mobile and Cyber Forensics	
15.	Biotechnology	Animal Biotechnology	Biostatistics, Bioinformatics, Ethics & Patenting	<b>Elective</b> A) Industrial Biotechnology II <b>OR</b> B) Environmental Biotechnology II	<b>FOR FOUNDATION COURSE OPTIONAL – AS PER ENCLOSED LIST OF FOUNDATION COURSES OF 42 SUBJECTS</b> Basic rDNA Technology <b>Core Subject Centric</b> Therapeutic Medical Biotechnology	
16	Geology	Ore Geology and Ore Microscopy (3+1)	Indian Mineral Deposits and Mineral Economics (3+1)	<b>Elective</b> 1. Exploration Geochemistry (4) 2. Quaternary Geology & Limnogeology(3+1) 3. Basin Analysis and Sequence Stratigraphy(2+2) 4. Marine Geology and Oceanography(2+2)	<b>FOR FOUNDATION COURSE OPTIONAL – AS PER ENCLOSED LIST OF FOUNDATION COURSES OF 42 SUBJECTS</b> Paleobiology <b>Core (Subject Centric)</b> Fuel Geology (Coal, Petroleum & Nuclear)	

Sr. No	Subject	Day Date Paper	Saturday 10-06-2023 I	Tuesday 13-06-2023 II	Thursday 15-06-2023 III	Saturday 17-06-2023 IV
17.	Forensic Science	Criminology and Forensic Law	<b>Special Paper-I</b> 1. Questioned Document Analysis-II 2. Forensic Anthropology and Odontology 3. Instrumentation 4. Steganography and Watermarking 5. Forensic Physics	<b>Special Paper-II</b> 1. Advanced Fingerprint Development Methods II 2. Microbial Forensics and Bioinformatics 3. Advanced Forensic Chemistry 4. Mobile and Smart Phone Forensics 5. Ballistics Modeling and Analysis	<b>FOR FOUNDATION COURSE OPTIONAL – AS PER ENCLOSED LIST OF FOUNDATION COURSES OF 42 SUBJECTS</b>  <b><u>Paper V :- Tuesday, 20-06-2023</u></b> <b>Special Paper-III</b> 1. Forgery and its Forensic Detection 2. DNA Fingerprinting 3. Advanced Forensic Toxicology 4. Biometrics 5. Weapon Systems and Ballistics Measurements  <b><u>Paper VI :- Thursday , 22-06-2023</u></b> <b>Special Paper-IV</b> 1. Automated Fingerprint Identification System 2. Wildlife and Environment Forensic 3. Pharmaceutical and Narcotic Drugs 4. Malware Forensics 5. Rocket Ballistics	
18.	Medicinal Plant	Herbal Drugs Technology & Development (HDD)	Drug Standardization and Regulation (DSR)	<b>Core Elective</b> Natural Plant Products & Photochemistry-II (NPP-II)  <b>OR</b> Forensic and Industrial Botany-II	<b>FOR FOUNDATION COURSE OPTIONAL – AS PER ENCLOSED LIST OF FOUNDATION COURSES OF 42 SUBJECTS</b> Ethnobotany (ETH) <b>OR</b> <b>Core Subject Centric</b> Cultivation and Utilization of Aromatic Plants	

**FOR FOUNDATION COURSE OPTIONAL – AS PER ENCLOSED LIST OF FOUNDATION COURSES OF 42 SUBJECTS**

Sr.No.	Subject	4 <sup>th</sup> Papers of Semester-4
1	Mathematics	Mathematics-II
2	Physics	Physics-II
3	Chemistry	Chemistry-II
4	Bio-Technology (Ad-hoc)	Bio-Technology-II
5	Computer Science	Computer Science-II
6	Environmental Science	Environmental Science-II
7	Botany	Botany-II
8	Zoology	Zoology-II
9	Statistic	Statistics-II
10	Business Management	Business Management -II
11	Accountancy	Account & Statistics-II
12	Managerial Skill	Managerial Skills-II

13	Education Technology & Management Skills	Education Technology & Management Skills-II
14	Communication Skill	Communication Skills-II
15	Sanskrit	Sanskrit-II
16	German	German-II
17	French	French-II
18	Law	Law-II
19	Pharmaceutical Sciences	Pharmaceutical Sciences-II
20	Life skills	Life Skills-II
21	Economics	Economics-II
22	Political Science	Political Science-II
23	Sociology	Sociology-II
24	Psychology	Psychology-II
25	Philosophy	Philosophy-II
26	History	History-II
27	Public Admn	Public Admn -II
28	Buddhist Studies	Buddhist Studies-II
29	Gandhian Thought	Gandhian Thought-II
30	Dr. Ambedkar Thought	Dr. Ambedkar Thought-II
31	Rashtrasant Tukdoji Maharaj Thought	Rashtrasant Tukdoji Maharaj Thought-II
32	Travel & Tourism	Travel & Tourism-II
33	Personality Development	Personality Development-II
34	Cosmetic Technology	Cosmetic Technology-II
35	Hospitality Management	Hospitality Mgt. –II
36	Chemical Engineering	Chemical Engineering-II
37	Chemical Technology	Chemical Technology-II
38	Civil Engineering	Civil Engineering-II
39	Electrical Engineering	Electrical Engineering-II
40	Mechanical Engineering	Mechanical Engineering-II
41	Electronics Engineering	Electronics Engineering-II
42	Pali Prakrit	Pali Prakrit-II

**M.Sc. 6<sup>TH</sup> SEMESTER(CBCS) EXAMINATION OF SUMMER, 2023**  
**=: PROGRAMME ( WRITTEN ) :=**

**TIME : - 9.30. A.M. To 12.30. P.M.**

Sr. No	Subject	Day Date Paper	Saturday 10-06-2023 I	Tuesday 13-06-2023 II	Thursday 15-06-2023 III	Saturday 17-06-2023 IV
1.	M.Sc. (Tech.) Applied Geology	Engineering Geology and Geotechniques.		Applied and Industrial Micropaleontology .	<b>Core Elective 2. Optional Any One</b> 1. Petroleum Exploration 2. Basin Analysis and Sequence Stratigraphy 3. Marine Geology and Oceanography	<b>Foundation Course 2.</b> Geology 2 ; Paleobiology <b>OR</b> <b>Core Subject Centric 2</b> 1) Geodesy and Mapping

**GENERAL INSTRUCTIONS FOR SEATING ARRANGEMENT**

The name of the College Centre is already printed on the Admission Card of each candidate. However, it is notified for general information of the candidates that :-

The seating arrangement for the Centre will be notified separately seven days prior to the commencement of the written examination at the respective College / Centre. The candidates concerned will also be able to get the necessary information from that chart of seating arrangement sent to the concerned College by University.

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**Nagpur**

**Date: 8<sup>th</sup> May 2023**  
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**Sd/-**  
**Director**  
**Board Of Examination & Evaluation**  
**Rashtrasant Tukadoji Maharaj**  
**Nagpur University**