RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR

NOTIFICATION

No. Acad/215. Date : 15th June, 2015

To,

The Principal
of all the affiliated Science Colleges
of Rashtrasant Tukadoji Maharaj
Nagpur University, Nagpur

Subject:- Direction No. 10 of 2015.

Sir/Madam,

I am forwarding herewith a copy of the Direction No. 10 of 2015 issued by the Hon'ble Vice-Chancellor under Section 14(8) of Maharashtra Universities Act, 1994 **"DIRECTION RELATING TO THE EXAMINATION LEADING TO THE DEGREE OF MASTER OF SCIENCE, SEMESTER PATTERN (CHOICE BASED CREDIT SYSTEM) AND DEGREE OF MASTER OF SCIENCE AND TECHNOLOGY (APPLIED GEOLOGY). SEMESTER PATTERN, (CHOICE BASED CREDIT SYSTEM) "**along with the examination scheme and Syllabi to be implemented from Academic Session **2015-2016**.

You are requested to kindly bring it to the notice of all teachers and students of your college.

Thanking you,

Direction and Syllabi available on the Rashtrasant Tukadoji Maharaj Nagpur University.

(www.nagpur university. org.)

Yours faithfully,

Encl: As above.

Sd/-
(Puran Meshram)
Registrar,
Rashtrasant Tukadoji Maharaj
Nagpur University, Nagpur.

No. Acad/-- Nagpur dated the 15th June, 2015

Copy for information and necessary action along with the Direction , Examination Scheme and Syllabi as mentioned above to :-

1) The Dean Faculty of Science, Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur.
2) The Controller of Examinations, Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur
3) The Director, B.C.U.D., Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur
4) The Deputy Registrar (Examinations) Rashtrasant Tukadoji Maharaj Nagpur University,
5) The Deputy Registrar (Coll. Sec.) Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur
6) The Asstt. Registrar (Prof. Exam.), Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur
7) The Asstt. Registrar (Conf.), Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur.

8) The Asstt. Registrar (Exams & Enqury.), Rashtrasant Tukadoji Maharaj Nagpur University,
9) The Officer-in-Charge, Publication Section, R.T.M. Nagpur University, Nagpur.
10) The Asstt. Registrar, Ordinance Section, R.T.M. Nagpur University, Nagpur
11) The P. A. to the Hon'ble Vice-Chancellor, R.T.M. Nagpur University, Nagpur
12) The P. A. to the Hon'ble Pro-Vice-Chancellor, R.T.M. Nagpur University, Nagpur
13) The P. A. to the Registar, R.T.M. Nagpur University, Nagpur
14) Mrs. Veena Prakashe, Information Scientist, R.T.M. Nagpur University, Nagpur

Sd/-
(Manish Zodpey)
Deputy Registrar(Acad.
Rashtrasant Tukadoji Maharaj
Nagpur University, Nagpur.

RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR
FACULTY OF SCIENCE
DIERCTION NO. _10 OF 2015

DIRECTION RELATING TO THE EXAMINATION LEADING TO THE DEGREE OF MASTER OF SCIENCE, SEMESTER PATTERN (CHOICE BASED CREDIT SYSTEM) AND DEGREE OF MASTER OF SCIENCE AND TECHNOLOGY (APPLIED GEOLOGY). SEMESTER PATTERN, (CHOICE BASED CREDIT SYSTEM) (FACULTY OF SCIENCE)

(Issued under Section 14(8) of the Maharashtra Universities Act, 1994)

Whereas, Maharashtra Universities Act, 1994 (hereinafter referred to as Act) has come into force from 22nd July, 1994 and was amended from time to time,

AND

Whereas, the University Grants Commission, New Delhi vide letter No.D.O.No.F-1-1/2015 (CM) dated 8th January 2015 regarding reforms pertaining to the introduction of Choice Based Credit System at the earliest from the academic session 2015-16 to provide option to students and also seamless mobility across the institutions.

AND

Whereas, the Board of Studies in all the Science subjects in their meeting held during 24.4.2015 prepared the syllabi and scheme of examination for the M. Sc. and M. Sc. (Tech) Applied Geology course and recommended for starting of the Choice Based Credit System in Faculty of Science from the academic session 2015-16,

AND

Whereas, the faculty of Science in its meeting held on 20.5.2015 vide item No. 16 , has considered, accepted and recommended to Academic Council, the policy decision regarding introduction of Choice Based Credit System and the draft syllabi of M. Sc. Semester-I to IV (Semester I to VI for M. Sc. (Tech) Applied Geology) with draft direction and other details.

AND

Whereas, the Academic Council in its meeting held on _ _ _ _ _ _ _ _ _ vide item No. _ _ has considered, accepted and recommended to Management Council, for M.Sc. along with draft direction and other details.

AND

Whereas, the Management Council in its meeting held on _ _ _ _ _ _ vide item No. _ _ , has considered, accepted the draft direction and other details.

AND

Whereas, the new draft direction and scheme of examination as per semester pattern is to be implemented from the Academic Session 2015-16 for M.Sc. semester I and onwards which is to be regulated by this direction and as such there is no existence and framing of an Ordinance for the above examination is a time consuming process.

AND

Whereas, the admission of students in the Choice Based Credit System at M.Sc. Semester I and onwards are to be made in the Academic Session 2015-16.

AND

Whereas, ordinance making is a time consuming process, therefore, I, Dr. S. P. Kane, Vice Chancellor Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur in exercise of powers vested under Section 14(8) of the Act do hereby issue the following Direction.

1. This Direction may be called "Direction relating to examinations leading to the Degree of Master of Science, Semester Pattern (Choice Based Credit System) and Degree of Master of Science and Technology (Applied Geology), Semester Pattern, (Choice Based Credit System)
2. The direction shall come into force from the date of its issue by Hon'ble Vice Chancellor and shall remain in force till the relevant ordinance comes into being in accordance with the provisions of the Act.
3. The duration of the M. Sc. course shall be of two academic years consisting of four semesters with the University examinations at the end of each semester namely:

a) M. Sc. Semester I Exam
b) M. Sc. Semester II Exam
c) M. Sc. Semester III Exam
d) M. Sc. Semester IV Exam

4. The duration of the M. Sc. (Tech) Applied Geology course shall be of three academic years consisting of six semesters with the University examinations at the end of each semester namely:
   a) M. Sc. Semester I Exam
   b) M. Sc. Semester II Exam
   c) M. Sc. Semester III Exam
   d) M. Sc. Semester IV Exam
   e) M. Sc. Semester V Exam
   f) M. Sc. Semester VI Exam
5. The theory examination of Semester-I, II, III, IV, V and VI shall be conducted by the University and shall be held separately at the end of each semester at such places and dates as may be decided and notified by the University and shall be held as per the schedule given in Table below.

Sr. No.	Name of the examination	Main Examination	Supplementary Examination
1	Semester I, III & V	Winter	Summer
2	Semester II, IV&VI	Summer	Winter

ELIGIBILITY TO THE COURSE:

6. Subject to their compliance with the provisions of this direction and of other ordinances in force from time to time, the following applicant candidates shall be eligible for the admission to Master of Science and examinations theirof

A	For M. Sc. (Physics) Semester-I	For admission to the M. Sc. Semester I in Physics, a candidate shall have offered Physics as one of the subjects at the qualifying B.Sc. Examination.
B	For M. Sc. (Chemistry) Semester-I	For admission to the M. Sc. Semester I in Chemistry, a candidate shall have offered Chemistry / Industrial Chemistry as one of the subjects at the qualifying B.Sc. Examination.
C	For M. Sc. (Mathematics) Semester-I	For admission to the M. Sc. Semester I in Mathematics, a candidate shall have offered Mathematics as one of the subjects at the qualifying B.Sc. Examination.
D	For M. Sc. (Statistics) Semester-I	For admission to the M. Sc./M.A. Semester I in Statistics, a candidate shall have offered Statistics/Maths as one of the subjects at the qualifying B.Sc./B.A. Examination.
E	For M. Sc. (Computer Science) Semester-I	For admission to the M. Sc. Semester I in Computer Science, a candidate shall have offered Computer Science as one of the optional subjects of study and examination at B.Sc. degree or B.Sc./ B.E. examination with Post B.Sc. diploma course in Computer Science of RTM Nagpur University or any other statutory university and Application or B.Sc. with optional subjects Computer Maintenance / B.Sc. (Information Technology) / B.C.A.
F	For M. Sc. (Information Technology) Semester-I	For admission to the M. Sc. Semester I in Information Technology, a candidate must have Mathematics at 10+2 level and shall have passed B.Sc. (Computer Science) / B.Sc. (Information Technology) / B.Sc. (with Information Technology as the optional subject) / Bachelor of Computer Application (BCA)/ B.Sc. with optional subjects Mathematics, Computer Maintenance, Computer Science / B.Sc. with Electronics / Computer Maintenance as one of the subject .
G	For M. Sc. (Electronics) Semester-I	For admission to the M. Sc. Semester I in Electronics, a candidate shall have offered Electronics / Computer Maintenance as one of the subjects at the qualifying B.Sc. Examination.

H	For M. Sc. (Botany) Semester-I	For admission to the M. Sc. Semester I in Botany, a candidate shall have offered Botany as one of the subjects at the qualifying B.Sc. Examination / B.Sc. (Agriculture) with Botany is one of the subject.
I	For M. Sc. (Zoology) Semester-I	For admission to the M. Sc. Semester I in Zoology, a candidate shall have offered Zoology as one of the subjects at the qualifying B.Sc. Examination.
J	For M. Sc. (Microbiology) Semester-I	For admission to the M. Sc. Semester I in Microbiology, a candidate shall have offered Microbiology/ Biotechnology as a subject of study and examination at B.Sc. degree.
K	For M. Sc. (Biochemistry) Semester-I	For admission to the M. Sc. Semester I in Biochemistry, a candidate shall have offered Chemistry and Biochemistry as subjects of study and examination at B.Sc. degree.
L	For M. Sc. (Biotechnology) Semester-I	For admission to the M. Sc. Semester I in Biotechnology, a candidate shall be all Life Science graduates / Veterinary / Fishery Sciences / Pharmacy / Engineering Technology / Medicine (MBBS) / B.D.S. graduates / B.Sc. Agriculture.
M	For M. Sc. (Environmental Science) Semester-I	For admission to the M. Sc. Semester I in Environmental Science, a candidate shall have offered Environmental Science as one of the subjects at the qualifying B.Sc. Examination and B.Sc. Agriculture Science but having Environmental Science is one of the subject.
N	For M. Sc. (Molecular Biology and Genetic Engineering)	For admission to the M. Sc. Semester I in Molecular Biology and Genetic Engineering, the candidates who have passed the B.Sc. Examination in at least second division with any one or more subjects of life sciences / biological sciences / candidates who have passed B.Sc. with Biotechnology as one of the subjects in second division / candidates who have passed the B. Pharm. Examination in at least second division / candidates who have passed the graduation degree in agriculture / fisheries / veterinary sciences Examination in at least second division.
O	For M. Sc. (Geology) Semester-I	For admission to the M. Sc. Semester I in Geology, a candidate shall have offered Geology as one of the subjects at the qualifying B.Sc. Examination.
P	For M. Sc. (Tech) Applied Geology Semester-I	For admission to the M. Sc. (Tech) Semester I in Applied Geology, a candidate shall have offered Geology as one of the subjects at the qualifying B.Sc. Examination.
Q	For M. Sc. (Sericulture) Semester-I	For admission to the M. Sc. Semester I in Sericulture, a candidate shall have offered Sericulture / Zoology / Botany / Microbiology / Biochemistry as one of the subjects at the qualifying B.Sc. Examination / B.Sc. (Agriculture Science)

Candidates shall have passed any one of the above examinations from Rashtrasant Tukadoji Maharaj Nagpur University or any other statutory University of India or abroad, recognized by the UGC or any other concerned apex regulatory authority / body of India.

7) Semester Examinations

A	M. Sc. Semester I Examination	Students who have fulfilled the eligibility criteria as mentioned in Section 6 and have been admitted to this course in Semester I.
B	M. Sc. Semester II Examination	Students who have been admitted to this course in semester II.
C	M. Sc. Semester III Examination	Students who have been admitted to this course in semester III.
D	M. Sc. Semester IV Examination	i) Students who have been admitted to this course in semester IV. ii) Every student shall submit two copies of the project report (typed and properly bound) for the Fourth Semester to the Concerned Department at least one month prior to the commencement of the final practical examination through the Head of the Department / Centre / the Principal of the college concerned along

		with the certificate signed by the supervisor and declaration by the candidate towards original work which is not submitted to any university or organization for award of the degree. The scheme/ guidelines for the students and supervisors regarding Project Work Report are given in Appendix 04

(Note: Subject to the Rules of ATKT as mentioned in para 9 of this direction)

8) [M. Sc. (Tech) Applied Geology]

A	M. Sc. (Tech) Applied Geology] Semester I Examination	Students who have fulfilled the eligibility criteria as mentioned in Section 6 and have been admitted to this course in Semester I.
B	M. Sc. (Tech) Applied Geology] Semester II Examination	Students who have been admitted to this course in semester II.
C	M. Sc. (Tech) Applied Geology] Semester III Examination	Students who have been admitted to this course in semester III.
D	M. Sc. (Tech) Applied Geology] Semester IV Examination	Students who have been admitted to this course in semester IV.
E	M. Sc. (Tech) Applied Geology] Semester V Examination	Students who have been admitted to this course in semester V.
F	M. Sc. (Tech) Applied Geology] Semester VI Examination	Students who have been admitted to this course in semester VI.

(Note: Subject to the Rules of ATKT as mentioned in para 9 of this direction)

9) A) The ATKT rules for admission for the M. Sc. Course (Theory ,Practical and Seminar as separate passing head and on calculation fraction, if any, shall be ignored) shall be as given in the following table

Admission to Semester	Candidate should have passed in all the subjects of the following examination of R.T.M. Nagpur University	Candidate should have passed at least two third of the passing heads of the following examinations
Semester I	As provided in the para 6 of the direction	--------
Semester II	--------	--------
Semester III	--------	Semester I and II taken together
Semester IV	--------	--------

B) The ATKT rules for admission for the M. Sc. (Tech) Applied Geology Course (Theory ,Practical and Seminar as separate passing head and on calculation fraction, if any, shall be ignored) shall be as given in the following table-

Admission to Semester	Candidate should have passed in all the subjects of the following examination of R.T.M. Nagpur University	Candidate should have passed at least two third of the passing heads of the following examinations
Semester I	As provided in the para 6 of the direction	--------
Semester II	--------	--------
Semester III	--------	Semester I and II taken together
Semester IV	--------	-------
Semester V	Semester I and II	a) Passed Semester I and II examination And b) Two third of the passing heads of Semester III and IV taken together
Semester VI	--------	-------

10) Without prejudice to other provisions of Ordinance no. 6 relating to the examination in general, provisions of Para 5, 8, 9, 10, 26, 31 and 32 of the said ordinance shall apply to every student admitted to this course.
11) The fees for the tuition, examination, laboratory and other fees shall be as prescribed by the university from time to time.
12) (a) The scope of the subjects shall be as prescribed in the syllabus.
    (b) The medium of instruction and examination shall be English.
13) The number of papers and maximum marks assigned to each paper and minimum marks / grade, an examinee must obtain in order to pass the examination shall be as prescribed in appendices appended with this direction.
14) The examinee at each of the examination shall have option of not being declared successful at the examination in case he / she does not secure a minimum of grade equivalent to 55% marks at the examination. This option will have to be exercised every time the application is submitted to any of the examinations. Once this option is exercised, the option shall be binding on the examinee and it shall not be evoked in under any circumstances.
15) The classification of the examinee successful at the semester and examinations and at the end of final semester examination shall be as per the rules and regulations of Choice Based Credit System as prescribed in appendices, appended with this direction.
16) The provisions of direction no. 3 of 2007 for the award of grace marks for passing an examination, securing higher grade in subject(s) as updated from time to time shall apply to the examination under this direction.
17) The names of the successful examinee passing the examination as a whole in the minimum prescribed period and securing the grades equivalent to first and second division shall be arranged in order of merit as provided in ordinance 6 relating to examination in general.
18) Successful examinees at the end of M. Sc. Sem-IV Examination (Sem VI for M. Sc. (Tech) Applied Geology) who obtained CGPA above 7.51 shall be placed in First Division with distinction, those obtaining CGPA from 6.00 to 7.50 shall be placed in First Division, those obtaining CGPA from 4.50 to 5.99 shall be placed in Second Division and those obtaining CGPA from 4.00 to 4.49 shall be placed in Third Division.
19) No candidate shall be admitted to an examination under this direction, if he / she has already passed the same examination of this university or of any other university.
20) Successful examinees at the M. Sc. Sem I, II, III, & IV ((Sem I, II, III, IV, V & VI for M. Sc. (Tech) Applied Geology) Examinations shall be entitled to receive a Certificate signed by the Controller of Examination of University (COE) and successful examinees at the end of M. Sc. Sem IV (Sem VI for M. Sc. (Tech) Applied Geology) examination shall, on payment of prescribed fees, receive a Degree in the prescribed format, signed by the Vice-Chancellor.
21) This course is based on Choice Based Credit System and therefore, it will be also regulated by guidelines and regulation given in appendices which are part of this direction.
22) Absorption scheme for failure students of the credit based semester pattern:
    a) While switching over to Choice Based Credit System, the failure students of credit based semester pattern will be given **Five** chances to clear the examination.

b) The candidates who have cleared first and second semester of Part I of the Credit Based Semester Pattern examination in the concerned subject shall get admission to Third Semester of Part II of the Choice Based Credit System directly. However, candidates who are allowed to keep term will not be eligible for admission to Third Semester of Part II of the Choice Based Credit System unless they clear all the papers and practical of first and second semester of Part I of the Credit Based Semester Pattern examination.

c) The candidates who have cleared Third and Fourth semester of Part II of the Credit Based Semester Pattern examination in the concerned subject shall get admission to Fifth Semester of Part III of the Choice Based Credit System directly. However, candidates who are allowed to keep term will not be eligible for admission to Fifth Semester of Part III of the Choice Based Credit System unless they clear all the papers and practical of Third and Fourth semester of Part II of the Credit Based Semester Pattern examination.

23 Absorption scheme for failure students of annual pattern:

a. The candidates who have cleared first year of annual pattern shall get admission to Semester III of the Choice Based Credit System directly. However, candidates who are allowed to keep term will not be eligible for admission to Third Semester of the Choice Based Credit System unless they clear all the papers and practical of First year of the annual pattern examination.

b. For M. Sc. Tech Applied Geology course, the candidates who have cleared second year of annual pattern shall get admission to Semester V of the Choice Based Credit System directly. However, candidates who are allowed to keep term will not be eligible for admission to firth Semester of the Choice Based Credit System unless they clear all the papers and practical of First and Second year of the annual pattern examination.

24 With the issuance of this Direction No. _ _ of 2015, The Direction No 3 of 2015 (Credit based Semester Pattern) & Direction No. 14 of 2010 (M. Sc. Molecular Biology & Genetic Engineering) & Ordinance No. 49 (Annual Pattern) shall stand repealed.

Appendix-1

Scheme of teaching and examination under semester pattern Choice Based Credit System (CBCS) for M.Sc. Program in all subjects except Mathematics and M.Sc. (Tech) Applied Geology

Semester I for M.Sc. Program in all subjects except Mathematics and M.Sc. (Tech) Applied Geology											
Code	Theory / Practical	Teaching scheme (Hours / Week)			Credits	Examination Scheme					
						Duration in hrs.	Max. Marks		Total Marks	Minimum Passing Marks	
		Th	Pract	Total			External Marks	Internal Ass		Th	Pract
Core 1	Paper 1	4	-	4	4	3	80	20	100	40	
Core 2	Paper 2	4	-	4	4	3	80	20	100	40	
Core 3	Paper 3	4	-	4	4	3	80	20	100	40	
Core 4	Paper 4	4	-	4	4	3	80	20	100	40	
Pract. Core 1 & 2	Practical 1	-	8	8	4	3-8*	100**	-	100		40
Pract. Core 3 & 4	Practical 2	-	8	8	4	3-8*	100**	-	100		40
Seminar 1	Seminar 1	2	-	2	1			25	25	10	
	TOTAL	**18**	**16**	**34**	**25**		**520**	**105**	**625**	**170**	**80**

Semester II for M.Sc. Program in all subjects except Mathematics and M.Sc. (Tech) Applied Geology											
Code	Theory / Practical	Teaching scheme (Hours / Week)			Credits	Examination Scheme					
						Duration in hrs.	Max. Marks		Total Marks	Minimum Passing Marks	
		Th	Pract	Total			External Marks	Internal Ass		Th	Pract
Core 5	Paper 5	4	-	4	4	3	80	20	100	40	
Core 6	Paper 6	4	-	4	4	3	80	20	100	40	
Core 7	Paper 7	4	-	4	4	3	80	20	100	40	
Core 8	Paper 8	4	-	4	4	3	80	20	100	40	
Pract. Core 5 & 6	Practical 3	-	8	8	4	3-8*	100**	-	100		40
Pract. Core 7 & 8	Practical 4	-	8	8	4	3-8*	100**	-	100		40
Seminar 2	Seminar 2	2	-	2	1			25	25	10	
	TOTAL	**18**	**16**	**34**	**25**		**520**	**105**	**625**	**170**	**80**

Semester III for M.Sc. Program in all subjects except Mathematics and M.Sc. (Tech) Applied Geology											
Code	Theory / Practical	Teaching scheme (Hours / Week)			Credits	Examination Scheme					
						Duration in hrs.	Max. Marks		Total Marks	Minimum Passing Marks	
		Th	Pract	Total			External Marks	Internal Ass		Th	Pract
Core 9	Paper 9	4	-	4	4	3	80	20	100	40	
Core 10	Paper 10	4	-	4	4	3	80	20	100	40	
Core Elective 1	Paper 11	4	-	4	4	3	80	20	100	40	
Foundation Course 1	Paper 12	4	-	4	4	3	80	20	100	40	
Pract. Core 9 & 10	Practical 5	-	8	8	4	3-8*	100**	-	100		40
Pract. Core Elective 1	Practical 6	-	8	8	4	3-8*	100**	-	100		40
Seminar 3	Seminar 3	2	-	2	1			25	25	10	
	TOTAL	**18**	**16**	**34**	**25**		**520**	**105**	**625**	**170**	**80**

Semester IV for M.Sc. Program in all subjects except Mathematics and M.Sc. (Tech) Applied Geology											
Code	Theory / Practical	Teaching scheme (Hours / Week)			Credits	Examination Scheme					
						Duration in hrs.	Max. Marks		Total Marks	Minimum Passing Marks	
		Th	Pract	Total			External Marks	Internal Ass		Th	Pract
Core 11	Paper 13	4	-	4	4	3	80	20	100	40	
Core 12	Paper 14	4	-	4	4	3	80	20	100	40	
Core Elective 2	Paper 15	4	-	4	4	3	80	20	100	40	
Foundation Course 2	Paper 16	4	-	4	4	3	80	20	100	40	
Pract. Core 11, 12 & Elective 2	Practical 7	-	8	8	4	3-8*	100**	-	100		40
Project	Project		8	8	4		100**	-	100		40
Seminar 4	Seminar 4	2	-	2	1			25	25	10	
	TOTAL	**18**	**16**	**34**	**25**		**520**	**105**	**625**	**170**	**80**

Note: Th = Theory; Pr = Practical/lab, * = If required, for two days.
** = The Practical and Project shall be evaluated by both the External and Internal Examiner in the respective Department / Center / Affiliated College as per guidelines appended with this direction.

1. In each semester, the student will have to deliver a seminar on any topic relevant to the syllabus / subject encompassing the recent trends and development in that field / subject. The topic of the seminar will be decided at the beginning of each semester in consultation with the supervising teachers. The student has to deliver the seminar which will be followed by discussion. The seminar will be open to all the teachers of the department, invitees, and students.
2. The student will have to carry out the project work (based on guidelines appended to this direction) in lieu of practical in the fourth semester in the department or depending on the availability of placement; he / she will be attached to any of the national / regional / private research institute / organization.
3. Internal Assessment Marks will be as per appendix attached in this direction.
4. **Foundation Course:** Student can choose this paper from any other subject other than his / her main subject for postgraduation.
5. One credit of 25 marks for theory / tutorial will be of one clock hour per week, running for 15 weeks.
6. One credit of 25 marks for practical / project / seminar will be of two clock hour per week, running for 15 weeks.

Appendix-2

Scheme of teaching and examination under semester pattern Choice Based Credit System (CBCS) for M.Sc. Program in Mathematics

Semester I for M.Sc. Program in Mathematics												
Code	Theory / Practical	Teaching scheme (Hours / Week)		Credits			Examination Scheme					
							Duration in hrs.	Max. Marks		Total Marks	Minimum Passing Marks	
		Th	Total	Theory	Int. Assessment	Total		External Marks	Internal Ass		Th. External	Internal Ass.
Core 1	Paper 1	5	5	4	1	5	3	100	25	125	50	
Core 2	Paper 2	5	5	4	1	5	3	100	25	125	50	
Core 3	Paper 3	5	5	4	1	5	3	100	25	125	50	
Core 4	Paper 4	5	5	4	1	5	3	100	25	125	50	
Core 5	Paper 5	5	5	4	1	5	3	100	25	125	50	
	TOTAL	**25**	**25**	**20**	**5**	**25**		**500**	**125**	**625**	**250**	

Semester II for M.Sc. Program in Mathematics												
Code	Theory / Practical	Teaching scheme (Hours / Week)		Credits			Examination Scheme					
							Duration in hrs.	Max. Marks		Total Marks	Minimum Passing Marks	
		Th	Total	Theory	Int. Assessment	Total		External Marks	Internal Ass		Th. External	Internal Ass.
Core 6	Paper 6	5	5	4	1	5	3	100	25	125	50	
Core 7	Paper 7	5	5	4	1	5	3	100	25	125	50	
Core 8	Paper 8	5	5	4	1	5	3	100	25	125	50	
Core 9	Paper 9	5	5	4	1	5	3	100	25	125	50	
Core 10	Paper 10	5	5	4	1	5	3	100	25	125	50	
	TOTAL	**25**	**25**	**20**	**5**	**25**		**500**	**125**	**625**	**250**	

Semester III for M.Sc. Program in Mathematics												
Code	Theory / Practical	Teaching scheme (Hours / Week)		Credits			Examination Scheme					
								Max. Marks			Minimum Passing Marks	
		Th	Total	Theory	Int. Assessment	Total	Duration in hrs.	External Marks	Internal Ass	Total Marks	Th. External	Internal Ass.
Core 11	Paper 11	5	5	4	1	5	3	100	25	125	50	
Core 12	Paper 12	5	5	4	1	5	3	100	25	125	50	
Core 13	Paper 13	5	5	4	1	5	3	100	25	125	50	
Core Elective 1	Paper 14	5	5	4	1	5	3	100	25	125	50	
Foundation Course 1	Paper 15	5	5	4	1	5	3	100	25	125	50	
	TOTAL	**25**	**25**	**20**	**5**	**25**		**500**	**125**	**625**	**250**	

Semester IV for M.Sc. Program in Mathematics												
Code	Theory / Practical	Teaching scheme (Hours / Week)		Credits			Examination Scheme					
								Max. Marks			Minimum Passing Marks	
		Th	Total	Theory	Int. Assessment	Total	Duration in hrs.	External Marks	Internal Ass	Total Marks	Th. External	Internal Ass.
Core 14	Paper 16	5	5	4	1	5	3	100	25	125	50	
Core 15	Paper 17	5	5	4	1	5	3	100	25	125	50	
Core 16	Paper 18	5	5	4	1	5	3	100	25	125	50	
Core Elective 2	Paper 19	5	5	4	1	5	3	100	25	125	50	
Foundation Course 2	Paper 20	5	5	4	1	5	3	100	25	125	50	
	TOTAL	**25**	**25**	**20**	**5**	**25**		**500**	**125**	**625**	**250**	

*Internal Assessment: For the purpose of internal assessment the department will conduct three tests (with equal weight of marks). Best two scores of a student in these tests will be considered to obtain the internal assessment score of that student.

Foundation Course: Student can choose this paper from any other subject other than his / her main subject for postgraduation.

Appendix-3

Scheme of teaching and examination under semester pattern Choice Based Credit System (CBCS) for M.Sc. (Tech) Applied Geology

Semester I for M.Sc. Program in M.Sc. (Tech) Applied Geology											
Code	Theory / Practical	Teaching scheme (Hours / Week)			Credits	Examination Scheme					
						Duration in hrs.	Max. Marks		Total Marks	Minimum Passing Marks	
		Th	Pract	Total			External Marks	Internal Ass		Th	Pract
Core 1	Paper 1	4	-	4	4	3	80	20	100	40	
Core 2	Paper 2	4	-	4	4	3	80	20	100	40	
Core 3	Paper 3	4	-	4	4	3	80	20	100	40	
Core 4	Paper 4	4	-	4	4	3	80	20	100	40	
Pract. Core 1 & 2	Practical 1	-	8	8	4	3-8*	100**	-	100		40
Pract. Core 3 & 4	Practical 2	-	8	8	4	3-8*	100**	-	100		40
Seminar 1	Seminar 1	2	-	2	1			25	25	10	
	TOTAL	**18**	**16**	**34**	**25**		**520**	**105**	**625**	**170**	**80**

Semester II for M.Sc. Program in M.Sc. (Tech) Applied Geology											
Code	Theory / Practical	Teaching scheme (Hours / Week)			Credits	Examination Scheme					
						Duration in hrs.	Max. Marks		Total Marks	Minimum Passing Marks	
		Th	Pract	Total			External Marks	Internal Ass		Th	Pract
Core 5	Paper 5	4	-	4	4	3	80	20	100	40	
Core 6	Paper 6	4	-	4	4	3	80	20	100	40	
Core 7	Paper 7	4	-	4	4	3	80	20	100	40	
Core 8	Paper 8	4	-	4	4	3	80	20	100	40	
Pract. Core 5 & 6	Practical 3	-	8	8	4	3-8*	100**	-	100		40
Pract. Core 7 & 8	Practical 4	-	8	8	4	3-8*	100**	-	100		40
Seminar 2	Seminar 2	2	-	2	1			25	25	10	
	TOTAL	**18**	**16**	**34**	**25**		**520**	**105**	**625**	**170**	**80**

Semester III for M.Sc. Program in M.Sc. (Tech) Applied Geology											
Code	Theory / Practical	Teaching scheme (Hours / Week)			Credits	Examination Scheme					
						Duration in hrs.	Max. Marks		Total Marks	Minimum Passing Marks	
		Th	Pract	Total			External Marks	Internal Ass		Th	Pract
Core 9	Paper 9	4	-	4	4	3	80	20	100	40	
Core 10	Paper 10	4	-	4	4	3	80	20	100	40	
Core 11	Paper 11	4	-	4	4	3	80	20	100	40	
Core 12	Paper 12	4	-	4	4	3	80	20	100	40	
Pract. Core 9 & 10	Practical 5	-	8	8	4	3-8*	100**	-	100		40
Pract. Core 11 & 12	Practical 6	-	8	8	4	3-8*	100**	-	100		40
Seminar 3	Seminar 3	2	-	2	1			25	25	10	
	TOTAL	**18**	**16**	**34**	**25**		**520**	**105**	**625**	**170**	**80**

Semester IV for M.Sc. Program in M.Sc. (Tech) Applied Geology											
Code	Theory / Practical	Teaching scheme (Hours / Week)			Credits	Examination Scheme					
						Duration in hrs.	Max. Marks		Total Marks	Minimum Passing Marks	
		Th	Pract	Total			External Marks	Internal Ass		Th	Pract
Core 13	Paper 13	4	-	4	4	3	80	20	100	40	
Core 14	Paper 14	4	-	4	4	3	80	20	100	40	
Core 15	Paper 15	4	-	4	4	3	80	20	100	40	
Core 16	Paper 16	4	-	4	4	3	80	20	100	40	
Pract. Core 13 & 14	Practical 7	-	8	8	4	3-8*	100**	-	100		40
Pract. Core 15 & 16	Practical 8	-	8	8	4	3-8*	100**	-	100		40
Seminar 4	Seminar 4	2	-	2	1			25	25	10	
	TOTAL	**18**	**16**	**34**	**25**		**520**	**105**	**625**	**170**	**80**

Semester V for M.Sc. Program in M.Sc. (Tech) Applied Geology											
Code	Theory / Practical	Teaching scheme (Houurs / Week)			Credits	Examination Scheme					
						Duration in hrs.	Max. Marks		Total Marks	Minimum Passing Marks	
		Th	Pract	Total			External Marks	Internal Ass		Th	Pract
Core 17	Paper 17	4	-	4	4	3	80	20	100	40	
Core 18	Paper 18	4	-	4	4	3	80	20	100	40	
Core Elective 1	Paper 19	4	-	4	4	3	80	20	100	40	
Foundation Course 1	Paper 20	4	-	4	4	3	80	20	100	40	
Pract. Core 17 & 18	Practical 9	-	8	8	4	3-8*	100**	-	100		40
Pract. Core Elective 1	Practical 10	-	8	8	4	3-8*	100**	-	100		40
Seminar 5	Seminar 5	2	-	2	1			25	25	10	
	TOTAL	**18**	**16**	**34**	**25**		**520**	**105**	**625**	**170**	**80**

Semester VI for M.Sc. Program in M.Sc. (Tech) Applied Geology											
Code	Theory / Practical	Teaching scheme (Hours / Week)			Credits	Examination Scheme					
						Duration in hrs.	Max. Marks		Total Marks	Minimum Passing Marks	
		Th	Pract	Total			External Marks	Internal Ass		Th	Pract
Core 19	Paper 21	4	-	4	4	3	80	20	100	40	
Core 20	Paper 22	4	-	4	4	3	80	20	100	40	
Core Elective 2	Paper 23	4	-	4	4	3	80	20	100	40	
Foundation Course 2	Paper 24	4	-	4	4	3	80	20	100	40	
Pract. Core 19, 20	Practical 11	-	8	8	4	3-8*	100**	-	100		40
Pract. Core Elective 2	Practical 12	-	8	8	4	3-8*	100**	-	100		40
Seminar 6	Seminar 6	2	-	2	1			25	25	10	
	TOTAL	**18**	**16**	**34**	**25**		**520**	**105**	**625**	**170**	**80**

Note: Th = Theory; Pr = Practical/lab, * = If required, for two days.

** = The Practical shall be evaluated by both the External and Internal Examiner in the respective Department / Center / Affiliated College as per guidelines appended with this direction.

1. In each semester, the student will have to deliver a seminar on any topic relevant to the syllabus / subject encompassing the recent trends and development in that field / subject. The topic of the seminar will be decided at the beginning of each semester in consultation with the supervising teachers. The student has to deliver the seminar which will be followed by discussion. The seminar will be open to all the teachers of the department, invitees, and students.
2. Internal Assessment Marks will be as per appendix attached in this direction.
3. **Foundation Course:** Student can choose this paper from any other subject other than his / her main subject for postgraduation.
4. One credit of 25 marks for theory / tutorial will be of one clock hour per week, running for 15 weeks.
5. One credit of 25 marks for practical / project / seminar will be of two clock hour per week, running for 15 weeks.

Appendix-4

Project Work Scheme / Guidelines for the Students, Supervisors and Examiners

Every student is required to carry out a project work in semester IV. The project can be of following types. A) Experimental Project Work; OR B) Field Based Project Work; OR C) Review writing based Project Work.

Experimental Project Work and Field Based Project Work:

Student can carry out Experimental / Field Based Project Work on a related research topic of the subject /course. It must be an original work and must indicate some degree of experimental work / Field work. On the basis of this work, student must submit the Project Report (typed and properly bound) in two copies at least one month prior to commencement of the final Practical / lab Examination of Semester IV or VI as applicable. The project report shall comprise of Introduction, Material and Methods, Results, Discussion, Summary, Conclusion and, References along with the declaration by the candidate that the work is original and not submitted to any University or Organization for award of the degree and certificate by the supervisor and forwarded through Head / Course-coordinator / Director of the Department / Centre or the Principal of the College

Review writing based Project Work.

Student can carry out review writing Based Project Work on a related topic of the subject / course. It must be a review of topic based on research publications. Student shall refer peer reviewed original research publications and based on findings, write a summary of the same. The pattern of review writing shall be based on reputed reviews published in a standard, peer reviewed journals. On the basis of this work, student must submit the Project Report (typed and properly bound) in two copies at least one month prior to commencement of the final Practical / lab Examination of Semester IV or VI as applicable. The project report shall comprise of Abstract, Introduction, detailed review, Discussion, Summary, Conclusion and, References along with the declaration by the candidate that the work is original and not submitted to any University or Organization for award of the degree and certificate by the supervisor and forwarded through Head / Course-coordinator / Director of the Department / Centre or the Principal of the College

The supervisors for the Project Work shall be from the following.

A person shall be an approved faculty member in the relevant subject.

OR

Scientists of National Laboratories / Regional Research Laboratories who are approved by dint of their appointments in such facilities by the Union Government / the State Government / Nagpur University / Other Universities recognized by UGC.

The Project Work will carry total 100 marks and will be evaluated by both external and internal examiner in the respective Department / Center / Affiliated College.

The examiners will evaluate the Experimental Project Work taking into account the Coverage of subject matter, Arrangement and presentation, References, etc.

For written Project work	: 40 Marks – Evaluated jointly by External & Internal
Presentation	: 20 Marks – Evaluated jointly by External & Internal
For Viva-Voce	: 20 Marks – Evaluated by External examiner
Internal Assessment	: 20 Marks – Evaluated by Internal examiner
	---
Total	: 100 Marks

Appendix-5

Seminar

Guidelines for Students, Supervisors and Examiners

In each semester (Except M. Sc. Mathematics), the student will have to deliver a seminar on any topic relevant to the syllabus / subject encompassing the recent trends and development in that field / subject. The topic of the seminar will be decided at the beginning of each semester in consultation with the supervising teachers. The student has to deliver the seminar which will be followed by discussion. The seminar will be open to all the teachers of the department, invitees, and students.

The students should submit the seminar report typed and properly bound in two copies to the head of the department. The said shall be evaluated by the concerned supervisor / head of the department. The marks of the seminar shall be forwarded to the university within due period through head of the Department. The record of the seminar should be preserved till the declaration of the final result.

Appendix 6

Internal Assessment:

1. The internal assessment marks shall be awarded by the concerned teacher.
2. The internal assessment shall be completed by the College / University at least 15 days prior to the final examination of each semester. The Marks shall be sent to the University immediately after the Assessment in the prescribed format.
3. For the purpose of internal assessment the University Department / College shall conduct one to three assignments described below. Best two scores of a student in these tests shall be considered to obtain the internal assessment score of that student.
4. General guidelines for Internal Assessment are:
   a) The internal assessment marks assigned to each theory paper as mentioned in Appendix 1 shall be awarded on the basis of assignments like class test, attendance, home assignments, study tour, industrial visits, visit to educational institutions and research organizations, field work, group discussions or any other innovative practice / activity.
   b) There shall be one to three assignments (as described above) per Theory paper.
   c) There shall be no separate / extra allotment of work load to the teacher concerned. He/ She shall conduct the Internal assessment activity during the regular teaching days / periods as a part of regular teaching activity.
   d) The concerned teacher / department / college shall have to keep the record of all the above activities until six months after the declaration of the results of that semester.
   e) At the beginning of each semester, every teacher / department / college shall inform his / her students unambiguously the method he / she propose to adopt and the scheme of marking for internal assessment.
   f) Teacher shall announce the schedule of activity for internal assessment in advance in consultation with HOD / Principal.
   g) Final submission of internal marks to the University shall be before the commencement of the University Theory / Practical examinations whichever is later.

Appendix 7

Practical Examination

1. Each practical carries 100 marks. For the examination, the distribution of the marks shall be as follows:
   a. Record / Journal / Internal assessment : 20 marks – Evaluated by Internal
   b. Practical Performance : 60 marks – Evaluated jointly by External & Internal
   c. Viva-voce : 20 marks - Evaluated by External

   NOTE: Practical performance shall be jointly evaluated by the External and Internal Examiner. In case of discrepancy, the External Examiner's decision shall be final.
2. Practical exam shall be of 3 to 8 hours duration for one or two days, depending on subject and number of students.
3. The Practical Record of every student shall carry a certificate as shown below, duly signed by the teacher-in-charge and the Head of the Department.

4. If the student fails to submit his / her certified Practical Record duly signed by the Teacher-In-Charge and the Head of the Department, he / she shall not be allowed to appear for the Practical Examination and no Marks shall be allotted to the student.
5. The certificate template shall be as follows:

C E R T I F I C A T E

Name of the college / institution _
Name of the Department: _

This is to certify that this Practical Record contains the bonafide record of the Practical work of Shri / Shrimati / Kumari _ of M. Sc. _ _ _ _ _ _ _ _ _ _ _ _ _ _ Semester _ _ _ _ _ _ _ _ _ _ during the academic year _ _ _ _ _ _ _. The candidate has satisfactorily completed the experiments prescribed by Rashtrasant Tukdoji Maharaj Nagpur University for the subject _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

Dated _ _ _ / _ _ _ / _ _ _ _ _

Signature of the teacher who taught the examinee
1. _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
2. _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

Head of the Department

Appendix 8

Subject wise Core Elective Papers:

M. Sc. Subject	**Core elective paper to be opted in sem III (Sem V in case of M. Sc. (Tech) Applied Geology)**	**Core elective paper to be opted in sem IV (Sem VI in case of M. Sc. (Tech) Applied Geology)**
M. Sc. (Physics)	Materials Science I	Materials Science II
	X-ray I	X-ray II
	Nanoscience and Nanotechnology I	Nanoscience and Nanotechnology II
	Atomic and Molecular Physics I	Atomic and Molecular Physics II
	Applied Electronics I	Applied Electronics II
	Methods of Theoretical Physics I	Methods of Theoretical Physics II
	Nonlinear Dynamics I	Nonlinear Dynamics II
M. Sc. (Chemistry)	Applied Analytical Chemistry I	Applied Analytical Chemistry II
	Nuclear Chemistry I	Nuclear Chemistry II
	Environmental Chemistry I	Environmental Chemistry II
	Polymer Chemistry I	Polymer Chemistry II
	Medicinal Chemistry I	Medicinal Chemistry II
M. Sc. (Mathematics)	Fluid Dynamics I	Fluid Dynamics II
	General Relativity	Cosmology
	Operations Research I	Operations Research II
M. Sc. (Statistics)	Mathematical Programming	Operations Research
	Industrial Process and Quality Control	Industrial Statistics
	Demography	Actuarial Statistics
	Survival Analysis	Biostatistics
	Statistical Ecology	Reliability Theory
	Computer Programming	Data Mining
M. Sc. (Computer Science)	Neural Network	Design and Analysis of Algorithm
	Mobile Computing	Embedded System
	Multimedia Technologies	Pattern Recognition
	ASP.NET	Parallel Computing
	Digital & Cyber Forensics	Mobile & Cyber Forensics
M. Sc. (Information Technology)	Soft Computing	Design and Analysis of Algorithm
	Distributed Databases	Cloud Computing

	Object Oriented Analysis and Design using UML	Mobile Computing
	CORBA	Enterprise Computing
	Digital & Cyber Forensics	Mobile & Cyber Forensics
M. Sc. (Electronics)	Digital signal Processing	Microwave and Optical Communication
	Mechatronics	Mobile and Satellite Communication
M. Sc. (Botany)	Molecular Biology and Plant Biotechnology I	Molecular Biology and Plant Biotechnology II
	Reproductive Biology of Angiosperms- I	Reproductive Biology of Angiosperms- II
	Advanced Phycology and Hydrobiology I	Advanced Phycology and Hydrobiology II
	Mycology and Plant pathology I	Mycology and Plant pathology II
	Palaeobotany I	Palaeobotany II
	Palynology I	Palynology II
	Plant Physiology I	Plant Physiology II
M. Sc. (Zoology)	Entomology II	Entomology IV
	Fish & Fisheries II	Fish & Fisheries IV
	Mammalian Reproductive Physiology (MRP) II	Mammalian Reproductive Physiology (MRP) IV
	Animal Physiology II	Animal Physiology IV
	Cell Biology II	Cell Biology IV
	Fresh Water Zoology II	Fresh Water Zoology IV
	Aquaculture II	Aquaculture IV
	Environmental Biology II	Environmental Biology IV
	Sericulture II	Sericulture IV
M. Sc. (Microbiology)	Microbial Diversity, Evolution and Ecology (MDEE)	Microbial Diversity, Evolution and Ecology (MDEE)
	Bioinformatics (BIF)	Bioinformatics (BIF)
	Drungs, Vaccines and Delivery Systems (DVD)	Drungs, Vaccines and Delivery Systems (DVD)
M. Sc. (Biochemistry)	Biochemical & Environmental Toxicology	Clinical Research
	Nutritional Biochemistry	Applied Nutritional Biochemistry
M. Sc. (Biotechnology)	Industrial Biotechnology I	Industrial Biotechnology II
	Environmental Biotechnology I	Environmental Biotechnology II
M. Sc. (Environmental Science)	Biological processes in waste water treatment	Environmental Impact assessment and Legislation
	Water supply and resources	Environmental Management
M. Sc. (Molecular Biology and Genetic Engineering)	Molecular Diagnostics Methods	Molecular Diagnostics
	Plant Genetic Engineering I	Plant Genetic Engineering II
	Bioinformatics I	Bioinformatics II
M. Sc. (Geology)	Fuel Geology (Coal, Petroleum & Nuclear)	Mining Geology & Mineral Exploration
	Environmental Geology and Engineering Geology	Exploration Geochemistry
	Petroleum Exploration	Applied & Industrial Micropalentology
	Quaternary Geology & Limnogeology	Basin Analysis & Sequence Stratigraphy
		Marine Geology & Oceanography
M. Sc. (Tech) Applied Geology	Exploration Geochemistry	Environmental Geology & Geohazards

	Quaternary Geology & Limnogeology	Petroleum Exploration
	Marine Geology & Oceanography	Basin Analysis & Sequence Stratigraphy
M. Sc. (Sericulture)	Genetics & Breeding of Mulberry Silk Work	Economics of Sericulture and Trading of Silk
	Genetics & Breeding of Silk Worm & Host Plant	Extension, Management & Product Analysis

Appendix 9

Foundation Course

Candidate can opt for any one foundation course paper as shown below in the semester III and IV (Semester V & VI in case of M. Sc. (Tech) Applied Geology). However, Student shall opt for this paper from any other subject other than his / her main subject for postgraduarion.

List of foundation courses available:

M. Sc. Subject	**Foundation Course I in semester III (Sem V in case of M. Sc. (Tech) Applied Geology)**	**Foundation Course II in Semester IV (Sem VI in case of M. Sc. (Tech) Applied Geology)**
M. Sc. (Physics)	Fundamentals of Spectroscopy	Spectroscopic applications
	Fundamentals of Nanoscience and Nanotechnology	Optics and Optical Instruments
M. Sc. (Chemistry)	Instrumental Methods of Analysis-I	Instrumental Methods of Analysis-II
M. Sc. (Mathematics)	Elementary Mathematics	Elementary Discrete Mathematics
	Elementary Mathematical Methods	Fuzzy Mathematics II
	Elementary Numerical Methods	Linear Programming
	Fuzzy Mathematics I	
M. Sc. (Statistics)	Foundation course in Statistics I	Foundation course in Statistics II (Applied Statistics)
	Biostatistics I	Biostatistics II
M. Sc. (Computer Science)	Operating system concepts	Advances in information technology
	Principles of Management	Enterprise Resource Planning
	Managerial Economics	Supply Chain Management
	Retail & Services Marketing	Total Quality Management
	Financial Services Management	Banking Operations And Services
	E-Business	Information Security And Cyber Law
M. Sc. (Information Technology)	Operating system concepts	Advances in information technology
	Principles of Management	Enterprise Resource Planning
	Managerial Economics	Supply Chain Management
	Retail & Services Marketing	Total Quality Management
	Financial Services Management	Banking Operations And Services
	E-Business	Information Security And Cyber Law
M. Sc. (Electronics)	Basic Electronics	PC and PC Interfacing
M. Sc. (Botany)	General Botany	Applied Botany
M. Sc. (Zoology)	Elementary Zoology	Applied Zoology
	Basic Entomology	Applied & Industrial Entomology
	Fresh Water Fisheries	Applied Fresh Water Fisheries
	Human Physiology	Applied Human Physiology
M. Sc. (Microbiology)	General Microbiology	Advanced Microbiology
M. Sc. (Biochemistry)	Biomolecules and Basic Metabolism	Enzyme Technology
M. Sc. (Biotechnology)	Introductory Biotechnology	Molecular Biotechnology
M. Sc. (Environmental Science)	Fundamentals of Environmental Science-I	Fundamentals of Environmental Science -II
M. Sc.	Molecular Biology	Recombinant DNA Technology and

(Molecular Biology and Genetic Engineering)		Plant Genetic Engineering
M. Sc. (Geology)	Introduction to Geology	Paleobiology
M. Sc. (Tech) Applied Geology	Introduction to Geology	Paleobiology
M. Sc. (Sericulture)	Sericulture, Commercial insect conservation & Management	Insect Cell Culture & Molecular Informatics Technology

Appendix-10

General Rules and Regulations regarding pattern of question paper, absorption scheme and choice based credit system:

A) Pattern of Question Paper

1. There will be four units in each paper.
2. Maximum marks of each theory paper will be 80 (In M. Sc. Mathematics, each paper will be of 100 marks)
3. Question paper will consist of five questions, each of 16 marks (In M. Sc. Mathematics, each question will be of 20).
4. Four questions will be on four units with internal choice (One question on each unit).
5. Fifth question will be compulsory with questions from each of the four units having equal weightage and there will be no internal choice.

B) Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA)

M. Sc. Program shall consist of four semesters, wherein the student has to complete certain number of credits as indicated in Table 1. Each subject (or course) has fixed number of credits. The types of subject subheads are: Core, Core Pract, Core Elective, Core Elective Pract, Foundation Course, Seminar and Project / Review writing.

Among the 100 credits (Applied Geology 150) which candidate needs to complete and clear for M. Sc. in any concerned subjects, at least 92 credits (Maths 90 / Appl. Geo 146) must be taken from the parent department where he / she is registered for M. Sc. Course. The remaining 08 credits (Maths 10 / Appl. Geo 8) can be taken from any other department of university or affiliated colleges offering foundation courses of PG programs. Similar is the case with Mathematics and Geology program with the exception of difference (given in parentheses) in number of credits.

Table 1: Credit Requirements for Post Graduate Studies

PG	Semester	Core	Pract Core	Core Elective	Pract Core Elective	Foundation Course	Project / Review Writing	Seminar	Total Credits
M. Sc. Maths	I	25							100
	II	25							
	III	15		5		5			
	IV	15		5		5			
Total		**80**		**10**		**10**			**100**
M. Sc. (Tech) Applied Geology	I	16	8					1	150
	II	16	8					1	
	III	16	8					1	
	IV	16	8					1	
	V	8	4	4	4	4		1	
	VI	8	4	4		4	4	1	
Total		**80**	**40**	**8**	**4**	**8**	**4**	**6**	**150**
All other M. Sc.	I	16	8					1	100
	II	16	8					1	
	III	8	4	4	4	4		1	
	IV	8	4	4		4	4	1	
Total		**48**	**24**	**8**	**4**	**8**	**4**	**4**	**100**

Explanatory terms:

1. **Core:** Major theory papers in the concerned subject.
2. **Core Elective:** These papers will be specialization in the concerned subject. Ex. Zoology – MRP, AP, Fisheries, Entomology etc.
3. **Foundation Course:** Student can choose this paper from any other subject other than his main subject for postgraduation. For Ex. An M. Sc. Biochemistry student can take such a foundation course paper from Zoology or Mathematics or Computer Science or Political Science subject.
4. **Project / Review writing:** Project / Review writing is in semester IV (Sem VI in Geology).
5. **Seminar:** The seminar in each semester shall be presented by the candidate in his / her parent department only.

Credits:

It is a unit by which the course work is measured. It determines the number of hours of instructions required per week. One credit is equivalent to one hour of teaching (lecture or tutorial) or two hours of practical work / field work per week.

For example a subject with 6-2-6 (L-T-P) means it has 3 Lectures, 1 Tutorial and 6 Practical in a week. This subject will have ten credits (6x1 + 2x½ + 6x½ = 10). If a student is declared pass in a subject, then he/she gets the credits associated with that subject. Depending on the marks scored in a subject, student is given a Grade. Each grade has got certain grade points as follows:

Letter Grade	O	A+	A	B+	B	C	P	F	Ab
Grade Point	10	09	08	07	06	05	04	0	0

A student obtaining Grade F shall be considered failed and will be required to reappear for the examination.

Valuation pattern:

Every credit is for 25 marks and valuation and grade points will be given as per following pattern.

Marks obtained in Theory / Practical of 100 marks	Marks obtained in Theory / Practical of 50 marks	Letter Grade	Grade point
91-100	46-50	O	10
81-90	41-45	A+	09
71-80	36-40	A	08
61-70	31-35	B+	07
51-60	26-30	B	06
41-50	21-25	C	05
= 40	=20	P	04
<40	<20	F	0
Ab	Ab	Ab	0

Computation of SGPA and CGPA

Following is the procedure to compute the Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA):

i. The SGPA is the ratio of sum of the product of the number of credits with the grade points scored by a student in all the courses taken by a student and the sum of the number of credits of all the courses undergone by a student, i.e

SGPA (Si) = Σ(Ci x Gi) / Σ Ci

where Ci is the number of credits of the ith course and Gi is the grade point scored by the student in the ith course.

Illustration for SGPA

Code	Theory / Practical	Credits	Marks Obtained	Out of	Grade Point	Grade Letter	Credit Point (Credit x Grade Point)
Core 1	Paper 1	4	91	100	10	O	4x10=40
Core 2	Paper 2	4	89	100	9	A+	4x9=36
Core 3	Paper 3	4	50	100	5	C	4x5=20
Core 4	Paper 4	4	78	100	8	A	4x8=32
Pract. Core 1 & 1	Practical 1	4	89	100	9	A+	4x9=36
Pract. Core 3 & 4	Practical 2	4	85	100	9	A+	4x9=36
Seminar 1	Seminar 1	2	46	50	10	O	2x10=20
	Total	**26**					**220**
Thus, **SGPA =220/26 = 8.4615384 = 8.46**							

ii. The CGPA is also calculated in the same manner taking into account all the courses undergone by a student over all the semesters of a program, i.e.

CGPA = Σ (Ci x Si) / Σ Ci

where Si is the SGPA of the ith semester and Ci is the total number of credits in that semester.

Illustration for CGPA

Semester 1	**Semester 2**	**Semester 3**	**Semester 4**
Credit : 26 SGPA: 8.46	Credit : 26 SGPA: 7.83	Credit : 26 SGPA: 5.69	Credit : 26 SGPA: 6.31

Thus,

$$\textbf{CGPA} = \frac{26 \times 8.46 + 26 \times 7.83 + 26 \times 5.69 + 2\,6 \times 6.31}{104}$$

$$= \frac{219.96 + 203.58 + 147.94 + 164.06}{104} = \frac{735.54}{104} = \textbf{7.0725} \qquad \textbf{i.e. 7.07}$$

The SGPA and CGPA shall be rounded off to 2 decimal points and reported in the transcripts. Ex. 7.0765 = 7.08 or 6.5168 = 6.52 etc.

Transcript (Format): Based on the above recommendations on Letter grades, grade points and SGPA and CCPA, the HEIs may issue the transcript for each semester and a consolidated transcript indicating the performance in all semesters.

Sd/-

Nagpur: **Dr. S.P. Kane**

Dated : 15.6.2015 **Vice-Chancellor**