



RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR

**FACULTY OF SCIENCE
DIRECTION NO. 3 OF 2013**

DIRECTION RELATING TO THE EXAMINATION LEADING TO THE DEGREE OF MASTER OF SCIENCE(TECH) in Applied Electronics, Applied Geology, and Applied Environmental Science

**(CREDIT BASED SEMESTER PATTERN)
(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-2/2008/(XI Plan), dated 31 January 2008 regarding new initiatives under the XI Plan – Academic reforms in the University has suggested for improving quality of higher education and to initiate the academic reform at the earliest,

AND

WHEREAS, the committee constituted for the preparations of guidelines for 5 year integrated Courses in Applied Electronics, Applied Geology and Applied Environmental Science, in its meeting held on i) 13/02/2012, ii) 18/02/2012 for the award of MASTER OF SCIENCE(Tech) has prepared and submitted guidelines and syllabi,

AND

WHEREAS, the Board of Studies in the subjects Electronics, Geology and Environmental Science in their meeting held on 16.03.2012 prepared the syllabi and scheme of examination for the 5 Year integrated M.Sc. (Tech) degree course in their respective subjects and recommended for starting the credit based semester pattern in Future,

AND

WHEREAS, the Dean, Faculty of Science has consented to the syllabi and the scheme of examination for the award of M.Sc. (Tech) degree in Science faculty,

AND

Whereas, ordinance making is a time consuming process, therefore, I, Dr. V.S. Sapkal, 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 (Tech) in the Faculty of Science (Credit Based Semester Pattern).

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.

2. The duration of the M.Sc. (Tech) course shall be of Five academic years consisting of Ten semester with University examinations at the end of each semester namely:
 - a) M.Sc. (Tech) Semester I Exam.
 - b) M.Sc. (Tech) Semester II Exam.
 - c) M.Sc. (Tech) Semester III Exam.
 - d) M.Sc. (Tech) Semester IV Exam.
 - e) M.Sc. (Tech) Semester V Exam.
 - f) M.Sc. (Tech) Semester VI Exam.
 - g) M.Sc. (Tech) Semester VII Exam.
 - h) M.Sc. (Tech) Semester VIII Exam.
 - i) M.Sc. (Tech) Semester IX Exam.
 - j) M.Sc. (Tech) Semester X Exam.
3. The examinations shall be held at such places and dates which are notified by the University.

ELIGIBILITY TO THE COURSE:

4. 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 (Tech) and examinations thereof.

4 (i) For M.Sc.(Tech.) Applied Electronics.

A) For [M.Sc. (Tech) Applied Electronics Semester-I]

For admission to the M.Sc. (Tech) Semester I in Applied Electronics, every applicant shall have passed the 12th Standard examination of Maharashtra State Board of Secondary and Higher Secondary Education with English together with Mathematics, Physics and Chemistry subjects at the qualifying 12th Standard Examination or an examination recognised as equivalent thereto in such subjects and with such standards of attainments as may be prescribed.

B) For M.Sc.(Tech.)Applied Electronic Semester-III

For admission to the M.Sc.(Tech.)Semester-III in Applied Electronics, an applicant shall have passed 3 years Diploma Course with Electronic, Instrumentation, Electrical Engineering, Computer Science, Software Technology, Information Technology or an examination recognised as equivalent thereto in such subjects and with such standards of attainments as may be prescribed or is eligible by para 6 of this Direction.

C) For [M.Sc. (Tech) Applied Electronics Semester-V]

For admission to the M.Sc. (Tech) Semester V in Applied Electronics, every applicant shall have passed the B.Sc. with Electronics as one of the subjects or an examination recognised as equivalent thereto in such subjects and with such standards of attainments as may be prescribed or is eligible by para 6 of this Direction.

D) For [M.Sc. (Tech) Applied Electronics Semester-VII]

For admission to the M.Sc. (Tech) Semester VII in Applied Electronics, every applicant shall have passed the B.E. /B.Tech. In Electronics / Communication electronics / Applied electronics / Instrumentation / Embedded Technology from U.G.C. / A.I.C.T.E. recognized University or an examination recognised as equivalent thereto in such subjects and with such standards of attainments as may be prescribed or have passed the Bachelor of Applied Electronics and Software Technology (Science Faculty / Home Science Faculty) or is eligible by para 6 of this Direction.

4 (ii) For M.Sc.(Tech.) Applied Geology

A) For [M.Sc. (Tech) Applied Geology Semester-I]

For admission to the M.Sc. (Tech) Semester I in Applied Geology, every applicant shall have passed the 12th Standard examination of Maharashtra State Board of Secondary and Higher Secondary Education with English together with Physics, Chemistry Mathematics and or Biology, subjects at the qualifying 12th Standard Examination or an examination recognised as equivalent thereto in such subjects and with such standards of attainments as may be prescribed.

B) For [M.Sc. (Tech) Applied Geology Semester-V]

For admission to the M.Sc. (Tech) Semester V in Applied Geology, every applicant shall have passed the B.Sc. with Geology as one of the subjects or an examination recognised as equivalent thereto in such subjects and with such standards of attainments as may be prescribed or is eligible by para 6 of this Direction.

4 (iii) For M.Sc.(Tech.) Applied Environmental Science

A) For [M.Sc. (Tech) Applied Environmental Science-I]

For admission to the M.Sc. (Tech) Semester - I in Applied Environmental Science, an applicant shall have passed the 12th Standard examination of Maharashtra State Board of Secondary and Higher Secondary Education with English together with Biology, Mathematics, Physics and Chemistry subjects at the qualifying 12th Standard Examination or an examination recognised as equivalent thereto in such subjects and with such standards of attainments as may be prescribed.

B) For [M.Sc. (Tech) Applied Environmental Science-V]

For admission to the M.Sc. (Tech) Semester V in Applied Environmental Science, an applicant shall have passed the B.Sc. with Environmental Science as one of the subjects or an examination recognised as equivalent thereto in such subjects and with such standards of attainments as may be prescribed or is eligible by para 6 of this Direction.

C) For [M.Sc. (Tech) Applied Environmental Science -VII]

For admission to the M.Sc. (Tech) Semester VII in Applied Environmental Science, an applicant shall have passed the B.E. /B.Tech. Environmental Engineering from U.G.C. / A.I.C.T.E. recognized University or an examination recognised as equivalent thereto in such subjects and with such standards of attainments as may be prescribed or have passed the Bachelor of Environmental Science is eligible by para 6 of this Direction.

5. Eligibility For M.Sc. (Tech) Examination

a) M.Sc. (Tech) Semester I Examination

Students, who have fulfilled the eligibility criteria as mentioned in Section 4 and have been admitted to this course in Semester I.

b) M.Sc. (Tech) Semester II Examination

Students, who have been admitted to this course in semester II.

c) M.Sc. (Tech) Semester III Examination

Students, who have been admitted to this course in semester III.

d) M.Sc. (Tech) Semester IV Examination

Students, who have been admitted to this course in semester IV.

e) M.Sc. (Tech) Semester V Examination

Students, who have been admitted to this course in semester V.

f) M.Sc. (Tech) Semester VI Examination

Students, who have been admitted to this course in semester VI.

g) M.Sc. (Tech) Semester VII Examination

Students who have been admitted to this course in semester VII.

h) M.Sc. (Tech) Semester VIII Examination

Students, who have been admitted to this course in semester VIII.

i) M.Sc. (Tech) Semester IX Examination

Students, who have been admitted to this course in semester IX.

j) M.Sc. (Tech) Semester X Examination

Students, who have been admitted to this course in semester X.

(Note: Subject to the Rules of ATKT as mentioned in para 6 of this direction)

6. The ATKT rules for admission for the M.Sc. (Tech) Course (Theory and Practical as separate passing head) shall be as given in the following table-

6 (i) For M.Sc.(Tech.) Applied Electronics.

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 4(i) of the direction	-----
Semester II	-----	-----
Semester III	-----	Semester I as well as Semester II
Semester IV	Semester I of M.Sc. (Tech) in Applied Electronics	Semester II as well as Semester III
Semester V	Semester II of M.Sc. (Tech) in Applied Electronics or Eligibility as provided in the para 4.(i) C	Semester III as well as Semester IV
Semester VI	Semester III of M.Sc. (Tech) in Applied Electronics Or admitted by para 4 (i) C	Semester IV as well as Semester V

Semester VII	Semester IV of M.Sc. (Tech) in Applied Electronics or Eligibility as provided in the para 4 (i) C or Eligibility as provided in the para 4 (i) D	Semester V as well as Semester VI
Semester VIII	Semester V of M.Sc. (Tech) in Applied Electronics or Eligibility as provided in the para 4 (i) D	Semester VI as well as Semester VII
Semester IX	Semester VI of M.Sc. (Tech) in Applied Electronics Or Eligibility as provided in the para 4 (i) D	Semester VII as well as Semester VIII
Semester X	Semester VII of M.Sc. (Tech) in Applied Electronics	Semester V III as well as Semester IX

6(ii) for M.Sc. (Tech.) Applied Geology

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 4(ii) of the direction	-----
Semester II	-----	-----
Semester III	-----	Semester I as well as Semester II
Semester IV	Semester I of M.Sc. (Tech) in Applied Geology	Semester II as well as Semester III
Semester V	Semester II of M.Sc. (Tech) in Applied Geology or Eligibility as provided in the para 4.(ii) B	Semester III as well as Semester IV
Semester VI	Semester III of M.Sc. (Tech) in Applied Geology Or admitted by para 4 (ii)	Semester IV as well as Semester V
Semester VII	Semester IV of M.Sc. (Tech) in Applied Geology or Eligibility as provided in the para 4 (ii) or Eligibility as provided in the para 4 (ii)	Semester V as well as Semester VI
Semester VIII	Semester V of M.Sc. (Tech) in Applied Geology or Eligibility as provided in the para 4 (ii)	Semester VI as well as Semester VII

Semester IX	Semester VI of M.Sc. (Tech) in Applied Geology Or Eligibility as provided in the para 4 (ii)	Semester VII as well as Semester VIII
Semester X	Semester VII of M.Sc. (Tech) in Applied Geology	Semester V III as well as Semester IX

6 (iii) For M.Sc.(Tech.) Applied Environmental Science

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 4(iii) of the direction	-----
Semester II	-----	-----
Semester III	-----	Semester I as well as Semester II
Semester IV	Semester I of M.Sc. (Tech) in Applied Environmental Science	Semester II as well as Semester III
Semester V	Semester II of M.Sc. (Tech) in Applied Environmental Science or Eligibility as provided in the para 4.(iii)	Semester III as well as Semester IV
Semester VI	Semester III of M.Sc. (Tech) in Applied Environmental Science Or admitted by para 4 (iii)	Semester IV as well as Semester V
Semester VII	Semester IV of M.Sc. (Tech) in Applied Environmental Science or Eligibility as provided in the para 4 (iii) or Eligibility as provided in the para 4 (iii)	Semester V as well as Semester VI
Semester VIII	Semester V of M.Sc. (Tech) in Applied Environmental Science or Eligibility as provided in the para 4 (iii)	Semester VI as well as Semester VII
Semester IX	Semester VI of M.Sc. (Tech) in Applied Environmental Science Or Eligibility as provided in the para 4 (iii)	Semester VII as well as Semester VIII
Semester X	Semester VII of M.Sc. (Tech) in Applied Environmental Science	Semester V III as well as Semester IX

7. 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.

8. The fees for the tuition, examination, laboratory and other fees shall be as prescribed by the university from time to time.
9. (a) The scope of the subjects shall be as prescribed in the syllabus.

(b) The medium of instruction and examination shall be English.
10. 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 appendix 1, 2, &3 appended with this direction.
11. 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.
12. 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 credit based semester pattern as prescribed in appendix 1,2 & 3 appended with this direction.
13. 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.
14. The names of the successful examinee passing the examination as a whole in the minimum prescribed period and obtaining prescribed number of places 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.
15. 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.
16. Examinee successful at the final examination shall on payment of the prescribed fees, will be entitled for the award of the degree in the prescribed form signed by the Vice Chancellor.
17. This course is based on credit based semester pattern and therefore, it will be also regulated by guidelines and regulation given in appendices which are part of this direction.

Appendix-1A

Scheme of teaching and examination under credit based semester pattern for M.Sc. (Tech) Programme in Applied Electronics

S.No.	Semester	Theory Paper/ Practical	Teaching Scheme (Hrs/ week)			Credits	Examination Scheme					
			Th	Pr.	Total		Duration (Hrs)	Max. Marks		Total Marks	Min. Passing Marks	
								External Marks	Internal Marks		Th	Pr.
1	I to IX	I	4		4	4	3	80	20	100	40	
2		II	4		4	4	3	80	20	100	40	
3		III	4		4	4	3	80	20	100	40	
4		IV	4		4	4	3	80	20	100	40	
5		Practical I		9	9	4	6*	80	20	100		40
6		Practical II		9	9	4	6*	80	20	100		40
7		Seminar /workshop /project	2		2	1	---		25	25	10	
		Total	18	18	36	25				625	170	80

S.No.	Semester	Theory Paper/ Practical	Teaching Scheme (Hrs/ week)			Credits	Examination Scheme					
			Th	Pr.	Total		Duration (Hrs)	Max. Marks		Total Marks	Min. Passing Marks	
								External Marks	Internal Marks		Ex.	In.
1	X	Project				24	1:00 Hours per Student	400	200	600	200	100
2		Seminar / workshop	2		2	1	---		25	25	10	
		Total				25				625	210	100

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

- In each semester student will have to give seminar/ participate in workshop on any topic relevant to the syllabus encompassing the recent trends and development in that field. 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 student will have to carry out the research based project work in the VI & IX semester in the department or depending on the availability of place; he/she will be attached to any of the national/regional/private research institute/organization. The student in consultation with supervisor will finalize the topic of the project work at the beginning of the respective semester.
- The student will have to carry out the research based Major project work in the X semester in the institute where candidate has taken admission or he/she will be attached to any of the national/regional/private research institute/organization or any industry. The student in consultation with supervisor will finalize the topic of the project work before the end of semester IX and can undertake project only after completion of IX examination conducted by university. Details of Project work explained in Appendix 2 of this directive are mandatory for each student, Supervisor and In-Charge place of work. The project will carry total 400 marks, out of which 300 marks are allotted for project report and 100 marks for Viva-voce.

- Each theory paper is supposed to cover in maximum 60 clock hours (15 clock hours per unit) of teaching and 240 clock hours per semester for all the four papers.
- 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.

Appendix-1B

Scheme of teaching and examination under credit based semester pattern for M.Sc. (Tech) Programme in Applied Geology

S.No.	Semester	Theory Paper/ Practical	Teaching Scheme (Hrs/ week)			Credits	Examination Scheme					
			Th	Pr.	Total		Duration (Hrs)	Max. Marks		Total Marks	Min. Passing Marks	
								External Marks	Internal Marks		Th	Pr.
1	I to IX	I	4		4	4	3	80	20	100	40	
2		II	4		4	4	3	80	20	100	40	
3		III	4		4	4	3	80	20	100	40	
4		IV	4		4	4	3	80	20	100	40	
5		Practical I		9	9	4	6*	80	20	100		40
6		Practical II		9	9	4	6*	80	20	100		40
7		Seminar	2		2	1	---			25	25	10
		Total	18	18	36	25				625	170	80

S.No.	Semester	Theory Paper/ Practical	Teaching Scheme (Hrs/ week)			Credits	Examination Scheme				
			Th	Pr.	Total		Max. Marks		Total Marks	Min. Passing Marks	
							External Marks	Internal Marks		Ex.	In.
1	X	Project				24	400	200	600	200	100
2		Seminar	2		2	1		25	25	10	
		Total				25			625	210	100

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

- In each semester student will have to give seminar on any topic relevant to the syllabus encompassing the recent trends and development in that field. 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.
- Each candidate must carry out field work of three to four days duration in igneous / sedimentary / metamorphic (including structurally deformed) terrain. The field report must be submitted to the field excursion In-charge. The field work should be treated as a part of practical examination of semester II.
- Each candidate must carry out field work of three to four days duration in igneous / sedimentary / metamorphic (including structurally deformed) terrain. The field report must be submitted to the field excursion In-charge. The field work is a part of Practical I of Semester IV.

4. Each candidate must carry out field work of two to three weeks duration in igneous / sedimentary / metamorphic (including structurally deformed) terrain. The field report should be based on the mapping as well as laboratory work on the rock samples collected during the field work. The field work should be treated as a part of practical II examination of semester VI and the field report shall be assessed by field excursion In-charge.
5. Each candidate shall undergo Mine / Industrial Training of Two to Four weeks duration in any working mine or industry or organization related to earth science and submit Mine / Industrial Training report to the Head of the Department. This training shall be treated as a part of practical I examination of semester VIII and the field report shall be assessed by the Head of the Department.
6. Every student is required to carry out a Project work in the X semester in the institute where candidate has taken admission. Each student is required to carry out geological work independently in an area of about 50 Sq. Km approved by the head of the Department and Project Guide. The area/topic of the project work shall be assigned to the students depending upon the expertise available in the Department. The Project report shall comprise of introduction, aims and objectives, short literature review, methodology/ materials and methods, experiments and results, discussion, 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 of the department. The project report will be essentially evaluated by two referees, which includes Project Guide as internal referee and one External referee. The project will carry total 400 marks, out of which 300 marks are allotted for project report and 100 marks for Viva-voce.
7. Each theory paper is supposed to cover in maximum 60 clock hours (15 clock hours per unit) of teaching and 240 clock hours per semester for all the four papers.
8. **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.

Appendix-1C

Scheme of teaching and examination under credit based semester pattern for M.Sc. (Tech) Programme in Applied Environmental Science

S. No.	Semester	Theory Paper /Practical	Teaching Scheme (Hrs/Week)			Credits	Examination Scheme					
			Th.	Pr.	Total		Duration (Hrs)	Max. Marks		Total Marks	Min Passing Marks	
								External	Internal		Th.	Pr.
1	I to IX	I	4		4	4	3	80	20	100	40	
2		II	4		4	4	3	80	20	100	40	
3		III	4		4	4	3	80	20	100	40	
4		IV	4		4	4	3	80	20	100	40	
5		Practical I		9	9	4	6*	80	20	100		40
6		Practical II		9	9	4	6*	80	20	100		40
7		Seminar/Workshop/Project	2		2	1			25	25	10	
		Total	18	18	36	25				625	170	40

S.No.	Semester	Theory Paper/ Practical	Teaching Scheme (Hrs/ week)			Credits	Examination Scheme					
			Th	Pr.	Total		Duration (Hrs)	Max. Marks		Total Marks	Min. Passing Marks	
								External Marks	Internal Marks		Ex.	In.
1	X	Project				24	1:00 Hours per Student	400	200	600	200	100
2		Seminar / workshop	2		2	1	---		25	25	10	
		Total				25				625	210	100

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

1. In each semester student will have to give seminar/ participate in workshop on any topic relevant to the syllabus encompassing the recent trends and development in that field. 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 research based project work in the VI & IX semester in the department or depending on the availability of place; he/she will be attached to any of the national/regional/private research institute/organization. The student in consultation with supervisor will finalize the topic of the project work at the beginning of the respective semester.
3. The student will have to carry out the research based Major project work in the X semester in the institute where candidate has taken admission or he/she will be attached to any of the national/regional/private research institute/organization or any industry. The student in consultation with supervisor will finalize the topic of the project work before the end of semester IX and can undertake project only after completion of IX examination conducted by university. Details of Project work explained in Appendix 2 of this directive are mandatory for each student, Supervisor and In-Charge place of work. The project will carry total 400 marks, out of which 300 marks are allotted for project report and 100 marks for Viva-voce.
4. Each theory paper is supposed to cover in maximum 60 clock hours (15 clock hours per unit) of teaching and 240 clock hours per semester for all the four papers.
5. **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.

Appendix-2

Project Work Scheme Guidelines for the Students, Supervisors and Examiners

Every student is required to carry out **Field Based Project Work** on a related topic of the subject /course. It must be an original 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 Examination of Semester X. The project report should have 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 project supervisors for the Project Work shall be from the following.

A person selected by the duly constituted Selection Committee in the relevant subject and approved by the University, exclusively for P.G. courses.

OR

A person selected by the duly constituted Selection Committee of the University approved by the University and appointed as a full time regular teacher at U.G. level in the subject Electronics and having at least 10 years teaching experience.

OR

A person selected by duly constituted Selection Committee of R.T.M. Nagpur University, approved by the University and appointed as full time regular teacher at UG level having Ph.D. Degree in electronics, with 5 years teaching experience in 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 with at least 5 Year research experience.

OR

Person from industry irrespective of his/ her academic background, capable of mentoring student in his / her place of work and having at least 5 Year experience in Quality / Maintenance / Automation / Operation / Production and has been recommended by BOS before the start of the X semester

In the start of the semester IX list of probable supervisors with their area of interest / working and probable work place should be displayed to all the students. The student applies with his area of interest and will opt for 2 supervisors of his choice. Through process of scrutiny, suitable supervisor will be allotted to the student. The student in consultation with supervisor will finalize the topic of the project work before the end of semester IX. The topic will be forwarded to the controller of examination by the head of the department. The Project Work will carry total 600 marks will be evaluated by both external and internal examiner in the respective institute. The examiners will evaluate the Experimental Project Work taking into account the 1) Relevance and Coverage of subject matter, 2) Demonstration and presentation, 3) References and 4) Critical application and original experimental contribution of the candidate.

Appendix-2 (A)

Seminar

Guidelines for Students, Supervisors and Examiners

Any semester student will have to deliver seminar on any topic relevant to the syllabus with emphasis in the recent trends and develop in that field. The topic of the seminar will be decided at the beginning of the each semester in consultation with the supervisory teacher. Head of the Department will distribute the students among the faculty members. 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 and head of the department. The average marks shall be considered for the final result. 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-3

General Rules and Regulations

A) Pattern of Question Paper for theory examination

1. Question paper will consist of five questions.
2. Four questions will be on four units with internal choice (One question on each unit).
3. Fifth question will consist of 2 sets of 4 sub questions (One sub question on each unit), student have to attempt any one set.
4. Maximum marks of each paper will be 100.
5. Each paper will be of 3 hours duration.

B) Scheme for conduction of practical examination

For Semester 1 & 2

There will be 2 sections of practical examination Sec. A and Sec. B

In Sec. A student will have to perform 2 experiments in 6 hours from prescribed list in syllabus

In Sec. B student will have to perform 2 experiments in 6 hours from prescribed list in syllabus

For Semester 3 to 9

There will be 2 sections of practical examination Sec. A and Sec. B

In Sec. A student will have to perform 2 experiments in 6 hours.

Two experiments in Sec. A One from list of experiments on Paper I and the other from list of experiments on Paper II, in respective semester

In Sec. B student will have to perform 2 experiments in 6 hours.

Two experiments in Sec. B One from list of experiments on Paper III and the other from list of experiments on Paper IV, in respective semester

C) Grade Point Average (GPA) and Cumulative Grade Point Average (CGPA)

1. On clearing a paper, based on the cumulative score (out of 100) in that paper, a student will be given **Grade Point Average (GPA)** (Maximum of 10, and minimum of 4) for that paper on the following basis.

SCORE (out of 100)	Grade	GRADE POINT AVERAGE (out of 10)
100 to 75	O: Outstanding	10
74 to 65	A: Very Good	09
64 to 55	B: Good	08
54 to 50	C: Average	07
49 to 45	D: Satisfactory	06
44 to 40	E: Pass	05
Below 40	F: Fail	00 or fail

The description for each of the grades are as follows:

Grade Proposed Norms

O: Outstanding: Excellent analysis of the topic, (85% and above)

Accurate knowledge of the primary material, wide range of reading, logical development of ideas, originality in approaching the subject, neat and systematic organization of content, elegant and lucid style;

A: Very Good: Excellent analysis of the topic (70 to 84% and above)

Accurate knowledge of the primary material, acquaintance with seminal publications, logical development of ideas, neat and systematic organization of content, effective and clear expression;

B: Good: Good analysis and treatment of the topic (60 to 69%)

Basic knowledge of the primary material, logical development of ideas, neat and systematic organization of content, effective and clear expression;

C: Average: Some important points covered (55 to 59%)

Basic knowledge of the primary material, logical development of ideas, neat and systematic organization of content, good language or expression;

D: Satisfactory: Some points discussed (50 to 54%)

Basic knowledge of the primary material, some organization, acceptable language or expression;

E: Pass: Any two of the above (40 to 49%)

F: Fail: None of the above (Below 40%)

2. On clearing all the papers in a semester, a student will be allotted a **Semester Grade Point Average (SGPA)** for that particular semester. As the pattern given above does not have differential weights for papers, the SGPA of a student for a particular semester will be the average of the GPA's for all the papers.
3. A student will be allotted a **Cumulative Grade Point Average (CGPA)** after clearing all the four semesters. Again as there is no differential weight system for semesters, the CGPA of a student will be the average of the four SGPA's of that student.

The CGPA can be converted to the usual / conventional divisions in the following way.

CGPA	Final Grade	Equivalent class/division
9.00 to 10.00	O	First class (outstanding)
8.00 to 8.99	A	First class (excellent)
7.00 to 7.99	B	First class with distinction
6.00 to 6.99	C	First class
5.00 to 5.99	D	Second class
4.00 to 4.99	E	Pass class
Below 4.00	F	Fail

- a. A student failed to score minimum 40% marks in each head of passing and in aggregate shall be given F grade.
 - b. Student with F grade in a course would be granted credit for that course but not the grade for that course.
 - c. Grade points earned in each paper shall be calculated as – Grade points obtained (vide above table) x Credits for the paper.
 - d. The formula for GPA will be based on Weighted Average. The final GPA will not be printed unless a student passes courses equivalent to minimum 100 Credits.
4. While declaring the result, the existing relevant ordinances are applicable. For verification and revaluation existing rules will be applicable.
 5. The candidate may take all the examinations as per the provisions of ATKT simultaneously but his result of final semester shall not be declared unless he is declared successful at lower examinations.
 6. If an examinee failed to pass the post graduate programme within five successive years (for four semesters degree) and within six successive years (for six semesters degree) from the date of his / her first admission to particular post graduate programme he/ she shall be declared as "Not Fit for the Course (NFC)" and he/ she will not be allowed to appear further for any previous examination of the course.
 7. The computation of Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA) of an examinee shall be given below:
 - a. The marks will be given in all examinations which will include the college assessment marks, and the total marks for each Theory/ Practical shall be converted into Grades as per above table. SGPA shall be calculated based on Grade Points corresponding to Grade

as given in above table and the credits allotted to respective Theory / Practical shown in the scheme for respective semester.

- b. SGPA shall be computed for every semester and CGPA shall be computed only in X semester (for X semester degree) . The CGPA of X semester shall be calculated based on SGPA of all ten semesters as per following computation:

$$\text{SGPA} = \frac{C1 \times G1 + C2 \times G2 + \dots + Cn \times Gn}{C1 + C2 + \dots + Cn}$$

Where C1 = Credit of individual Theory / Practical

G1 = Corresponding Grade Point obtained in the Respective Theory/ Practical

n = 7

$$\text{CGPA} = \frac{(\text{SGPA}) I \times (\text{Cr}) I + (\text{SGPA}) II \times (\text{Cr}) II + \dots + (\text{SGPA}) m \times (\text{Cr}) m}{(\text{Cr}) I + (\text{Cr}) II + \dots + (\text{Cr}) m}$$

Where

m = 10

(SGPA) I = SGPA of I Semester; (Cr) I = Total Credits for I Semester;

(SGPA) II = SGPA of II Semester; (Cr) II = Total Credits for II Semester;

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(SGPA) m = SGPA of m Semester; (Cr) m = Total Credits for m Semester

Nagpur :

Dated : _28/03/2013.

Sd/-

Dr. V.S. Sapkal

Vice-Chancellor