



Ordinance No. 83 of 2017.

EXAMINATIONS LEADING TO THE DEGREE OF MASTER OF COMPUTER APPLICATION (M.C.A.) SEMESTER PATTERN WITH CHOICE BASED CREDIT SYSTEM, Ordinance, 2017.

Whereas, it is expedient to prepare an Ordinance in respect of Examinations Leading to the Degree of Master of Computer Application(M.C.A.) in the Faculty of Science, Semester Pattern with Choice Based Credit System, for the purpose hereinafter appearing, the Management Council is hereby pleased to make the following ordinance:-

1. This Ordinance may be called “Examinations leading to the Degree of Master of Computer Application (M.C.A.) in the Faculty of Science (3 year course) Semester Pattern with Choice Based Credit System, Ordinance, 2016.”
2. This Ordinance shall come into force from the date of its making by the Management Council.
3. **Salient features of the Course:**
 - i) Except sixth semester, each semester is consists of 8 papers including practical/project/Seminar.
 - ii) Each Theory course will be of 4 credits, Lab courses (Practical’s) shall be of 2 and seminar shall be of 1 credit.
 - iii) Each regular student will have to appear for all the 25 credits of each semester except sixth semester which shall consist of 15 credits.
 - iv) Total credits for MCA course shall be 140.
 - v) A student will have to complete at least 75% of credit of Syllabus from concerned department of MCA. and if wish remaining credit can be chosen, mentioned in syllabus, from other department.
4. The duration of the MCA course shall be of three Academic years consisting of six semesters with the University examination at the end of each semester namely: -
 - MCA Part I : Semester I & Semester II Examinations;
 - MCA Part II : Semester III & Semester IV Examinations, and
 - MCA Part III : Semester V & Semester VI Examinations,

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

5. The examination specified in the preceding paragraph shall be held semester wise at such places and on such dates as prescribed by the University.

ELIGIBILITY FOR THE COURSE:

6. Subject to his compliance with the provisions of this Ordinance and of other ordinances in force from time to time, the following candidate shall be eligible for

the admission to MCA course and examinations thereof :-

Eligibility:-

a) **MCA I** - A student who has passed 12th standard examination with Mathematics as one of the subject in 10+2 along with any Graduation (with minimum 50% marks for General and 45% marks for all backward category) and having valid CET Score (i.e. Candidate securing zero or negative marks in MCA-CET or any other equivalent CET will not be considered eligible for the admission) and following other norms as laid down by AICTE/DTE from time-to-time .

Or

Student who studied the Statistics as one of the subject during Graduation course and having Valid CET Score (i.e. Candidate securing zero or negative marks in MCA-CET or any other equivalent CET will not be considered eligible for the admission) and following other norms laid down by AICTE/DTE from time-to-time.

b) **Direct Admission to MCA II** – A student who cleared the PGDCS&A course from Gondwana University, Gadchiroli or from R.T.M. Nagpur University, Nagpur can enroll directly to MCA II (Semester III), subject to satisfaction of other norms laid down by AICTE and availability of seats in the colleges running MCA Course.

7) **Eligibility Criteria for next Higher Semester Examinations:** Following rules shall be followed while admitting into the next higher semester.

Sr. No.	Semester	ATKT/Promotion Rules
1	I	-----
2	II	A students enrolled in Semester I shall be allowed to keep term for semester II, if he/she has appeared for University Examination of semester I.
3	III	Candidate should have passed at least 9 papers out of 14 in semester I and II taken together including practical's. Note: Only UE should be counted including practical.
4	IV	A student enrolled in Semester III shall be allowed to keep term for semester IV, taken if he/she has appeared for University Examination of semester III.
5	V	A student shall be allowed to keep term for semester V, if he / She has passed semester I, II And Candidate should have passed at least 9 papers out of 14 in semester III and IV together including practical's. Note: Only UE should be counted including practical
6	VI	A student enrolled in Semester V shall be allowed to keep term for semester VI, if he/she has appeared for University Examination of semester V.

8) Absorption scheme for failure students of the Credit Based Semester Pattern:

While switching over to Choice Based Credit System, the failure students of

credit based semester pattern will be given only **Five** chances to clear the examinations.

a) The candidates who have cleared Part I examination of the Credit Based Semester Pattern examination shall get admission to Third Semester of Part II of the Choice Based Credit System directly.

b) The candidates who have cleared Part I and Part II examination of the Credit Based Semester Pattern examinations shall get admission to Fifth Semester of Part III of the Choice Based Credit System directly.

9) Without prejudice to other provisions of Ordinance No. 6 relating to the examinations 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.

10) The fees for the tuition, examination, laboratory and other fees shall be as prescribed by the university from time to time.

11) a) The scope of the subject shall be as prescribed in the syllabus.

b) The medium of instruction and examination shall be English.

12) The details of Papers, Practical, Project and maximum marks assigned to each paper and minimum marks to pass in the examination, shall be as prescribed in the course structure mentioned in para. 19.

13) The examinee at each of the examination shall have an 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 examination. Once this option is exercised, the option shall be binding on the examinee and it shall not be evoked under any circumstances.

14) The provisions 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 Ordinance.

15) 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 No. 6 relating to Examination in General.

16) Successful examinees at the end of MCA course who have 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.

17) No candidate shall be admitted to an examination under this Ordinance, if he / she has already passed the same examination of this university or of any other university.

18) Fairness in Assessment:

For fairness of assessment in the examination following rules shall be observed :-

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- i. In case of theory paper valuation, at least one valuer must be appointed from other university.
- ii. In case of the assessment of Practical/Project reports, the work should be under taken by an internal as well as an external examiner.

19) Course Structure

Scheme of teaching and examinations under semester pattern with Choice Based Credit System (CBCS) for MCA program shall be as given below :-

MCA I (Semester I)								
Subject	Paper Code	Paper Name	Total Period /Week	Credit	% of Assessment			
					IA	UE	Total	Min. Passing (40%)
Core	PSMCAT101	Java Concepts	4	4	20	80	100	40
	PSMCAT102	Operating System and Linux	4	4	20	80	100	40
	PSMCAT103	Project Management	4	4	20	80	100	40
Discipline Specific Elective (DSE)	PSMCAT104.1	<u>Elective</u> 1. Discrete Mathematical Structure 2. Numerical Methods	4	4	20	80	100	40
	PSMCAT104.2							
Skill Enhancement Elective (SEE)	PSMCAT105.1	<u>Elective</u> 1. Digital Electronics 2.PC-Maintenance	4	4	20	80	100	40
	PSMCAT105.2							
Core Lab*	PSMCAP106	Lab on PSMCAT101, 102 & 103	6	2	50	50	100	40
SEE based Lab	PSMCAP107	Lab on PSMCAT105.1 or PSMCAT105.2	6	2	50	50	100	40
Ability Enhancement	PSMCAS108	Seminar	1	1	25	-	25	10
Total			33	25	255	470	725	290

- **Core:** Major theory papers in the concerned subject.
- **Discipline Specific Elective:** These papers will be specialization in the concerned subject.
- **Skill Enhancement Course:** Student can choose this paper from any subject.
- **Ability Enhancement (Compulsory Foundation) :** It is courses based upon a content that

leads to knowledge enhancement.

- From Elective Courses (Either Skill based and Discipline Specific), students need to select one paper form each.
- **IA** (Internal Assessment) : It will be evaluated by Internal Examiner appointed by College in consultation with the University. (Refer Appendix 1)
- **UE** (University Examination): It will be evaluated by External Examiner appointed by University. (Refer Appendix 1 & 3)
- **Period** : Each period is of 60 minutes or as per AICTE/DTE direction from time to time.
- In Paper Code
 - 1st Letter (P) : Represent it a Post Graduate Course
 - 2ND Letter (S) : Represent it is Science Stream.
 - Next 3 Letter (MCA) :Represent it is course in Master of Computer Application.
 - Next Letter (T/P) : T : Represent Theory Paper (Refer Appendix 1 & 3)
P: Represent Practical (Refer Appendix 1 & 2)
S : Represent Seminar (Refer Appendix 1)
 - Next Letter (1) : Represent Semester (1- 1st, 2 – 2nd and so on 6-6th Semester)
 - Last two letter : Represent Paper No. for Ex. 01 Represent Paper 1

Lab* :

- 1) Not more than two students should be allowed to do practical on one machine.
- 2) Wherever possible Practical's should be perform using Open Source Software.

Note: Student must appear for University Practical Examination.

MCA I (Semester II)

Subject	Paper Code	Paper Name	Total Period /Week	Credit	% of Assessment			
					IA	UE	Total	Min. Passing (40%)
Core	PSMCAT201	Advanced Java	4	4	20	80	100	40
	PSMCAT202	Data Structures	4	4	20	80	100	40
	PSMCAT203	Software Testing	4	4	20	80	100	40
Discipline Specific Elective (DSE)	PSMCAT204.1 PSMCAT204.2	<u>Elective</u> 1.Data Warehousing 2. Client and Server Technologies	4	4	20	80	100	40
Skill Enhancement	PSMCAP205	Project	4	4	20	80	100	40
Core Lab	PSMCAP206	Lab on PSMCAT201 & PSMCAT202	6	2	50	50	100	40
Discipline Specific based Lab	PSMCAP207	Lab on PSMCAT204.1 Or PSMCAT204.2	6	2	50	50	100	40
Ability Enhancement	PSMCAS208	Seminar	1	1	25	-	25	10
Total			33	25	255	470	725	290

MCA II (Semester III)

Subject	Paper Code	Paper Name	Total Period /Week	Credit	% of Assessment			
					IA	UE	Total	Min. Passing (40%)
Core	PSMCAT301	.Net Technologies	4	4	20	80	100	40
	PSMCAT302	Scripting Languages	4	4	20	80	100	40
	PSMCAT303	Operational Techniques	4	4	20	80	100	40
Discipline Specific Elective (DSE)	PSMCAT304.1	<u>Elective</u> 1. Digitalized Accounting	4	4	20	80	100	40
	PSMCAT304.2	2. Enterprise Resource Planning						
Skill Enhancement Elective (SEE)	PSMCAT305.1	<u>Elective</u> 1. Soft Skills and Personality Development	4	4	20	80	100	40
	PSMCAT305.2	2. E-Commerce						
Core Lab	PSMCAP306	Lab on PSMCAT301, PSMCAT302 & PSMCAT303	6	2	50	50	100	40
DSC & SEE based Lab	PSMCAP307	Lab on PSMCAT304.1 or PSMCAT304.2	6	2	50	50	100	40
Ability Enhancement	PDMCAS308	Seminar	1	1	25	-	25	10
Total			33	25	255	470	725	290

MCA II (Semester IV)

Subject	Paper Code	Paper Name	Total Period /Week	Credit	% of Assessment			
					IA	UE	Total	Min. Passing (40%)
Core	PSMCAT401	ASP.Net using C#	4	4	20	80	100	40
	PSMCAT402	Advance Data Communication	4	4	20	80	100	40
	PSMCAT403	Distributed Database and Database Administration	4	4	20	80	100	40
Discipline Specific Elective	PSMCAT404.1 PSMCAT404.2	<u>Elective</u> 1. Computer Graphics 2. Image Processing	4	4	20	80	100	40
Skill Enhancement	PSMCAP405	Project	4	4	20	80	100	40
Core Lab	PSMCAP406	Lab on PSMCAT401, PSMCAT402 &PSMCAT403	6	2	50	50	100	40
Discipline Specific based Lab	PSMCAP407	Lab on PSMCAT404.1 or PSMCAT404.2	6	2	50	50	100	40
Ability Enhancement	PSMCAS408	Seminar	1	1	25	-	25	10
Total			33	25	255	470	725	290

MCA III (Semester V)

Subject	Paper Code	Paper Name	Total Period /Week	Credit	% of Assessment			
					IA	UE	Total	Min. Passing (40%)
Core	PSMCAT501	Advanced Web development	4	4	20	80	100	40
	PSMCAT502	Digital Cyber Security	4	4	20	80	100	40
	PSMCAT503	Cloud Computing	4	4	20	80	100	40
Discipline Specific Elective	PSMCAT504.1 PSMCAT504.2	<u>Elective</u> 1.Research Methodology 2.Big Data & Hadoop	4	4	20	80	100	40
Skill Enhancement Elective	PSMCAT505.1 PSMCAT505.2	<u>Elective</u> 1. Android Application Development 2. Mobile Computing	4	4	20	80	100	40
Core Lab	PSMCAP506	Lab on PSMCAT501	6	2	50	50	100	40
Discipline Specific based Lab	PSMCAP507	Lab on (PSMCAT504.1 or PSMCAT504.2) & PSMCAT505	6	2	50	50	100	40
Ability Enhancement	PSMCAS508	Seminar	1	1	25	-	25	10
Total			32	25	255	470	725	290

MCA III (Semester VI)

Subject	Paper Code	Paper Name	Total Period /Week	Credit	% of Assessment			
					IA	UE	Total	Min. Passing (40%)
Skill Enhancement	PSMCAP601	Industrial Internship Project	-	10	250	250	500	200
Ability Enhancement	PSMCAS602	Seminar Work	-	5	100	100	200	80
Total			-	15	350	350	700	280

Total credit for the entire course of MCA is 140.

Note: The Practical and Project shall be evaluated by the an External and an Internal Examiner s appointed by the University.

1. In sixth semesters, 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 semester in consultation with the supervising teacher. The student has to deliver the seminar which will be followed by discussion. The seminar will be opened to all the teachers of the department, invitees, and students.
2. The student will have to carry out the project work in lieu of practical in the Second and Fourth semester in the College or University Department. Sixth semester project should be undertaken as specified in Syllabus.

20) Credit, Grade, SGPA & CGPA

MCA Program shall consist of six semesters, wherein the student has to complete certain number of credits as indicated in para 19. Each Subject (Paper, Practicals, Project and Seminar) has some fixed number of credits. The types of subject subheads are: Core, Core Practical, Discipline Specific Elective, Discipline Specific Elective Practicals, Skill Enhancement course, Ability Enhancement Course.

Among the 140 credits which candidate needs to complete and clear for MCA course, at least 75% credits must be taken from the parent department where he / she is registered for MCA Course and as per student wish, the remaining 25% credits can be taken from any other department of concerned college or university department or other affiliated college offering such course depending upon such arrangement among Parent department and other department of concerned college or University department or other affiliated college.

a) Credits and Grade:

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. **There will be 1 credit for 16-20 hours for Theory papers and at least 30-40 hours for practical to be spent by the student per course in one semester.**

Depending on the marks scored in a subject, student shall be given a Grade. Each grade shall have certain grade points as follows:-

Marks Obtained	Letter Grade	Grade Point
91-100	O (Outstanding)	10
81-90	A+ (Excellent)	09
71-80	A (Very Good)	08
55-70	B+ (Good)	07
51-54	B (Satisfactory)	06
41-50	C (Average)	05
= 40	P (Pass)	04
<40	F (Fail)	0
Ab	Ab (Absent)	0

Table 1: Letter grade and Grade Point based on Marks Scored

A student obtaining Grades F and Ab shall be considered fail and will be required to reappear for the examination.

b) Computation of SGPA and CGPA:-

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

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.

$$\text{SGPA (Si)} = \frac{\sum(C_i \times G_i)}{\sum C_i}$$

Where C_i is the number of credits of the i^{th} course and G_i is the grade point scored by the student in the i^{th} course.

Illustration for SGPA:-

Code	Theory/Practical	Credits	Marks Obtained	Out of	Grade Point	Grade Letter	Credit Points (Credit x Grade Points)
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
Discipline Specific Elective (DSE)	Paper 4	4	78	100	8	A	4x8=32
Skill Enhancement Elective (SEE)	Paper 5	4	89	100	9	A+	4x9=36
Practical 1	Practical based on Core Paper 1-3	2	85	100	9	A+	2x9=27
Practical 2	Practical based on DSE and SEE	2	91	100	10	O	2x10=20
Ability Enhancement	Seminar	1	22	25	9	A+	1*9=9
Total		25					211
Thus, SGPA = 211/25 = 8.44							

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.

$$\text{CGPA} = \frac{\sum (C_i \times S_i)}{\sum C_i}$$

Where S_i is the SGPA of the i^{th} semester and C_i is the total number of credits in that semester.

Illustration for CGPA

Semester 1	Semester 2	Semester 3	Semester 4	Semester 5	Semester 6
Credit : 25	Credit : 25	Credit : 25	Credit : 25	Credit : 25	Credit : 15
SGPA: 8.44	SGPA: 7.83	SGPA: 5.69	SGPA: 6.31	SGPA: 6.34	SGPA: 9.3
Thus, CGPA = $\frac{25 \times 8.44 + 25 \times 7.83 + 25 \times 5.69 + 25 \times 6.31 + 25 \times 6.34 + 25 \times 9.3}{140}$					
= $\frac{211 + 195.75 + 142.25 + 157.75 + 158.5 + 232.5}{140}$					
= $\frac{1097.75}{140} = 7.84107$					
i.e. CGPA = 7.84					

The SGPA and CGPA shall be rounded off to 2 decimal points and reported in the transcripts. For example 7.318333 = 7.32

21) **Qualification for Teacher** shall be as per the norms specified by AICTE.

22) **Awarding Certificate and Degree**

- i) Successful examinees at the end of MCA Semester I, II, III, IV, V & VI examinations shall be entitled to receive a **Certificate/ Marksheet / Transcript** signed by the Controller of Examinations (COE) of the University.
- ii) After successful completion of MCA course and on payment of prescribed fees candidate will receive a Degree in the prescribed format, signed by the Vice-Chancellor.

(Statement of Object and reasons)

The Vice-chancellor had issued Direction No.211 of 2016 date 19/09/2016 in respect of “Examinations Leading to the Degree of Master of Computer Application(M.C.A.) Semester Pattern with Choice Based Credit System, Direction,2016.”

The above mentioned Direction is required to be converted into an ordinance as per provision made under the Maharashtra Universities Act,1994, hence this Draft Ordinance is prepared for its consideration by the Academic Council and the Management Council of the Gondwana University, Gadchiroli.

Appendix 1

Evaluation Rules

A) Internal Assessment:-

1. The internal assessment marks shall be awarded by the concerned teacher.
2. The internal assessment marks shall be sent to the University after the Assessment in the prescribed format.
3. General guidelines for Internal Assessment:-
 - a) The internal assessment marks assigned to each theory paper on the basis of the performance in any two assignments (each of 10 marks), as described below, shall be selected by concerned teacher:-
 1. Class Test / Sessional examination,
 2. On-line Test,
 3. Theory Assignments,
 4. Programming Assignments,
 5. Study tour,
 6. Industrial visits,
 7. Visit to educational institutions and research organizations, field work, Conference etc.,
 8. Group discussions,
 9. Seminar Presentation,
 10. Publishing Research Paper,
 11. Review of Research Papers, and
 12. Participation in Departmental Activities.
 - b) There shall be no separate / extra allotment of work load to the concerned teacher related to above assignments. He/ She shall conduct the Internal assessment activity during the regular teaching days / periods as a part of regular teaching activity.
 - c) The concerned teacher / department / college shall have to keep the record of all the above activities until six months after the declaration of the result of that semester.
 - d) At the beginning of each semester, every teacher / department / college shall inform his / her student unambiguously the method he / she propose to adopt and the scheme of marking for internal assessment. (Prescribed in syllabus of respective Subjects)
 - e) Teacher shall announce the schedule of activity for internal assessment in advance in consultation with HOD.

B) Seminar:-

In seminar, 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 teacher. The student has to deliver the seminar which will be followed by discussion.

The students should submit the seminar report, typed and properly bound in one copy to the head of the department along with soft copy in CD. The said shall be evaluated by the concerned supervisor / head of the department. The concerned teacher / department / college shall have to keep the record of Seminar Reports until six months after the declaration of the result of that semester.

C) Practical Assessment:

Time: Minimum 2 Hours 30 Min. for conducting the practical examination subject to the availability of computers and printers at the center.

Marks Distribution: A practical mark will be allocated by an Internal & an External Examiner as per the following format

Sr. No.	Particulars	Max. Marks
a.	Writing, Execution and Printout of Program	40
b.	Writing Program	20
c.	Practical Record	20
d.	Viva Voce	20
Total		100

- Note:** 1) The Written work should be completed within max. 45 minutes.
 2) For execution and taking printout, max. 45 minutes shall be reserved.

D) Project Courses:

The project proposal should be prepared in consultation with the Internal Guide. The Project Work should be of such a nature that it could prove useful or be relevant from the System-Oriented/Application/Commercial. A student needs to submit one copy of project work along with two soft copies in CD in the department. A detail guideline of Project is given in the Syllabus. Classification of Marks of Project for 2nd Semester and 4th Semester shall be as given below. -

Sr. No.	Particulars	Max. Marks
a.	Report, Documentation and Project Execution	70
b.	Viva Voce	30
Total		100

E) Theory Paper Assessment: Theory papers will be held as per the schedule given by the university and examinee needs to score minimum 40% of marks to clear the paper including internal assessment marks.

F) Revaluation: There shall be also a provision for the Revaluation of theory papers examination conducted by the University (i.e. it shall not be applicable for Internal

Assessment) as per the rules and fee structure prescribed by the University.

Appendix 2
Practical Examination

1. Each practical carries 100 marks. The scheme of marking shall be as given in the syllabi of respective subjects.
2. Practical performance shall be jointly evaluated by the External and Internal Examiners. In case of discrepancy, the External Examiner's decision shall be final.
3. Duration of practical examination will be of Minimum 2 Hours 30 Min.
4. 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. 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 Mr. / Mrs. / Ku. _____ of MCA _____ Semester _____ during the academic year _____.
The candidate has satisfactorily completed the practicals prescribed for the course by Gondwana University, Gadchiroli for the subject _____
Dated : __ / __ / _____
Signature of the teacher who has taught an examinee
1. _____
2. _____
Head of the Department

Appendix-3
Pattern of Question Paper

General Rules and Regulations regarding pattern of question paper for the semester end examination shall be as given below:-

1. There will be four units in each paper.
2. Maximum marks of each theory paper will be 80.
3. Question paper will consist of five questions, each of 16 marks.
4. Four questions will be based on four units with internal choice.
5. Fifth question will be compulsory with questions from each of the four units having equal weightage and there will be no internal choice.

Master of Computer Application	
MCA – [I / II / III]	Semester – [I / II/ III / IV / V / VI]
Paper Code :	Name of Paper :
Time: 3 Hours]	[Max. Marks: 80
Note: 1) All questions are compulsory and carry equal marks. 2) Draw Neat and Labeled diagram and use supporting data wherever necessary. 3) Avoid vague answers and write specific points/answer related to questions.	
Q1 Either (From Unit 1)	
a)	8
b)	8
Or	
c)	8
d)	8
Q2 Either (From Unit 2)	
a)	8
b)	8
Or	
c)	8
d)	8
Q3 Either (From Unit 3)	
a)	8
b)	8
Or	
c)	8
d)	8
Q4 Either (From Unit 4)	
a)	8
b)	8
Or	
c)	8
d)	8
Q5 Solve all questions	
a)(From Unit 1)	4
b) (From Unit 2)	4
c)(From Unit 3)	4
d)(From Unit 4)	4