Revised Syllabus Structure for Final Year B tech.(Civil Engineering)

Part-I

Sr. No.	Course Code.	Subjects	Periods			Evaluation Scheme					Credits
			L	T	P	TA	PR	CT	ESE	Grand Total	
1		Enviromental Engineering-II	4	--	2	25	50	25	80	180	5
2		Professional Practice	4	--	2	25	50	25	80	180	5
3		Project Planning &Management	4	--	2	25	50	25	80	180	5
4		Structural Mechanics	4	--	2	25	50	25	80	180	5
5		Elective -II	4	--	2	25		25	80	130	5
6		Project	--	--	4	50	100	--	--	150	2
		Total of Part-I	**20**	**--**	**14**	**175**	**300**	**125**	**400**	**1000**	**27**
Part-II											
1	In plant Training and Project Seminar (After completion of training of @ 8 weeks)					75	75	--	--	150	--
2	In plant Training and Project Seminar (After completion of training of @ 14 weeks)					75	75	--	--	150	--
3	In plant Training and Project Seminar (After completion of training of @ 20 weeks)					100	200	--	--	300	--
	Total of Part-II					**250**	**350**	--	--	**600**	--
	Grand Total of I & II					**425**	**650**	**125**	**400**	**1600**	**27**

L : Lecture Hours per week
T : Tutorial Hours per week
P : Practical Hours per week

TA : Teachers Assessment
CT : Class Test
PR: Practical Exam
ESE : End Semester Examination

Class Test Duration : 1 Hour

Choises for Elective- II

1 Engineering Economics and Costing
2 Earthquake Engineering
3 Finite Element Analysis

ENVIRONMENTAL ENGINEERING - II

Periods			Evaluation Scheme					
L	T	P	Sessional Exam		ESE		Total	Credits
			TA	CT	TH	PR		
4	--	2	25	25	80	50	180	5
ESE: (End Semister Exam.) duration 3 hrs.								

OBJECTIVE:

A knowledge of Environmental Engineering II help the engineers to analyse, think logically and pursue the engineer approach for safe disposal of waste and therefore desirable as an integral part of engineering education and training , irrespective of the branch specialization.

A: THEORY

Unit	Contents	Duration	Nature
1	**Water pollution Acts** Need and importance, Central and state pollution control boards, Power and functions of boards, Maharashtra pollution control board .ISI guidelines for effluent disposal	04 Hrs	Theoretical
2	**Waste water terminology** Definitions of some common terms- Refuse, sewage, garbage, rubbish, storm water, sullage, sewer, sewerage & components of sewerage system.	01Hrs	Theoretical
3	**Collection & conveyance of sewage** System of sanitation, Types of sewerage system, Sewer layouts & Patterns of collection system.	02Hrs	Theoretical
4	**Sewers & required appurtenances** Various sewer sections suitability & adoptability, Design of sewer , sewer appurtenances	03Hrs	Analytical and theoretical
5	**Quality & characteristics of waste water** Physical , chemical & biological parameters, BOD & COD , first & second stage BOD , limitations of BOD , problems on first stage BOD	06Hrs	Analytical and theoretical
6	**Natural methods of waste water disposal** Methods of disposal, disposal by dilution, standards for waste water, self purification of stream- actions involved and zones of pollution Oxygen sag analysis, Streeter- Phelps equation And model Problems on DO model , dilution into sea, disposal on land , comparison of disposal methods	08Hrs	Theoretical and Analytical
7	**Volume reduction and strength reduction of industrial waste** Flow Equilisation inline- offline , neutralization, necessity importance and suitability	04Hrs	Theoretical
8	**Sampling technique**	02Hrs	Theoretical

	Sampling- locations, intervals, equipments and preservation		
9	**Waste water treatment process & its design** Screen, Grit chambers, PST , ASP, Trickling filters, UASB, sludge disposal methods and sludge drying beds , design of various components of waste water treatment plant	12Hrs	Theoretical & Analytical
10	**Low cost waste water treatment system & their design** Aerated lagoon, stabilisation pond, oxidation ditch	06Hrs	Theoretical & Analytical
11	**Advance waste water system** a) Nitrification & Denitrification b) Phosphorous removal c) Removal of dissolved inorganic substances-any five methods	06Hrs	Theoretical
12	**Hazardous waste & Radio active waste** Treatment and disposal methods	06Hrs	Theoretical

Section A –unit- 1 to 8
Section B –unit- 9 to 12

B: TERM WORK.

1. Waste water quality analysis for the following parameters pH, total solids, SVI ,BOD & COD.
2. Characterisation of waste water from any two sources. Interpretation of results – Design of suitable treatment system –based on characterization of waste water.
3. Detailed design of Waste water system
4. Visit to waste water treatment plant

C: SUGGESTED TEXT BOOKS & REFERENCES

Sr.No.	Title	Author	Publication	Edition
1	Environmental Engineering	Howard. S. Peavy Donald R. Rowe	McGraw-Hill International Editions	1st
2	Water supply Waste disposal &Environmental Engineering	A. K. Chatterjee	Khanna publishers	6th
3	Sewage Disposal & Air Pollution	S.K.Garg	Khanna Publishers	12th
4	Waste water Engineering	B.C.Punmia,Ashok Jain, Arun Jain	Laxmi Publications	2nd
5	Water Supply & Sanitary Engineering	G.S.Birde, J.S.Birde	Dhanpat Rai Publishing Company	8th
6	Waste water treatment	M.N.Rao ,A.K.Datta	Oxford &IBH Publication	2nd
7	Wastewater Engineering	Metcalf & Eddy	Tata McGraw-Hill	2nd
8	Environmental pollution analysis	N.N.Bandela Masarrat Sultana	Prithvi publishing company	1st

PATTERN OF QUESTION PAPER

Faculty of Engineering and Technology

Final year (B. Tech) Civil Engineering (Revised Course) Examination

November / December, May/June 200_

Environmental Engineering - II

Time: 3 Hrs **Max Marks: 80**

'Please check whether you have got the right question paper'

N.B:-

- All the questions are compulsory
- Use separate answer book for each section
- ……
- ……

SECTION A

Question no 1 **16 marks**

This question will consists of questions from all the chapters under section A mentioned in the syllabus.

This will consists of objective type, multiple choice type, short questions, concept oriented problems.

Question no 2 **12 marks**

OR

Question no 2

Question no 3 **12 marks**

OR

Question no 3

Note: 1. The questions will be memory based, application based and understanding type.
2. There should be intermixing in the questions.

SECTION B

Question no 4 **16 marks**

This question will consist of questions from all the chapters under section B mentioned in the syllabus.

This will consists of objective type, multiple choice type, short questions, concept oriented problems.

Question no 5 **12 marks**

OR

Question no 5

Question no 6 **12 marks**

OR

Question no 6

Note: 1. The questions will be memory based, application based and understanding type.
2. There should be intermixing in the questions.

PROFESSIONAL PRACTICE

Periods			Evaluation Scheme					
L	T	P	Sessional Exam		ESE		Total	Credits
			TA	CT	TH	PR		
4	--	2	25	25	80	50	180	5
ESE: (End Semister Exam.) Paper duration 3 hrs.								

OBJECTIVE:

A knowledge of professional practice enriches the ability of engineers to visualize , think logically to present and pursue the engineer approach and therefore desirable as an integral part of engineering education and training , irrespective of the branch specialization.

A: THEORY

Unit	Contents	Duration	Nature
1	**Estimates:**Methods of taking off, P.W.D. method, English method, Estimates for buildings (including roofs of different types),slab & pipe culvert ,septic tanks ,wells, roads, railway track, canal ,plumbing works, R.C.C. Abstracting.	20 Hrs	Analytical and theoretical
2	**Types of estimates:**Approximate Estimate, its need , Methods of preparation for various types of work as building road, bridges, Irrigation and public-health works,Detail Estimate,Revised,supplementary and reduced estimates, accompaniment to detail estimate.	4 Hrs	Theoretical
3	**Analysis of rates**:Analysis of rates for various items of construction, Introduction to D.S.R./RSR rates	4 Hrs	Analytical and theoretical
4	**Specifications:**Principles of specifications drafting, Reference to PWD hand book, Red book .Detailed specifications for typical items construction items.	4 Hrs	Analytical and theoretical
5	**Contracts:**Various agencies involved in construction industries, their role in contract with Govt/semi- Gov/private organization , essentials of valid Contract, contract documents, performance of contract, breach and termination of contracts, Various types of contract with merits and demerits ,i.e. Item rate ,percentage rate, lump sum etc. including labour , transportation and material supply contract, rate contract Tenders: tender – definition , difference between contract & tender document, tender notice for press &detail tender notice, earnest money, security deposit, Retention money, Preparation, submission, opening of tender papers, Acceptance or rejection thereof. Informal and unbalanced tender.	10 Hrs	Theoretical

6	**Govt. procedure of works :**Administrative approval, technical sanction, budget provision, Bills & measurements of work done, advance payment, secured advance ,nominal muster roll, Accounts of works &stores, tools &plants, material site account, daily diary.	6 Hrs	Theoretical
7	**Valuation** Definition and nature of value, factors affecting value of land &buildings, salvage value, scrap value, market value, book value, prospective value, Sinking fund, depreciation, Year's purchase for terminable and non-terminable property, methods of working out depreciation & sinking funds, Methods of valuation of buildings, deferred payments	8 Hrs	Theoretical & analytical
8	Definitions, Mortgage, amortization, arbitrations, sales of properties, registration, formation of co-operative society, Maharashtra apartment Act.	4 Hrs	Theoretical

Section A –unit- 1 to 4
Section B –unit- 5 to 8

B: Term Work

The term work shall consist of following

1. Project (any five)
    1. Estimate of two storied building
    2. Estimate for culvert or road or railway track or canal
    3. Analysis of rates for five items of construction
    4. Specifications for five items of construction
    5. Valuation report for a building
    6. Draft tender papers for detailed estimate under 1or 2

    The assessment will be based on:
    1) Performing an exercise
    2) Record of exercise submitted by the candidate, viva-voce based on syllabus.

C: SUGGESTED TEXT BOOKS & REFERENCES

Sr. No.	Title	Author		
1	Estimating, costing ,specification &Valuation in civil engineering	M. Chakraborti		
2	Estimating & Costing in civil engineering	B.N.Dutta		
3	Civil engineering contracts & estimates	B.S. Patil		
4	Element of Estimating and Costing	S.C. Rangwala		
5	Maharashtra public works manual	Govt.publication		

PATTERN OF QUESTION PAPER

Faculty of Engineering and Technology

Final year (B. Tech) Civil Engineering (Revised Course) Examination

November / December, May/June 200_

Professional Practice

Time: 3 Hrs **Max Marks: 80**

'Please check whether you have got the right question paper'

N.B:-

- All the questions are compulsory
- Use separate answer book for each section
- ……
- ……

SECTION A

Question no 1 **16 marks**

This question will consists of questions from all the chapters under section A mentioned in the syllabus.

This will consists of objective type, multiple choice type, short questions, concept oriented problems.

Question no 2 **12 marks**

OR

Question no 2

Question no 3 **12 marks**

OR

Question no 3

Note: 1. The questions will be memory based, application based and understanding type.
2. There should be intermixing in the questions.

SECTION B

Question no 4 **16 marks**

This question will consist of questions from all the chapters under section B mentioned in the syllabus.

This will consists of objective type, multiple choice type, short questions, concept oriented problems.

Question no 5 **12 marks**

OR

Question no 5

Question no 6 **12 marks**

OR

Question no 6

Note: 1. The questions will be memory based, application based and understanding type.
2. There should be intermixing in the questions.

PROJECT PLANNING AND MANAGEMENT

Periods			Evaluation Scheme					
L	T	P	Sessional Exam		ESE		Total	Credits
			TA	CT	TH	PR		
4	--	2	25	25	80	50	180	5
ESE: (End Semister Exam.) duration 3 hrs.								

OBJECTIVE:

1.To develop the awareness students regarding scope of construction Industry and management, various acts, importance of safety etc.

2. To make the students familiar with various techniques of project management

3. To develop the knowledge of students towards material handling and management and various construction equipments used in the Industry.

A: THEORY

Unit	Contents	Duration	Nature
1	**Introduction:** Role of construction industry in the national development, other development of small scale civil Engineering industries in India, Special characteristics of Civil Engineering works classification & types of construction, scheduling & controlling.	05 Hrs.	Theoretical
2	**Important Acts and Laws:** Factory Act, minimum wages act, Insurance act, workmen's compensation act, other provisions of act.	05 Hrs.	Theoretical
3	**Network Techniques & applications:** Bar charts, their advantages & deficiencies, logic of dummy activities, network construction, activity time, float, prime cost, over heads, cost slopes, resource planning, resource allocation, project review & controlling, updating of network technique, crashing of network.	15 Hrs.	Theoretical & analytical
4	**Program Evaluation & Review Technique:** Introduction, advantages, time estimates, slack, project duration, comparison between CPM & PERT	05 Hrs.	Theoretical & analytical
5	**Planning for safety:** Importance of safety in construction work , causes of accidents, remedial measures & precautions, accident hazards, safety program , injury frequency rate, Buffer stock, dead time	05 Hrs.	Theoretical
6	**Material Management:** General , aims & function, Inventory analysis, ABC analysis, material requirement planning , Inventory management, Inventory cost , Inventory model , Buffer stock, dead time	10 Hrs.	Theoretical & analytical
7	**Construction manpower management:** a) Work-study & motion study : Definition & application, method study (motion study) symbols used	09 hrs.	Theoretical & analytical

	procedure of method study basis time, Relaxation allowance , and standard time . b)Personnel Management: Introduction, importance of man power planning, Employees framing, motivation, welfare activities.		
8	**Construction equipments:** General, classification, Hauling equipments, Earth moving machines, hoisting equipments, conveying equipments, ,vibrators , concepts of time for equipment operation, cost of owning & operating , down time cost, obsolescence cost.	06 hrs.	Theoretical

Section A –unit- 1 to unit- 4
Section B –unit- 4 to unit- 8

B: TERM WORK

Each student will be required to submit assignments on the topics mentioned in the syllabus.

The assessment of term work shall be done on the following criteria.

1. Continuous assessment
2. Oral examination conducted internally on the syllabus and the term work mentioned above.

PRACTICAL EXAMINATION:

The practical examination shall consist of the viva voce based on the syllabus and the term work submitted by the candidate. The assessment shall be done on the following criteria,

1. Record of the term work submitted by the candidate.
2. Oral examination conducted externally on the syllabus and the term work mentioned above.

C: SUGGESTED TEXT BOOKS & REFERENCES

Sr.No.	Title	Author	Publication	Edition
1	Construction Planning Equipment & Method,	R.L. Peurifoy		
2	Construction Planning & management	Mahesh Verma		
3	Industrial Engineering & management	O.P. Khanna		
4	Construction Planning & Management	Vazirani & Chandola		
5	CPM & PERT	B.C. Punmia & Khandelwal		

Note: The distribution of marks in the question paper should be based on the proportion of teaching hours allotted to each topic.

PATTERN OF QUESTION PAPER

Faculty of Engineering and Technology

Final year (B. Tech) Civil Engineering (Revised Course) Examination

November / December, May/June 200_

Project Planning And Management

Time: 3 Hrs **Max Marks: 80**

'Please check whether you have got the right question paper'

N.B:-

- All the questions are compulsory
- Use separate answer book for each section
- ……
- ……

SECTION A

Question no 1 **16 marks**

This question will consists of questions from all the chapters under section A mentioned in the syllabus.

This will consists of objective type, multiple choice type, short questions, concept oriented problems.

Question no 2 **12 marks**

OR

Question no 2

Question no 3 **12 marks**

OR

Question no 3

Note: 1. The questions will be memory based, application based and understanding type.
2. There should be intermixing in the questions.

SECTION B

Question no 4 **16 marks**

This question will consist of questions from all the chapters under section B mentioned in the syllabus.

This will consists of objective type, multiple choice type, short questions, concept oriented problems.

Question no 5 **12 marks**

OR

Question no 5

Question no 6 **12 marks**

OR

Question no 6

Note: 1. The questions will be memory based, application based and understanding type.
2. There should be intermixing in the questions

STRUCTURAL MECHANICS

Periods			Evaluation Scheme					
L	T	P	Sessional Exam		ESE		Total	Credits
			TA	CT	TH	PR		
4	--	2	25	25	80	50	180	5
ESE: (End Semister Exam.) duration 3 hrs.								

OBJECTIVE:

To develop the knowledge and skills of the students towards various advanced methods of structural analysis and design and to improve their knowledge regarding the behavior of structural elements like plates and shells under strained conditions.

A: THEORY

Unit	Contents	Duration	Nature
1	**Theory of elasticity:** Basic concepts, strain compatibility, Stress and strain equilibrium, Hook's law	10 Hrs.	Theoretical & analytical
2	**Theory of plates :** Laterally loaded plates with small deflection theory, Cylinderical bending of thin rectangular plates.	05 Hrs.	Theoretical & analytical
3	**Analysis of shells:** membrane theory of thin cylindrical shells	05 Hrs.	Theoretical & analytical
4	**Flexibility matrix method:** flexibility coefficients, Applications to continuous beams, single bay single storey portal frames and pin jointed frames.	15 Hrs.	Theoretical & analytical
5	**Stiffness Matrix Method:** Stiffness coefficients, Applications to continuous beams , single bay single storey portal frames and pin jointed frames.	15 Hrs.	Theoretical & analytical
6	**Plastic Method of Analysis & Design:** Plastic analysis and design of indeterminate structures, upper bound and lower bound theorems, and collapse load for rectangular portal frames.	10 Hrs.	Theoretical & analytical

Section A –unit- 1 to 3

Section B –unit- 4 to 6

B: TERM WORK

Each student will be required to submit assignments on the topics mentioned in the syllabus.

The assessment of term work shall be done on the following criteria.

1.Continuous assessment

2.Oral examination conducted internally on the syllabus and the term work mentioned above.

PRACTICAL EXAMINATION:

The practical examination shall consist of the viva voce based on the syllabus and the term work submitted by the candidate. The assessment shall be done on the following criteria,

1. Record of the term work submitted by the candidate.
2. Oral examination conducted externally on the syllabus and the term work mentioned above.

C: SUGGESTED TEXT BOOKS & REFERENCES

Sr.No.	Title	Author	Publication	Edition
1	Basic Structural Analysis	C.S.Reddy		
2	Matrix analysis of structures	Gere Waver		
3	Advanced theory of structures	N.C. Sinha and P.K. Gayen		
4	Theory of structures -II	A.G. Deshpande		
5	Theory of plates and shells	Timoshenko & Goodier		
6	Theory of Elasticity	Timoshenko		

Note: The distribution of marks in the question paper should be based on the proportion of teaching hours allotted to each topic.

PATTERN OF QUESTION PAPER

Faculty of Engineering and Technology

Final year (B. Tech) Civil Engineering (Revised Course) Examination

November / December, May/June 200_

Structural Mechanics

Time: 3 Hrs **Max Marks: 80**

'Please check whether you have got the right question paper'

N.B:-

- All the questions are compulsory
- Use separate answer book for each section
- ……
- ……

SECTION A

Question no 1 **16 marks**

This question will consists of questions from all the chapters under section A mentioned in the syllabus.

This will consists of objective type, multiple choice type, short questions, concept oriented problems.

Question no 2 **12 marks**

OR

Question no 2

Question no 3 **12 marks**

OR

Question no 3

Note: 1. The questions will be memory based, application based and understanding type.
2. There should be intermixing in the questions.

SECTION B

Question no 4 **16 marks**

This question will consist of questions from all the chapters under section B mentioned in the syllabus.

This will consists of objective type, multiple choice type, short questions, concept oriented problems.

Question no 5 **12 marks**

OR

Question no 5

Question no 6 **12 marks**

OR

Question no 6

Note: 1. The questions will be memory based, application based and understanding type.
2. There should be intermixing in the questions

ELECTIVE-II (ENGINEERING ECONOMICS AND COSTING)

Periods			Evaluation Scheme					
L	T	P	Sessional Exam		ESE		Total	Credits
			TA	CT	TH	PR		
4	--	2	25	25	80		130	5
ESE: (End Semister Exam.) duration 3 hrs.								

OBJECTIVE:

The study of economics helps an engineer to ,

1) Utilization of relatively scare means to achieve certain ends with possible alternatives
2) Develop vision for using the means more economically.
3) To understand the mutual impact of technological changes and economic order of the system.

A: THEORY

Unit	Contents	Duration	Nature
1	**Engineering Economics** – Nature and scope, General concepts on micro & macro economics. The Theory of demand, Demand function, Law of demand and its exceptions, Elasticity of demand, Law of supply and elasticity of supply. Determination of equilibrium price under perfect competition. Theory of production, Law of variable proportion, Law of returns	11 hrs	Theoretical
2	**Time value of money** – Simple and compound interest, Cash flow diagram, Principle of economic equivalence. Evaluation of engineering projects – Present worth method, Future worth method, Annual worth method, internal rate of return method, Cost-benefit analysis in public projects. Depreciation policy, Depreciation of capital assets, Causes of depreciation, Straight line method and declining balance method. **.**	11 hrs	Theoretical
3	**Monetary System:** Money and its functions, Functions of the Commercial Bank and Central Bank, Monetary Policy.	08 hrs	Theoretical
4	**Cost concepts , estimation &CAPITAL**: Cost elements, economic vs. accounting concepts of costs and Revenues, Standard Cost, Actual Cost, Over head Cost, Cost control, Break-Even-Analysis. Fixed, Working capital, sources of finance Credit, shares, Debentures, , Loan from banks, Trade Public Deposits, financial Institution, foreign capital. Cost Estimating, Cost Accounting, Fixed costs, selling price	10 Hrs	Theoretical
5	**Economic appraisal techniques**: Long□ Range and Short range Budgeting, Criteria for Project Appraisal, Social benefit□cost analysis, Depreciation: concepts and Techniques	08 Hrs	Theoretical
6	**Economic appraisal techniques**: Long□ Range	06 Hrs	Theoretical

	and Short range Budgeting, Criteria for Project Appraisal, Social benefit□cost analysis, Depreciation: concepts and Techniques		
7	ECONOMIC SYSTEMS Various systems relative benefits and abuses., factors affecting success of system.	06 Hrs	Theoretical

Section A –unit- 1 to 3,
Section B –unit- 4 to 7

B: TERM WORK

Each student will be required to submit assignments on the topics mentioned in the syllabus.

The assessment of term work shall be done on the following criteria.

1. Continuous assessment
2. Oral examination conducted internally on the syllabus and the term work mentioned above.

C: SUGGESTED TEXT BOOKS & REFERENCES

Sr.No.	Title	Author	Publication	Edition
1	Engineering Economics	Riggs, Bedworth and Randhwa	McGraw Hill Education India	
2	Principles of Economics	D.M. Mithani	Himalaya Publishing House	
3	Applied Economics for Engineers and Managers	S.K.Jain	Vikas Publications House	1997
4	Engineering Economics & Costing	Sasmita Mishra	PHI	
5	Engineering Economy	Sullivan and Wicks	Pearson	
6	Engineering Economics	R.Paneer Seelvan	PHI	

Note: The distribution of marks in the question paper should be based on the proportion of teaching hours allotted to each topic.

PATTERN OF QUESTION PAPER

Faculty of Engineering and Technology

Final year (B. Tech) Civil Engineering (Revised Course) Examination

November / December, May/June 200_

Elective-II (Engineering Economics And Costing)

Time: 3 Hrs **Max Marks: 80**

'Please check whether you have got the right question paper'

N.B:-

- All the questions are compulsory
- Use separate answer book for each section
- ……
- ……

SECTION A

Question no 1 **16 marks**

This question will consists of questions from all the chapters under section A mentioned in the syllabus.

This will consists of objective type, multiple choice type, short questions, concept oriented problems.

Question no 2 **12 marks**

OR

Question no 2

Question no 3 **12 marks**

OR

Question no 3

Note: 1. The questions will be memory based, application based and understanding type.
2. There should be intermixing in the questions.

SECTION B

Question no 4 **16 marks**

This question will consist of questions from all the chapters under section B mentioned in the syllabus.

This will consists of objective type, multiple choice type, short questions, concept oriented problems.

Question no 5 **12 marks**

OR

Question no 5

Question no 6 **12 marks**

OR

Question no 6

Note: 1. The questions will be memory based, application based and understanding type.
2. There should be intermixing in the questions

ELECTIVE-II (EARTHQUAKE ENGINEERING)

Periods			Evaluation Scheme					
L	T	P	Sessional Exam		ESE		Total	Credits
			TA	CT	TH	PR		
4	--	2	25	25	80		130	5
ESE: (End Semister Exam.) duration 3 hrs.								

OBJECTIVE:

To make students familiar with the structural behavior of civil engineering structure (building) during earthquake. The Loading calculations and design of members to be adopted in Structural Consultancy practice shall strictly be in accordance with the relevant IS codes and also the analysis of structure shall be as per elastic methods developed and adopted widely all over the country.

A: THEORY

Unit	Contents	Duration	Nature
Unit 1	Engineering Seismology: Causes of earthquakes, seismic waves, magnitude, intensity, energy release, characteristics of strong earthquake ground motions.	06 hrs	Theoretical
Unit 2	Introduction to Theory of vibrations, flexibility of long and short period structures, concept of response spectrum.	06 hrs	Theoretical
Unit 3	Building forms for earthquake resistance.	06 hrs	Theoretical
Unit 4	Seismic design philosophy, performance of building in past earthquakes.	04 hrs	Theoretical
Unit 5	Equivalent static lateral earthquake force, study of IS 1893,2002	08 hrs	Analytical and theoretical
Unit 6	Seismic design of Masonry buildings, RC buildings. Study of IS 4326, IS 13827, IS 13828, IS 13920	10 hrs	Analytical and theoretical
Unit 7	Seismic effects and liquefaction	04 hrs	Theoretical
Unit 8	Theory of vibrations, Single, Two, Multi degree of freedom of system, response spectrum analysis	06 hrs	Analytical and theoretical
Unit 9	Concept of seismic design: Reduction factors, over strength, ductility, redundancy.	06 hrs	Analytical and theoretical
Unit10	Concepts of base isolation and energy dissipative devices	04 hrs	Theoretical

Section A- 1 to 5

Section B- 6 to 10.

B: PRACTICAL/DRAWING/DESIGN: Students will required to submit assignments on each of the topics mentioned in the syllabus.

The assessment of term work shall be on the following criteria:

- Continuous Assessment
- Oral examination conducted (internally) on the syllabus and the term work mentioned above.

Practical Examination:

The Practical examination shall be based on record submitted by the candidate and Viva- voice based on the syllabus.

C: SUGGESTED TEXT BOOKS & REFERENCES

Sr.No.	Title	Author	Publication	Edition
I	**Books**			
1	Earthquake Engineering	D. S. Joshi	Indian Society of Structural Engineering	1st
2	Structural Dynamics	Biggs		
3	Structural Dynamics	A. K. Chopra	Pearson Education Asia	1st
4	Dynamics of Structures	R. M. Clough and Ponian	McGraw Hill co. New Delhi	2nd
5	Elements of Earthquake Engineering –	Jai Krishna,	South Asian Pub.New Delhi	2nd
6	BMTPC Earthquake Engineering Tips.			
II	**Indian standard Institutes Publications**			
1	**IS 1893:2002**: Criteria for Earthquake Resistant Design of structures			
2	**IS 4326:1993:** Earthquake Resistant Design and Construction of Buildings-code of practice			
3	**IS 13827**: Improving Earthquake Resistance of Earthen Buildings- Guidelines			
4	**IS 13828**: Improving Earthquake Resistance of low strength Masonry Buildings- Guidelines			
5	**IS 13920:** Code of practice for Ductility Detailing of reinforced concrete structures subjected to seismic forms**.**			

Note: The distribution of marks in the question paper should be based on the proportion of teaching hours allotted to each topic.

PATTERN OF QUESTION PAPER

Faculty of Engineering and Technology

Final year (B. Tech) Civil Engineering (Revised Course) Examination

November / December, May/June 200_

Elective-II (Earthquake Engineering)

Time: 3 Hrs **Max Marks: 80**

'Please check whether you have got the right question paper'

N.B:-

- All the questions are compulsory
- Use separate answer book for each section
- ……
- ……

SECTION A

Question no 1 **16 marks**

This question will consists of questions from all the chapters under section A mentioned in the syllabus.

This will consists of objective type, multiple choice type, short questions, concept oriented problems.

Question no 2 **12 marks**

OR

Question no 2

Question no 3 **12 marks**

OR

Question no 3

Note: 1. The questions will be memory based, application based and understanding type.
2. There should be intermixing in the questions.

SECTION B

Question no 4 **16 marks**

This question will consist of questions from all the chapters under section B mentioned in the syllabus.

This will consists of objective type, multiple choice type, short questions, concept oriented problems.

Question no 5 **12 marks**

OR

Question no 5

Question no 6 **12 marks**

OR

Question no 6

Note: 1. The questions will be memory based, application based and understanding type.
2. There should be intermixing in the questions

ELECTIVE-II (FINITE ELEMENT ANALYSIS)

Periods			Evaluation Scheme					
L	T	P	Sessional Exam		ESE		Total	Credits
			TA	CT	TH	PR		
4	--	2	25	25	80		130	5
ESE: (End Semister Exam.) duration 3 hrs.								

OBJECTIVE:

Finite element method has its own characteristics to become an application for nearly of all the branches of civil engineering. Students will gain the knowledge of analysis of various structural elements which may help them to solve the problems in analysis in their future while working as a structural –civil engineer.

A: THEORY

Unit	Contents	Duration	Nature
Unit 1	**Fundamental Concepts:-**Introduction, Stress and equilibrium, boundary conditions, strain displacement relations, stress – strain relations, principle of virtual work, Saint Venant's principle, Von Mise's stress.	06 hrs	Analytical and theoretical
Unit 2	**One Dimensional Problems:-**Finite element modeling coordinates and shapes functions, potential energy approach, finite element equations, and treatment of boundary conditions.	06 hrs	Analytical and theoretical
Unit 3	**Trusses:-**Introduction, plane trusses, three dimensional trusses, assembly of global stiffness matrix for the banded and skyline solutions.	06 hrs	Analytical and theoretical
Unit 4	**Two dimensional problems using Constant Strain Triangles.(CST):-**Introduction, modeling, constant strain triangles, problem modeling and boundary conditions, orthotropic materials.	04 hrs	Analytical and theoretical
Unit 5	**Two dimensional Isoperimetric elements and numerical Integration:-**Introduction, four node quadrilateral, Numerical integration, higher order elements, four node quadrilateral for Axisymmetric problems,conjugate gradient implementation.	08 hrs	Analytical and theoretical
Unit 6	**Beams and Frames:-**Introduction , Finite element formulation, load vector, boundary conditions, shear force and bending moment, beams on elastic supports, plane frames, introduction to three dimensional frames.	10 hrs	Analytical and theoretical
Unit 7	**Three dimensional problems in Stress analysis:**Introduction, finite element formulation, stress calculations, mesh preparation, hexahedral elements and higher order elements problem modeling, frontal methods for finite element matrices.	04 hrs	Analytical and theoretical

Unit 8	**Scalar Field Problems :-**Introduction, steady state heat transfer, torsion, potential flow, seepage, electrical and magnetic fields and fluid flow in ducts.	06 hrs	Analytical and theoretical
Unit 9	**Dynamic considerations:-**Introduction, formulation , element massmatrices,evaluation of eigenvalues and eigen vectors, Guyan Reduction , rigid body modes.	06 hrs	Analytical and theoretical
Unit10	**Pre processing and Post processing:-** Introduction, mesh generation, post processing.	04 hrs	Analytical and theoretical

Section A- 1 to 5
Section B- 6 to 10.

B: PRACTICAL/DRAWING/DESIGN

Students will required to submit assignments on each of the topics mentioned in the syllabus.

The assessment of term work shall be on the following criteria:

- Continuous Assessment
- Oral examination conducted (internally) on the syllabus and the term work mentioned above.

Practical Examination:

The Practical examination shall be based on record submitted by the candidate and Viva- voice based on the syllabus.

C. SUGGESTED TEXT BOOKS AND REFERENCES:

Sr. No.	Title	Author	Publication	Edition
1	Introduction to finite element in engineering	Chandrupatla and Belegundu	Prentice Hall of India	third
2	Concept and Application of Finite element analysis	R.D. Cook	John wiley	
3	Finite element procedures in engineering analysis	Bathe	Prentice Hall of India	
4.	A first course in the finite element method	Daryl L. logan	Thomson	third
4	Fundamentals of Finite element method	Hutton	Tata McGraw Hill	2004
5	Finite element analysis	George R. Buchanan	Schaum	
6.	Finite element analysis	C.S.Krishnamurthy	Tata McGraw Hill	1995
7.	Finite element method in engineering	S.S.Rao	Elsevier	fourth

D. DIGITAL REFERENCES

Sr. No.	Website / Links / e-journals
1.	**Wikipedia/**
2.	**www.ansys.com**
3.	**www.mscsoftware.com/**

Note: The distribution of marks in the question paper should be based on the proportion of teaching hours allotted to each topic.

PATTERN OF QUESTION PAPER

Faculty of Engineering and Technology

Final year (B. Tech) Civil Engineering (Revised Course) Examination

November / December, May/June 200_

Elective-II (Finite Element Analysis)

Time: 3 Hrs **Max Marks: 80**

'Please check whether you have got the right question paper'

N.B:-

- All the questions are compulsory
- Use separate answer book for each section
- ……
- ……

SECTION A

Question no 1 **16 marks**

This question will consists of questions from all the chapters under section A mentioned in the syllabus.

This will consists of objective type, multiple choice type, short questions, concept oriented problems.

Question no 2 **12 marks**

OR

Question no 2

Question no 3 **12 marks**

OR

Question no 3

Note: 1. The questions will be memory based, application based and understanding type.
2. There should be intermixing in the questions.

SECTION B

Question no 4 **16 marks**

This question will consist of questions from all the chapters under section B mentioned in the syllabus.

This will consists of objective type, multiple choice type, short questions, concept oriented problems.

Question no 5 **12 marks**

OR

Question no 5

Question no 6 **12 marks**

OR

Question no 6

Note: 1. The questions will be memory based, application based and understanding type.
2. There should be intermixing in the questions

PROJECT

Periods				Evaluation Scheme					Credit
				Sessional Exam		ESE		Total	
L	T	P	Total	TA	CT	TH	PR		
-----	-----	04	04	50	-----	-----	100	150	2

OBJECTIVE:

The practical implementation of theoretical knowledge gained during your study to till date is important for Engineering Education. The student should be able implement their ideas/real time industrial problem/ current application of their engineering branch which they have studied in curriculum. This will definitely help in building the confidence in the student what he has learnt theoretically. The dependent study of the state of the art topics in a broad area of his/her specialization.

GUIDELINES FOR STUDENTS AND FACULTY:

1. Students have to finalize their project title based on Industrial Assignments.
2. The projects selected should be such so as to ensure the satisfaction of the urgent need to establish a direct link between education, national development and productivity and thus reduce the gap between the world of work and the world of study. The term work will consist of a report prepared by the student on the project allotted to them.
3. Project topics may be chosen by the student or group of students (maximum 3 students) with advice from the faculty members.
4. To design a project at adequate scale level for the following applications- It may be based (i) Entirely on study and analysis of a typical Instrumentation and Control System, (ii) Experimental verification, or (iii) Design, fabrication, testing and calibration of an Instrumentation system. The software based project can be considered based on its application for instrumentation and control purpose. The students are required to submit the report based on project work done.
5. Use appropriate tools for the preparation of the report.
6. Each student/group is required to-
   a. Submit a one page synopsis before the project talk for display on the notice board in the first week of their academic semester.
   b. Give a 10 minutes presentation through OHP, PC, and Slide projector followed by a 10 minute discussion in the second week of their academic semester.
   c. Submit a report on the project topic with a list of required hardware, software or other equipment for executing the project in the third week of their academic semester.
   d. Start working on the project and submit initial development and CPM/PERT planning drawing in the fourth week of their academic semester.
   e. Preparation of PCB layout, wiring diagram, purchase of components, software demo, flowchart, algorithm, program/code, assembling, testing, etc. should be submitted by student/s within next five/Six weeks and minimum one page report should be there for each major activity.
   f. Overall assembling, wiring, code writing, testing, commissioning, should completed within next two weeks.
   g. At the last but one week of end of academic semester the internal assessment of project will be done by panel of internal faculties and they will decide marks out 25 marks for term work (TA).

h. In the last week, student/group will submit final project report to guide and thereafter guide will finalize marks out of the remaining 25 marks for term work (TA).

7. Projects are to be scheduled in the weekly scheduled time-table during the semester and any change in schedule should be discouraged.
8. Every assigned faculty/s should maintain separate file for evaluating progress of each student or group.
9. Award 50 TA, Sessional marks based on the assessment done by internal guide and panel during semester and the involvement of student/group in the work assigned related to the topic and its application.

10. The format and other guidelines for the purpose of the Project Submission in hard bound copies should be as follows,

REPORT STRUCTURE

Index/Contents/Intent
List of Abbreviations
List of Figures
List of Graphs
List of Tables
and List of if any other inclusion
1. Introduction
2. Literature survey
3. System development
4. Performance analysis
5. Conclusions
References
Appendices
Acknowledgement

1. INTRODUCTION
 1.1 Introduction
 1.2 Necessity
 1.3 Objectives
 1.4 Theme
 1.5 Organization
2. LITERATURE SURVEY
Literature Survey
Related information available in standard Books, Journals, Transactions, Internet Websites *etc.* till date (More emphasis on last three to five years)
3. SYSTEM DEVELOPMENT
Model Development

- Analytical
- Computational
- Experimental
- Mathematical
- Statistical

(out of above methods at least one method is to be used for the model development) Some mathematical treatment or related information is required to be embodied

4. PERFORMANCE ANALYSIS

- Analysis of system developed either by at least two methods depending upon depth of standard
- These methods normally used are Analytical /Computational/Statistical/Experimental/ or Mathematical
- Results at various stages may be compared with various inputs
- Output at various stages with same waveforms or signals or related information/parameters
- Comparison of above results by at least two methods and justification for the differences or error in with theory or earlier published results

5. CONCLUSIONS
5.1 Conclusions
5.2 Future Scope
5.3 Applications

Contributions (if any,)
The innovative work/invention/new ideas generated from the analysis of the work which can be taken from the conclusions

REFERENCES

- Author, "Title", Name of Journal/Transactions/ Book, Edition/Volume, Publisher, Year of Publication, page to page (pp.__).

These references must be reflected in text at appropriate places in square bracket
In case of web pages complete web page address with assessing date has to be enlisted
List of references should be as per use in the text of the report

APPENDICES
Related data or specifications or referred charts, details computer code/program, *etc*.

(1 Page)

Expression of gratitude and thankfulness for helping in completion of the said task with name
Signed by the candidate

- General Guidelines
  Text should be printed on front and correct side of the watermark on quality bond paper
  Paper size- A4, 75 to 85 gsm paper
  Left Margin-1.5"
  Right Margin-3/4"
  Top Margin-1"
  Bottom Margin-1"
- First page of first chapter need not be printed anywhere ,second page onwards at right hand corner at ½ inch from right and top side from second chapter onwards starting page number of chapter should be printed at bottom center place report total pages –around.
  All Greek words must be italic

  Report Heading -All Capital—16 Font
  Chapter heading -All Capital—14 Font
  Subchapter –title case-12 Font

Sub-Subchapter –First Alphabet Capital case-12 Font
Page numbers for Index/Contents/Intent should be in roman
Title of the Report should not be more than two lines
Text pages should be in times new roman
The page of the Index/Contents/Intent heading should be below the words for appropriate sub chapter or sub-sub chapter as shown in sample copy
Cover page should have (Mission statement of Institute) in inverted commas, Symbol of Institute, Name of Department, and Institute

Suitable flap with name of the candidate, Department and Institute name and symbol can be used with nylon strip.

For more information and sample of hard copy please contact the respective Head of the Department

Semester VIII

IN PLANT TRAINING

(a)	**Rationale:** The techniques and processes of production of goods and services do not demand only technical skills, but also a cluster or conglomerate of skills. A significant part of which is related to the total humanistic growth of the man. Such conglomerate skills technical and humanistic can not obviously be acquired through pure academic learning of concepts in formalized and institutional courses and in isolation of the actual work situation. It, therefore, naturally follows that no technical education will be complete till it has two components, one learning of concepts vis-a vis acquiring conceptual skill and other application of the concepts in real work situation vis-a vis acquiring manipulative or practicing skills. Technical education needs to have a complement of learning of the techniques of applying the concepts within the industry and business.
(b)	**Objective:** 1) The students of B.Tech course shall get an opportunity to work on live problems of the industry. 2) He/She shall apply his leaving concepts in the real work situation. 3) He/She shall get an exposure to the industrial environment and thereby enable himself/herself to appreciate the other related aspects of industry vis, human, economic, commercial and regulatory. 4) He/She shall identify career paths taking into account their individual strengths and aptitude. 5) He/She shall contribute for the achievement of economic goals and aspirations of the industry and our country as a whole.
	The curriculum for B.Tech students of final Year Course of Part-II shall consist of; 1) In plant training for a period of one full term, and the period of the term shall be as prescribed by the university from time to time. 2) A project on live problems of the industry shall be undertaken by the student/group of students undergoing atraining in the same establishment. 3) The term work shall consist of the in plant training record-daily diary, work diary, progress report, a record containing the literature survey in the field of appropriate branch of Engineering, a preliminary report related to project work etc. 4) Seminars will be arranged after successful completion of period specified in the scheme of semester VIII of B.Tech. The date and times will be decided according to the convenience of guide and student.
	General Provisions, Rules And Regulation Of In-Plant Training **1. Definition** • In-plant training means a course of training in any industry or establishment undergone in pursuance of memorandum of understanding between industry and institute and under the prescribed terms and conditions of Dr. Babasaheb Ambedkar Marathwada University, Aurangabad. • Institution means an academic Institution of higher learning associated and admitted under the privileges of university, I.e. Maharashtra Institute of Technology, affiliated to Dr. Babasaheb Ambedkar Marathwada University, Aurangabad. • Industry means any industry or business in which any trade, occupation or subject

	field in engineering or technology may be specified as a designated trade. • Establishment includes any place where any industry is carried on. • University means any of the universities mentioned in the schedule of Maharashtra University Act, 1994 i.e. Dr. Babasaheb Ambedkar Marathwada University, Aurangabad. • Collaboration means collaborative academic activity of the Institute with industry. • Student means a B Tech Course student.
	2. Memorandum of understanding: Maharashtra Institute of Technology, Aurangabad will enter into an agreement with the industry through 'Memorandum of Understanding' for creating facilities of in-plant training in the appropriate branch of Engineering according to the Course Curriculum and keep this agreement for a period of 10 years to foster a healthy industry- institute interaction for mutual benefits of both.
	3. Admission to in-plant training: No student will be deputed for in-plant training unless he produces testimonial of having kept one term for the subject under B Tech Semester –VIII of final year course satisfactorily in Maharashtra Institute of Technology after passing the TY B Tech Examination (in the appropriate branch).
	4. Period of in-plant training: The period of in-plant training will be the period of one term for the subject under B Tech course semester-VIII, which will be notified by Dr. Babasaheb Ambedkar Marathwada University, Aurangabad.
	5. Contract of In-plant Training : • The student of Maharashtra Institute of Technology shall enter into a contract of in-plant training with the employing industry. • The in-plant training shall be deemed to have commenced on the date, on which the contract of in-plant training has been entered into. • Every contract of in-plant training will contain the Terms and Conditions to be agreed by both the parties. • Every contract of in-plant training shall be registered with the Maharashtra Institute of Technology within 15 days from entering into the contract.
	6. Violation of contract: Where an employer, with whom a contract for in-plant training has been entered into, is for any reason, unable to fulfill his obligation under the contract, the contract end with the consent of Maharashtra Institute of Technology. It is agreed between the employer, the student and any other employer that the student shall be engaged as an "in-plant trainee" under the other employer till the expiry period of the in-plant training. The agreement on registration with Maharashtra Institute of Technology shall be deemed to be the contract of in-plant training between the student and other employer, and from the date of such registration, the contract of in-plant training with the first employer shall terminate and no obligation under that contract shall be enforceable at the instance of any party to contract against the other party thereto.

	7. Termination of Contract: The contract of in-plant training shall terminate on the expiry of the period of in-plant training. Either party to the contract of in-plant training make an application to Maharashtra Institute of Technology, Aurangabad for the termination of the contract. After considering the content of the application, and objection, Maharashtra Institute of Technology by order in writing, will terminate the contract, if it is satisfied that the parties to the contract have/has failed to carry out the Terms and Conditions of the contract. Provided that where a contract is terminated- • For the failure on the part of the Employer, Maharashtra Institute of Technology will depute students to another Employer for providing facilities of in-plant training to the remaining period of training. • For the failure on the part of the student, the student will not be allowed to continue his/her in-plant training in that term. The student shall be deputed for in-plant training in the next coming term.
	8. Expectation from the Employer/Industry: The following expectations are derived for effective in-plant training. • To provide legitimate facilities for the training and learning of all the processes. • To guide the student for understanding a project of immense importance to industry and to help him/her for his/her career advancement.
	9. Obligation of Students: • To learn his/her subject field in Engineering or Technology conscientiously and diligently at his place of training. • To carry out all orders of his Employer and the Superior in the establishment. • To abide by the Rules and Regulations of the Industry/Establishment in all matters of conduct and discipline. • To carry out the obligation under the contract of in-plant training. • The student shall maintain a report of his work during the period of his in-plant training in a proforma Annexure. • Except in case of extreme urgency, the B.Tech student shall submit an application for all other leaves except the medical leave to the Manager/Gen. Manager (Personnel) of the concerned industry, where he is undergoing an in-plant training and obtain sanction before the leave is taken. In case of Medical Leave, he shall submit an application to Maharashtra Institute of Technology, Aurangabad. The shortage in attendance will be subjected to extending the period of in-plant training in which case, the student may not be allowed to appear for the test, project seminar and assessment of term work etc. which will be held immediately after successful completion of the in-plant training.
	10. Maintenance of Record: Every student of B.Tech course shall maintain a daily record of the work done by him/her relating to the in-plant training in the proforma (Annexure).

	11. Industry Sponsored Student Projects: The scheme envisages working out suitable programme for B.Tech students. They are required to complete their in-plant training in a given period. During this period, they shall be familiar with the understanding of the shop process and activities. The students can be asked to solve the mini-shop problem, which will make them think and try out short experiments as an improvement in the process, tools and equipment. The student here is not expected to acquire the skills in operating machines values. He should appreciate the application of theory learnt. The students in a group alone can undertake a project of immense importance for the benefit of the industry and also useful for the students for their advancementof career. Industry staff and Maharashtra Institute of Technology facultycan plan in advance to effectively complete the practical training with the project for preliminary studies on the floor. The projects should aim mainly- • Cost reduction • Reducing cycle time • Enhancing productivity • Energy conservation measures • Process Improvement technique • Inventory control • Quality control Technique • Improvement in Material handling system • Bottlenecks in material flow system and so on.
	12. What will form a good project? Through the project, it is hoped to provide the students an exciting experience in solving line problems under practical constraints. Hence it is desired that the project should be a well defined problem, which can be completed and implemented within the project period. It may be a problem, evolving analysis, design, fabrication and/or testing.
	13. Time Schedule for the Project: The following time schedule should be planned by each student or groups of students, who undertake the project. • Proposal to be received before specifies date. • Project acceptance before. • Commencement of the project. • Completion of the project.
	14. Commitment on the part of the Institute: • Providing a faculty member to supervise the project. • Providing the Institute facilities to complete the project. • Coordinator from industry will be invited to participate in the stage wise assessment of the students performance.
	15. Assistance for completion of the Project: All the projects undertaken by the students are time bound. Although, every attempt results may not be achieved within the period available for the student. In such cases, the services of the associated faculty members can be sought for the completion of the same on mutually agreed terms.

	16. Monitoring of In-Plant Training: The B.Tech students are expected to follow all the rules and discipline of the industry. However, because of other academic requirements and the nature of the project, the student may have to work in other places outside the industry. The faculty and Industry supervisor will work out a suitable arrangement to review the progress of the work from time to time. Maharashtra Institute of Technology, Aurangabad will monitor the progress of in-plant training in association with industry authority.
	17. Conduct and Discipline: In all matters of the conduct and discipline, B.Tech student shall be governed by the rules and regulations (applicable to employees of the corresponding category) in the Establishment, where he/she is undergoing a training.
	18. B.Tech Students are Trainees and not Workers: • Every B.Tech student undergoing an in-plant training in the respective branch of Engineering & Technology in any Establishment shall be treated as a trainee and not a worker and- • The provision of any law with respect to labour will not apply to such a trainee.
	19. Settlement of Disputes: Any disagreement or dispute between an industry and a B.Tech student trainee arising out of the contract of in-plant training shall be resolved both by Maharashtra Institute of Technology and the industry with mutual cooperation. The decision of both Maharashtra Institute of Technology and the industry shall be final.
	20. Holding of Test and Grant of Certificate: The progress in in-plant training of every student shall be assessed by the industry and Maharashtra Institute of Technology faculty from time to time. Every B.Tech student undergoing an in-plant training shall be issued a certificate of Proficiency on completion of his training to the satisfaction of the industry.
	21. Offer of Stipend / Other Welfare Activities and Employment: It shall not be obligatory on the part of the Employer / Industry to offer any stipend and other welfare amenities available, if any, to the students of B.Tech courses undergoing an in-plant training. However, if the industry desirous to do so, at will be a privilege for the students and also for Maharashtra Institute of Technology in view of the bonding of better understanding and cooperation forever.
	PRACTICAL EXAMINATION The Practical examination will be conducted after successful completion of the in-plant training for which guide will be internal examiner and external examiner will be appointed by the university. The date of practical examination will be same for the students of a branch and will be notified by the university. The assessment of the practical examination shall consist of 1. Seminar Performance 2. An oral on the project work done. 3. Assessment of the term work. **Note:** A 'Guide Note' on In-Plant training approved by the University is prepared and made available in each faculty of B.Tech course.