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FOUR YEAR B.Tech. DEGREE EXAMINATION, MAY 2014

THIRD YEAR/SECOND SEMESTER

Branch - ME

DYNAMICS OF MACHINERY

Time : 3 Hours

Max. Marks : 60

Answer ONE questions from each Unit.

UNIT-I

1. An effort of 1500 N is required to just make a certain body up an inclined plane of angle  $12^\circ$ , force acting parallel to the plane. If the angle of inclination is increased to  $15^\circ$ , then the effort required is 1720 N. Find the weight of the body and the coefficient of friction. (12)

Or

2. A single dry plate clutch transmits 7.5 kW at 900 r.p.w. The axial pressure is limited to  $0.07 \text{ N/mm}^2$ . If the coefficient of friction is 0.25. Find (a) mean radius and face width of friction lining assuming the ratio of the mean radius to the face width as 4 and (b) outer and inner radii of the clutch plate. (12)

UNIT-II

3. What are the various types of brakes? Explain single block brake by considering various cases. (12)

Or

4. Explain the following transmission dynamometers :
- (a) Epicyclic-train
- (b) Belt transmission. (12)

UNIT-III

5. What is governor? Briefly explain porter governor and derive the relation between speed and height of the governor. (12)

Or

6. Define effort and power of a governor. Derive the relation for effort and power of a porter governor. (12)

[P.T.O.]

#### UNIT-IV

7. What is fluctuation of energy? How do you determine maximum fluctation of energy. (12)

Or

8. A punching press is driven by a constant torque electric motor. The press is provided with a flywheel that rotates at maximum speed of 225 r.p.m. The radius of gyration of the fly wheel is 0.5 m. The press punches 720 holes per hour, each punching operation takes 2 second and requires 15 kN-m of energy. Find the power of the motor and the minimum mass of the flywheel if the speed of the same is not to fall below 200 r.p.m. (12)

#### UNIT-V

9. What are the various terms used in a Naval ship? What is the effect of gyroscopic couple on Naval ship during steering, pitching and rolling? (12)

Or

10. Define gyroscopic couple. What is the effect of gyroscopic couple and the effect of centrifugal couple of a four wheel drive making in a curved path. (12)

FOUR YEAR B.Tech. DEGREE EXAMINATION, MAY 2014

THIRD YEAR / SECOND SEMESTER

Branch – CSE

PRINCIPLES OF PROGRAMMING LANGUAGES

Time : 3 Hours

Max. Marks : 60

Answer ONE question from each Unit.

UNIT – I

1. (a) Explain the layered view of virtual computers. (6)
- (b) Write the advantages and disadvantages of pure interpretation. (6)

Or

2. (a) Develop an unambiguous grammar for if-then-else. (6)
- (b) How the expressions are evaluate by using associativity and precedence? (6)

UNIT – II

3. (a) Define Pointer. How pointers implemented in C, C++ and Ada? (6)
- (b) What are the design issues for character string types? (6)

Or

4. (a) Explain short-circuit evaluation with example. (6)
- (b) Explain implicit and explicit type conversions with examples. (6)

UNIT – III

5. (a) Write the characteristics of subprograms. (6)
- (b) Write about Coroutines. (6)

Or

6. (a) How to implementing subprograms with stack-dynamic local variables? (6)
- (b) Explain about activation record. (6)

UNIT – IV

7. (a) Explain parameterized abstract data types. (6)
- (b) What is the difference between private and limited private types in Ada? (6)

Or

8. (a) Define Inheritance. Explain different types of inheritance. (6)
- (b) Write the features of object-oriented languages. (6)

[P.T.O]

UNIT - V

9. (a) Explain built-in exceptions in Java. (6)  
(b) Explain event listener in Java. (6)

Or

10. (a) Explain ML functional programming language. (6)  
(b) Write the applications of functional languages. (6)
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FOUR YEAR B.Tech. DEGREE EXAMINATION, MAY 2014.

THIRD YEAR/SECOND SEMESTER

Branch - ECE AND EEE

MICROPROCESSORS AND APPLICATIONS

Time : 3 Hours

Max. Marks : 60

Answer any ONE question from each unit.

UNIT - I

1. (a) What are the different addressing modes are there in 8086 microprocessor? Explain with examples. (6)
- (b) Write an assembly language program for 8085 microprocessor to find the sum of 10 natural numbers. (6)

Or

2. (a) Explain the bus timing of memory write operation in the maximum mode configuration of the microprocessor 8086. (6)
- (b) Write a program to generate a delay of 0.6 sec for a given crystal frequency of 5 MHz. (6)

UNIT - II

3. (a) Explain the complete instruction set of 8086 with examples. (7)
- (b) In reference to 8086 microprocessor show how the double word 12345678H will be stored in memory starting at address A001. (5)

Or

4. (a) Describe the difference between MOVAX, 2437H and MOV AX, [2437H]. (6)
- (b) Explain how an interrupt is responded by 8086 CPU? (6)

UNIT - III

5. (a) Explain the operating modes of 8259. (8)
- (b) What is the block and demand transfer modes of DMA. (4)

Or

6. (a) Explain the modes of operations of 8254/3. (8)
- (b) What are the commonly used priority modes in 8259A? (4)

#### UNIT - IV

7. (a) Explain the differences between memory mapped I/O and directed mapped I/O. (6)
- (b) With a neat block diagram explain how the DAC0830 can be interfaced with 8086 microprocessor. (6)

Or

8. Interface a stepper motor to the 8086 microprocessor system and write an 8086 assembly language program to control the stepper motor. (12)

#### UNIT - V

9. (a) Describe the internal memory of 8051 micro controller. (7)
- (b) Describe different types of data transfer instructions in 8051. Explain the difference between MOU, MOUC and MOUX instructions. (5)

Or

10. (a) Explain how 8051 services an interrupt on its occurrence. (6)
- (b) What are the various SFR'S you need while programming a serial port? Write a short program to initialize the serial port of 8051 in mode 1. (6)

FOUR YEAR B.Tech. DEGREE EXAMINATION, MAY 2014

THIRD YEAR/SECOND SEMESTER

Branch - CE

R.C.C. STRUCTURAL DESIGN - II

Time : 3 Hours

Max. Marks : 60

Answer ONE question from each Unit.

UNIT - I

1. Design a combined rectangular footing for two columns  $C_1$  and  $C_2$  spaced at 3.0 m apart. Characteristic loads on  $C_1$  and  $C_2$  are 750 kN and 1000 kN. The column sizes are 300 mm  $\times$  600 mm where 600 mm is along  $C_1 - C_2$ . Width of the footing shall be 2.0 m. The S.B.C of soil is 150 kN/m<sup>2</sup>. (15)

Or

2. Design a combined footing for two columns A + B, carrying loads of 500 and 700 kN respectively column 'A' is 300 mm  $\times$  300 mm in size and column 'B' is 400 mm  $\times$  400 mm. The centre to centre spacing of column is 3.0 m. The S.B.C of soil is 125 kN/m<sup>2</sup>. Use 720 grade concrete and Fe u/s bars. (15)

UNIT - II

3. A R.C.C. retaining wall with counter forts is required to support earth to a height of 7 m above the grand level. The top surface is horizontal, unit weight of soil is 18kN/m<sup>3</sup> and  $\phi = 30^\circ$ ,  $\mu = 0.58$  and S.B.C. is 200 kN/m<sup>2</sup>. Use M20 grade concrete and fe u/s grade steel. Design the retaining wall. (15)

Or

4. Design a cantilever retaining wall for the following data:

- |  |   |                       |
|--|---|-----------------------|
| (a) Height of soil to be retained                  | = | 5 m                   |
| (b) Unit weight of soil                            | = | 20kN/m <sup>3</sup>   |
| (c) Angle of repose                                | = | $\phi = 30^\circ$     |
| (d) S.B.C.   | = | 220 kN/m <sup>2</sup> |
| (e) Co-efficient of friction b/w concrete and soil | = | 0.5                   |

Assume any other data if necessary.

### UNIT - III

5. A post tensioned prestress concrete beam of 30 m span is subjected to a transfer prestress force of 2500kN at 28 days. The profile of the cable is parabolic with maximum eccentricity of 200 mm at midspan. Determine the loss of prestress. The beam has a cross section of 500 mm × 800 mm and is prestressed with 9 cables each consist of 12 wires of 5 mm diameter. ( $E_s = 2 \times 10^5 \text{ N/mm}^2$ ;  $E_c = 3.5 \times 10^4 \text{ N/mm}^2$ ). Assume one cable is tensioned at a time. (15)

Or

6. Explain with a neat sketch the "LEE MCCALL SYSTEM" of prestressing. (15)

### UNIT - IV

7. Design a spherical dome over a circular room for the following data:

- |                               |   |                       |
|-------------------------------|---|-----------------------|
| (a) Inside diameter of room   | = | 12 m                  |
| (b) Rise of dome              | = | 4 m                   |
| (c) Live load due to wind etc | = | 1.5 kN/m <sup>2</sup> |

Use M20 grade concrete and Fe u/s grade steel. (15)

Or

8. Design a rectangular water tank 8m × 4m × 3m high open at top and fixed at base resting on ground. (15)



FOUR YEAR B.Tech. DEGREE EXAMINATION, MAY 2014

THIRD YEAR – SECOND SEMESTER

Branch – EICE

INDUSTRIAL INSTRUMENTATION

Time : 3 Hours

Max. Marks : 60

Answer ONE questions from each Unit.

**UNIT - I**

1. (a) Explain the principle of operation of Reluctance Pick-up transducers. Explain the advantages and disadvantages.
- (b) Explain different types of density measurements for liquids and gases.

**Or**

2. (a) Explain the construction and working of capacitive tachometers.
- (b) Explain how speed is measured using photo Transducers.

**UNIT - II**

3. Explain the types of differential pressure transmitter explain the advantages.

**Or**

4. Explain the principle of operation of Bourden gauges with neat sketches.

**UNIT - III**

5. (a) Explain the construction and working of Thermocouples.
- (b) Explain thermo electric laws and their applications.

**Or**

6. (a) Explain the construction and working of Bimetallic thermometers.
- (b) Explain the methods of construction used for increasing the sensitivity of Bimetallic thermometer.

**UNIT - IV**

7. Explain the working principle of an electromagnetic flow meter. Compare the operations of this meter when it is excited by d.c and a.c.

**Or**

8. (a) Write short notes on turbine flow meter.
- (b) Explain the working principle of Mass flow meter.

## UNIT - V

9. Explain different methods used for measurement of Humidity. Compare their advantages and disadvantages.

Or

10. Write short notes on :
- (a) Ultrasonic level ganging
  - (b) Rotameter viscometer
  - (c) Saybolt viscometer.
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FOUR YEAR B.Tech. DEGREE EXAMINATION, MAY 2014

THIRD YEAR/SECOND SEMESTER

Branch – ECE,EEE & EICE

ECONOMICS AND ACCOUNTANCY

Time : 3 Hours

Max. Marks : 60

Answer ONE question from each Unit.

UNIT I

1. (a) Discuss the relationship between Economic and other functions of the business.
- (b) State and explain the law of demand. What are its exceptions?

Or

2. (a) What is Income elasticity of demand? Explain its usefulness in business decisions.
- (b) What do you understand by Consumerism? Explain about consumers equilibrium.

UNIT II

3. (a) How does a firm optimize its production with one variable input?
- (b) Explain the law of variable proportions with diagrams.

Or

4. (a) Explain the implications of cost behavior in short and long-term situations.
- (b) What is break-even analysis? Evaluate the uses of break-even analysis in business.

UNIT III

5. (a) Explain how price is determined under perfect competition.
- (b) Explain the salient features of monopoly. How it is different from duopoly?

Or

6. (a) Explain the features of oligopoly and its differences with monopolistic competition.
- (b) Explain how the price is determined under duopoly?

UNIT IV

7. (a) Explain the merits and limitations of a Sole trade organization.
- (b) Discuss the different types of company form of organizations

Or

8. (a) What are the accounting concepts and conventions? Explain any four accounting concepts in detail.
- (b) Define funds flow analysis? How it is useful for managerial decisions?

## UNIT V

9. (a) What is capital budgeting? Discuss the various present value techniques of capital budgeting.
- (b) Calculate the Net Present Value of the following project requiring initial cash outlays of Rs. 2,00,000 and has a no scrap value after 8 years. The net profit after depreciation and taxes for each year is Rs. 60,000 for 8 years. Assume the present value of an annuity of Re. 1 for 8 years at 9% p.a interest is Rs. 5.535.

Or

10. (a) Explain the objectives of budgetary control with special reference to a banking organization.
- (b) Explain the determinants of working capital in a manufacturing organization.

FOUR YEAR B.Tech. DEGREE EXAMINATION, MAY 2014  
THIRD YEAR/SECOND SEMESTER

Branch – ME

ENGINEERING METROLOGY

Time : 3 Hours

Max. Marks : 60

Answer ONE question from each Unit.

UNIT - I

1. (a) Explain about interchangeability and selective assembly. (6)
- (b) Explain with neat sketch about slip gauge. (6)

Or

2. (a) What is difference between unilateral and bilateral tolerances? Why is unilateral tolerance preferred over bilateral tolerance? (6)
- (b) Determine the limit size for a hole  $\phi$  130 N4, given that main step is 120 – 180 mm and intermediate step is 120 to 140 mm. Deviation N for standard tolerance grades from IT 01 to IT 8 is increased by  $\Delta(IT_n - IT_{n-1})$ . ES for deviation is  $-0.6 \sqrt[3]{D}$ . (6)

UNIT - II

3. (a) Explain with neat sketch Bevel protractor for an angle measurement. (6)
- (b) Explain use of sine bar and limitations of Sine Bars. (6)

Or

4. (a) Explain with neat sketch principle of auto collimator. (6)
- (b) Explain about sigma comparator with neat sketch. (6)

UNIT - III

5. (a) Explain with neat sketch NPL flatness interferometer. (6)
- (b) Explain with neat sketch Talysurf instrument. (6)

Or

6. (a) What are the essential conditions to be observed while measuring absolute length of gauge by an interferometer? (6)
- (b) In the measurement of surface Roughness, heights of 20 successive peaks and troughs were measured from a datum and were 35, 25, 40, 22, 35, 18, 42, 25, 35, 22, 36, 18, 42, 22, 32, 21, 37, 18, 35, 20 microns if these measurement were obtained over a length of 20 mm, determine the C.L.A. ( $R_a$ ) and R.M.S. value of the rough surface. (6)

#### UNIT - IV

7. (a) Explain with neat sketch alignment tests on radial drilling machine. (6)  
(b) Explain about constant chord method with neat sketch. (6)

Or

8. (a) Explain with neat sketch alignment tests on milling machine. (6)  
(b) Explain about rolling gear tester. (6)

#### UNIT - V

9. (a) What is control chart? Explain the various types of control charts depend on characteristics being tested. (6)  
(b) What are the advantages and limitations of sampling plans? (6)

Or

10. (a) Write short notes on :  
(i) Process capability  
(ii) Process capability Vs. Tolerance. (6)  
(b) Write briefly about acceptance sampling plans. (6)

FOUR YEAR B.Tech. DEGREE EXAMINATION, MAY 2014

THIRD YEAR/SECOND-SEMESTER

Branch – CSE

ECONOMICS AND ACCOUNTANCY

Time : 3 Hours

Max. Marks : 60

Answer ONE question from each Unit.

UNIT – I

1. (a) Explain the objectives and functions of management accounting.
- (b) Explain the principles and functions of financial accounting.

Or

2. (a) Distinguish between a receipts and payments account and a trail balance?
- (b) What are the techniques employed to analyze and interpret financial statements?

UNIT – II

3. (a) What is financial analysis? Discuss the different types of financial analysis.
- (b) What is cash flow statement analysis? How do you organize the cash flow analysis?

Or

4. (a) Explain the process of preparation of the funds flow analysis.
- (b) Project financial plans of XYZ trading Ltd., the use of the following accounting ratios are made:

Estimated annual sales	Rs. 2,00,000
Sales to net worth	25 times
Current debt to net worth	25%
Total debt to net worth	60%
Current ratio	3.6
Net sales to inventory	4 times
Average collection period	36 days (year : 360 days)
Fixed assets to net worth	70%

On the basis of the above information, prepare a Proforma balance sheet of the company.

### UNIT – III

5. (a) Define managerial economics and discuss the nature and scope of managerial economics.  
(b) Explain the concept of scarcity. What are the basic economic principles?

Or

6. (a) Discuss the role and responsibilities of a managerial economist.  
(b) Explain the concept of economic theory. Discuss its application in business decisions.

### UNIT – IV

7. (a) How do you conduct the demand forecasting of a new product?  
(b) Explain the role of cost analysis in managerial decision making.

Or

8. (a) Explain the different forms of price discrimination.  
(b) Define price elasticity of demand. Explain its importance in business decisions.

### UNIT – V

9. (a) Define production function. What are the economies of scale of operation?  
(b) Explain the structure of markets. What are the features of perfect competition?

Or

10. (a) Distinguish between oligopoly and monopolistic competition.  
(b) Explain the features of oligopoly and its differences with monopolistic competition.
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FOUR YEAR B.Tech. DEGREE EXAMINATION, MAY 2014

THIRD YEAR/ SECOND SEMESTER

Branch - CE

HYDROLOGY

Time : 3 Hours

Max. Marks : 60

Answer ONE question from each Unit.

UNIT - I

1. (a) What are the significant features of a global water balance studies? (6)  
(b) Describe briefly the sources of hydrological data in India. (6)

Or

2. (a) Explain a depth-area relationship and intensity duration frequency relationship. (6)  
(b) Discuss the current practice and status of rainfall recording in India. (6)

UNIT - II

3. (a) Discuss briefly the various abstractions from precipitation. (6)  
(b) Describe a commonly used evaporimeter. (6)

Or

4. (a) Discuss the factors affecting the infiltration capacity of an area. (6)  
(b) Distinguish between :  
(i) Actual and potential evapotranspiration  
(ii) Field capacity and permanent wilting point. (6)

UNIT - III

5. (a) List the factors affecting the seasonal and annual run off (yield) of a catchment. (6)  
(b) With the help of typical hydrographs describe the salient features of  
(i) Perennial  
(ii) Intermittent  
(iii) Ephemereal steams. (6)

Or

6. (a) What is hydrological drought? What are its components? (6)  
(b) Describe briefly the surface water resources of India. (6)

#### UNIT - IV

7. (a) Explain the rational method and what are its merits and demerits. (6)  
(b) Describe briefly methods of estimation of the time of concentration. (6)

Or

8. (a) What are the limitations of flood frequency studies? (6)  
(b) Explain briefly : (6)  
(i) Risk  
(ii) Reliability and  
(iii) Safety margin.

#### UNIT - V

9. (a) Write a note on PUL's method. (6)  
(b) Describe Muskingum method of flood routing. (6)

Or

10. (a) Derive the basic differential equation of unsteady ground water flow in confined aquifer. (6)  
(b) Describe the ground water resources of India and its utilization. (6)

FOUR YEAR B.Tech. DEGREE EXAMINATION, MAY 2014  
THIRD YEAR – SECOND SEMESTER

Branch – ECE

MICROWAVE TECHNIQUES

Time : 3 Hours

Max. Marks : 60

Answer ONE question from each Unit.

UNIT – I

1. (a) Write a notes on Travelling wave tube amplifier.  
(b) A TWT operates at  $F = 2$  GHZ. The slow wave structure has pitch angle of  $5.7^\circ$ . Assuming lossless tube determine the propagation constant.

Or

2. (a) What is reflex klystron? What are its important applications.  
(b) Explain the concept of transit time.

UNIT – II

3. (a) Write notes on crystal Diode.  
(b) Sketch a neat diagram of IMPATT Diode and explain its functions.

Or

4. (a) Explain the function of the PIN Diode.  
(b) Write notes on Schottky Barrier Diode.

UNIT – III

5. (a) What is resonator? Describe Different types of resonators.  
(b) Derive the expression for field components in a circular cavity resonator.

Or

6. (a) Write notes on coupling probes and loops.  
(b) Derive the S-matrix of an ideal E-plane tee.

#### UNIT - IV

7. (a) What are various blocks of the bench? Briefly explain their purpose and properties.  
(b) Explain the procedure of measurement of S-parameters.

Or

8. (a) Describe the measurement frequency by  
(i) Dip method and  
(ii) Slotted line method  
(b) Write the comparison between low VSWR, medium VSWR and high VSWR.

#### UNIT - V

9. (a) Write the advantages of MIC's.  
(b) Write notes on horn antenna.

Or

10. Explain  
(a) Hybrid MIC's  
(b) Striplines and Micro Strip lines
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FOUR YEAR B.Tech. DEGREE EXAMINATION, MAY 2014

THIRD YEAR/SECOND SEMESTER

Branch – CSE

MICROPROCESSORS

Time : 3 Hours

Max. Marks : 60

Answer ONE question from each Unit.

UNIT – I

1. (a) Explain the functions of the following registers in 8086 microprocessor. (6)
- (i) AX, BX, CX, DX
  - (ii) CS, DS, SS, ES
  - (iii) BP, SP, SI, DI.
- (b) Write a program for the addition of two 16 bit numbers and answer should be in 16 bits. (6)

Or

2. (a) Explain in detail the addressing modes of 8086 microprocessor. (6)
- (b) Explain the bus interfacing unit of 8086. (6)

UNIT – II

3. (a) With a neat layout explain how a microprocessor can be used for data acquisition system using A/D and D/A converters. (6)
- (b) What are the address decoding techniques and give examples. (6)

Or

4. (a) With a neat block diagram explain the minimum mode configuration of 8086 based system. (6)
- (b) Explain the hand shake I/O operation with a neat diagram. (6)

UNIT – III

5. (a) Explain the data transfer operating of 8251. (6)
- (b) Explain the mode 0 and mode 1 operations of programmable interval timer 8253. (6)

Or

6. (a) With a neat block diagram explain the operation of a programmable interrupt controller. (6)
- (b) Explain the transfer modes of 8237. (6)

#### UNIT - IV

7. (a) Discuss the following bus arbitration strategies. (6)
- (i) Polling
  - (ii) Daisy chain
  - (iii) Independent bus request scheme.
- (b) What are the different types of exceptions which may be generated by 8087? (6)

Or

8. (a) What are the differences between a tightly coupled and a loosely coupled system? What are the relative advantages and disadvantage? (6)
- (b) Write a program to calculate the  $n^{\text{th}}$  power of an 8 bit hexadecimal number, where  $n$  is less than 8 using 8087 instructions. (6)

#### UNIT - V

9. (a) Explain the difference between a microprocessor and a microcontroller. (6)
- (b) Explain the interrupt handling mechanism of 8051. (6)

Or

10. With a neat diagram explain the architecture of 80196. (12)

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FOUR YEAR B.Tech. DEGREE EXAMINATION, MAY 2014

THIRD YEAR/SECOND SEMESTER

Branch — CE

ENVIRONMENTAL ENGINEERING — I

Time : 3 Hours

Max. Marks : 60

Answer ONE question from each Unit.

UNIT - I

1. (a) Compute the fire demand for a city having population of 1,40,000 using
  - (i) Kuichlings formula
  - (ii) Buston's formula
  - (iii) Freeman's formula.
- (b) What are the various variations in rate of demand?

Or

2. (a) Discuss various factors that affect the rate of demand.
- (b) Write forecast population and its methods.

UNIT - II

3. (a) Write the permissible limits in drinking was as follows.
  - (i) Odour
  - (ii) Taste
  - (iii) Iron
  - (iv) Nitrates
  - (v) Total hardness
  - (vi) Mercury
  - (vii) Lead
- (b) What are the different design elements in the continuous flow sedimentation tanks.

Or

4. (a) Write briefly sedimentation with coagulation.
- (b) At a water treatment plant, 12 million litres of water in treated daily, using alum dosage of 16mg per litres. Find
  - (i) Total quantity of alum used daily
  - (ii) Amount pf CO<sub>2</sub> released.

[P.T.O]

### UNIT - III

5. (a) Comparison between slow sand and rapid sand filters.  
(b) A city has a population of 1,00,000 with an average rate of demand 160 litres per head per day find the area of rapid sand filter.

Or

6. (a) What is the difference between disinfection and sterilization? Why is disinfection necessary?  
(b) What are the various forms of application of chlorine? Write a note on hypochlorination.

### UNIT - IV

7. A raw water sample contain the following impurities.

Ca CO<sub>3</sub> = 200 ppm

Mg Cl<sub>2</sub> = 150 ppm

Mg (HCO<sub>3</sub>)<sub>2</sub> = 120 ppm

Mg So<sub>4</sub> = 100 ppm

Ca So<sub>4</sub> = 100 ppm

NaCl = 25 ppm

Fe<sub>2</sub> O<sub>3</sub> = 40 ppm

Si O<sub>2</sub> = 30 ppm

Compute the annual requirements of slaked lime and soda, for treating 80,000 lit of water daily. the purity of slaked lime in 85% and soda = 90%.

Or

8. (a) Write short notes on Activated carbon Treatment. Where it can use.  
(b) What are the different methods of defluoridation techniques.

### UNIT - V

9. State the comparative merits and demerits of the following materials used to the conveyance of water.  
(a) Cast Iron  
(b) Steel and  
(c) Concrete.

Or

10. Draw the different layout of distribution stem with neat sketch and explain briefly.
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FOUR YEAR B.Tech. DEGREE EXAMINATION, MAY 2014

THIRD YEAR/SECOND SEMESTER

Branch – EEE & EICE

MODERN CONTROL THEORY

Time : 3 Hours

Max. Marks : 60

Answer ONE question from each Unit.

UNIT – I

1. (a) What is compensation? Derive the transfer functions of lead-lag network.  
(b) Derive the relation between  $\phi_m$  and  $\alpha$  for the lead compensator.

Or

2. Design a lead compensator using root locus for the system with  $G(s) = \frac{4}{s(s+2)}$  to meet the following specifications

- (a) Damping ratio = 0.5, (b) Settling time = 2 sec.

UNIT – II

3. (a) Define the following terms :  
(i) State variables (ii) State vector (iii) State trajectory (iv) State (v) State space.  
(b) What are the advantages and disadvantage of state space analysis?

Or

4. (a) State and explain controllability theorem.  
(b) A linear dynamical time invariant system represented by  $\dot{x} = Ax + By$  where

$$A = \begin{bmatrix} 0 & 1 & 0 \\ 0 & 0 & 1 \\ 0 & -2 & -3 \end{bmatrix}, B = \begin{bmatrix} 0 & 1 \\ 0 & 0 \\ 1 & 0 \end{bmatrix}. \text{ Find if the system is completely controllable.}$$

UNIT – III

5. (a) Derive the solution of homogeneous equation.  
(b) Explain the properties of state transition matrix.

Or

6. A single input system is described by the following state equation  $\dot{X} = \begin{bmatrix} 0 & 1 & 0 \\ 0 & 0 & 1 \\ -1 & -5 & -6 \end{bmatrix} X + B u$ ,  $B = \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix}$ , design the state feedback controller which will give closed loop poles at  $-2 \pm j4, -10$ .

#### UNIT - IV

7. (a) What is a non-linear system? What are different types of non linearity? Explain each of them in detail.  
 (b) Derive the describing function of dead zone and saturation non-linearity.

Or

8. (a) Explain singular points in non linear system.  
 (b) Draw the phase plane trajectory for the following equation using isocline method  $\ddot{X} + 2\varepsilon\omega\dot{x} + \omega^2x = 0$ , given  $\varepsilon = 0.5$ ,  $\omega = 1$ . Initial point  $(0, 6)$ .

#### UNIT - V

9. (a) Explain Lyapunov's stability theorem.  
 (b) Determine the stability of non linear system governed by the equations  $\dot{x}_1 = -x_1 + 2x_1^2x_2, \dot{x}_2 = -x_2$ .

Or

10. (a) Explain the variable-gradient method to investigate stability.  
 (b) Determine the stability of the non linear system  $\begin{matrix} \dot{x}_1 = -x_1 - x_2^2 \\ \dot{x}_2 = -x_2 \end{matrix}$  by using variable gradient method.

(10 ME 17)

FOUR YEAR B.Tech. DEGREE EXAMINATION, MAY 2014

THIRD YEAR/SECOND SEMESTER

Branch — ME

HEAT TRANSFER

Time : 3 Hours

Max. Marks : 60

Answer ONE question from each Unit.

UNIT - I

1. (a) Describe different types of boundary conditions applied to heat conduction problems. (5)
- (b) A 2 mm diameter wire with 0.8 mm thick layer of insulation,  $k = 0.15 \text{ W/m-k}$  is used in a certain electrical application. The insulated surface is exposed to atmosphere with  $h = 40$ . What percentage change in heat transfer rate would occur if the critical insulation is used. Assume temperature difference is unchanged. (7)

Or

2. (a) Estimate the heat loss through a hemi-spherical dome under steady state conduction. The inside and outside radii of dome are 0.6 m and 0.83 m respectively. The inside and outside temperatures are  $650^\circ\text{C}$  and  $150^\circ\text{C}$  respectively. Thermal conductivity of material varies with temperature are  $K = 0.813 + 0.000582 T$ . (8)
- (b) Differentiate between steady and transient heat conduction. (4)

UNIT - II

3. (a) What is critical thickness of insulation on a small diameter wire? Derive an expression. Explain its physical significance. (6)
- (b) A very long 1 cm diameter copper rod [ $K = 377$ ] is exposed to an environment at  $22^\circ\text{C}$ . The base temperature of the rod is  $150^\circ\text{C}$ . The heat transfer coefficient between the rod and environment is 11. Estimate the rate of heat transfer to the surroundings. (6)

Or

4. (a) Calculate the critical radius of insulation asbestos [ $K = 0.17$ ] surrounding a pipe and exposed to room air at  $20^\circ\text{C}$  with a convection heat transfer coefficient of  $3 \text{ W/m}^2\text{-K}$  calculate the heat loss from  $200^\circ\text{C}$ ; 5 cm diameter pipe when covered with critical radius of insulation and without insulation. (8)
- (b) Explain the importance of insulated tip solution for the fins used in practice. (4)

[P.T.O.]

### UNIT - III

5. (a) Define Grashof number. Explain its significance in natural convection heat transfer. (5)
- (b) Calculate the pressure drop in 100 m of 2 cm × 2.5 cm smooth rectangular duct when water at 40°C flows through it with a velocity of 0.5 m/s ( $\gamma = 0.66 \times 10^{-6} \text{ m}^2/\text{s}$ ;  $\rho = 955 \text{ kg/m}^3$ ). (7)

Or

6. (a) What is the Prandtl number? Show that it is a dimensionless quantity. (5)
- (b) Air at 27°C flows over a flat plate @ a velocity of 2 m/sec. The plate is heated over its entire length of 100 cm over a temperature of 60°C. Calculate
- (i) In the first 20 cm of plate
- (ii) In the first 40 cm of plate. (7)

### UNIT - IV

7. (a) State and prove
- (i) Kirchoff's law of radiation.
- (ii) Stefan-Boltzman law. (8)
- (b) Distinguish between a black body and Grey body. (4)

Or

8. (a) State and explain Wein-Displacement law. (6)
- (b) It is observed that the intensity of the radiation emitted by the sun is maximum at a wavelength of  $0.5 \mu$ . Assuming the sun to be a black body. Estimate its surface temperature and Emissive power. (6)

### UNIT - V

9. (a) Discuss the general arrangement of parallel flow, counter flow heat exchanges. (6)
- (b) In a counter flow double pipe heat exchanger, water is heated from 40°C to 80°C with an oil entering at 105°C and leaving at 70°C. Taking the overall heat transfer coefficient as  $300 \text{ W/m}^2 \text{ K}$  and the water flow rate as  $0.1 \text{ kg/sec}$ . Calculate heat exchange area. (6)

Or

10. (a) Derive an expression for LMTD for parallel flow heat exchanger. (5)
- (b) In a cross flow heat exchanger over all heat transfer coefficient and area are  $100 \text{ W/m}^2\text{-K}$ ,  $40 \text{ m}^2$  hot gases at 250°C enters the exchanger with a flow rate of  $1.5 \text{ kg/sec}$ . Whereas water flowing at  $1 \text{ kg/sec}$  enters at 35°C using NTU method, calculate water, gas outlet temperature. Assume both fluids unmixed. Take  $C_p$  of gas and water as 1 and  $4.18 \text{ kJ/kg-K}$  respectively. (7)

(10 CS 39)

FOUR YEAR B.Tech. DEGREE EXAMINATION, MAY 2014

THIRD YEAR/SECOND SEMESTER

Branch - CSE

Paper - SOFTWARE ENGINEERING

Time : 3 Hours

Max. Marks : 60

Answer ONE question from each Unit.

UNIT - I

1. (a) Explain the layered technology of software Engineering. (5)
- (b) Explain the unified approach to software development. Discuss the merits and demerits of this approach. (7)

Or

2. (a) Explain the five software assessment principles. (5)
- (b) What is prototype model? How can this model accommodate in spiral model? (7)

UNIT - II

3. (a) Explain the practices of modeling. (6)
- (b) What is validating requirements? What happens if the validation uncovers the error? (6)

Or

4. (a) Explain the steps in requirements Engineering. (6)
- (b) What are the different principles that guide software engineering practice? (6)

UNIT - III

5. (a) What is Design Engineering? What are the underlying concepts that lead to good design? (6)
- (b) Discuss the statement, "Abstraction and refinement are complementary concepts". (6)

Or

6. (a) Draw a sequence diagram for withdrawing money from an ATM system. (6)
- (b) What are the different approaches of analysis modeling? (6)

UNIT - IV

7. (a) What is coupling and cohesion? Explain Coupling in detail. (6)
- (b) Explain different architectural styles. (6)

Or

[P.T.O]

8. (a) What is Architecture? Explain Data design at Architectural level? (6)  
(b) Explain the components of conventional design. (6)

**UNIT - V**

9. (a) Explain the concept of Debugging? (6)  
(b) Explain Integration testing in detail? (6)

**Or**

10. (a) Explain the fundamentals of software testing. (6)  
(b) Explain validation testing. (6)
-

FOUR YEAR B.Tech. DEGREE EXAMINATION, MAY 2014  
THIRD YEAR/SECOND SEMESTER

Branch — EICE

ELECTRONIC MEASUREMENTS AND INSTRUMENTS

Time : 3 Hours

Max. Marks : 60

Answer ONE question from each unit.

UNIT - I

1. (a) Explain in detail the basic principle of an Oscilloscope. (6)  
(b) Draw the basic block diagram of an Oscilloscope and Explain the functions of each block. (6)

Or

2. (a) Explain The Vertical and Horizontal Deflection Systems. (8)  
(b) Why is a Delay line used in the vertical section of an Oscilloscope? (4)

UNIT - II

3. (a) Explain the Basic Principle of s Digital Voltmeter. (4)  
(b) Explain with the help of a neat circuit diagram, the working of a dual slop DVM? (8)

Or

4. (a) What is a Universal Counter? How can it be used to measure the following  
(i) Frequency  
(ii) Time  
(iii) Period  
(iv) Ratio. (6)  
(b) Explain the operation of digital phase meter. (6)

UNIT - III

5. (a) Explain the working of a Micro voltmeter. (8)  
(b) Why can a Transistor voltmeter not be used for measurement in the micro volts range? (4)

Or

6. (a) With the help of a block diagram. Explain an AF Wave Analyzer. (8)  
(b) State the applications of a Spectrum Analyzer. (4)

#### UNIT - IV

7. (a) What is the function of a Modern Digital Data Acquisition System? (6)  
(b) What are the Objectives of a DAS? (6)

Or

8. (a) Explain about Micro machined Electro Mechanical Sensors. (6)  
(b) What are some of the advantages of modern sensors? (6)

#### UNIT - V

9. (a) Explain the working of Basic X-Y Recorder. (6)  
(b) What is the difference between a strip chat recorder and an X-Y recorder? (4)  
(c) What are the applications of X-Y recorders? (2)

Or

10. (a) State the different types of Printers? (4)  
(b) How is line at a Time Impact Printers for fully formed characters? (6)  
(c) Write the applications of line printers. (2)
-



FOUR YEAR B.Tech. DEGREE EXAMINATION, MAY 2014.

THIRD YEAR / SECOND SEMESTER

Branch — CE

STRUCTURAL ANALYSIS — II

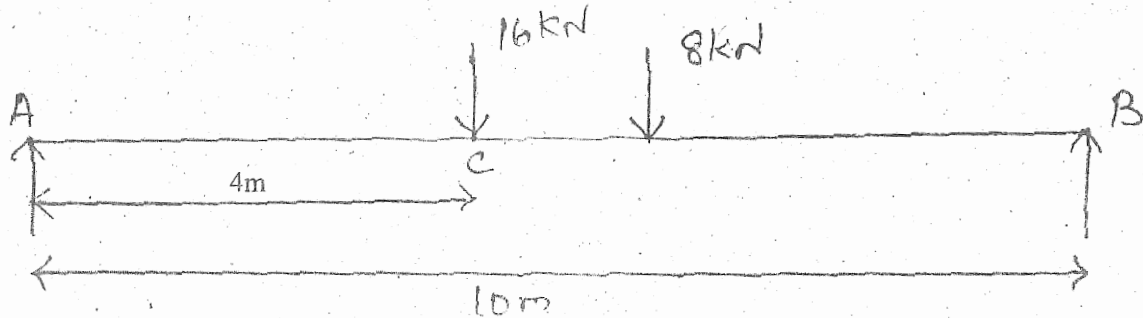
Time : 3 Hours

Max. Marks : 60

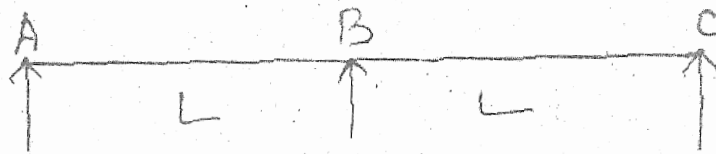
Answer ONE question from each Unit.

UNIT - I

1. (a) Two wheel loader of 16 and 8 kN at a fixed distance a part of 2m, cross a beam of 10 m span. Draw the influence line for bending moment and shear force for a point 4m. From the left, find the max bending moment and shear force at that point.

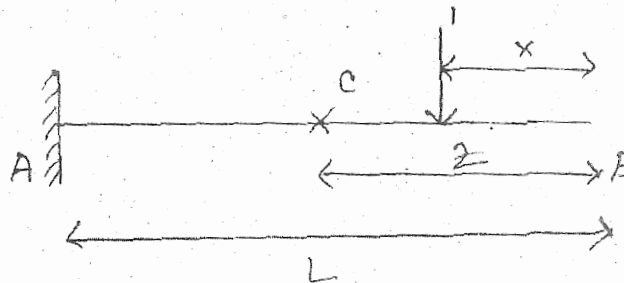


- (b) For the continuous beam of two equal spans draw influence line for reacting of end support.



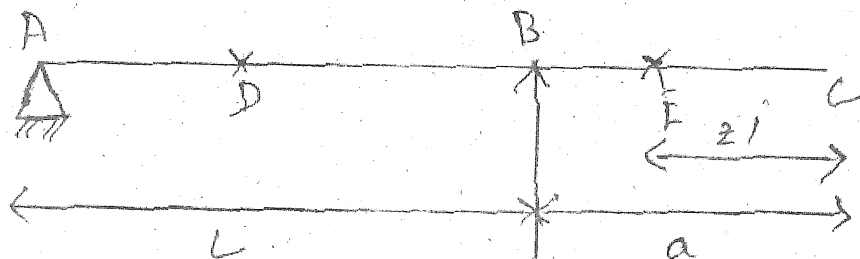
Or

2. (a) A cantilever beam of span L as shown in figure. Draw I.L.D. for shear force and bending moments at fixed end A and at Section C.



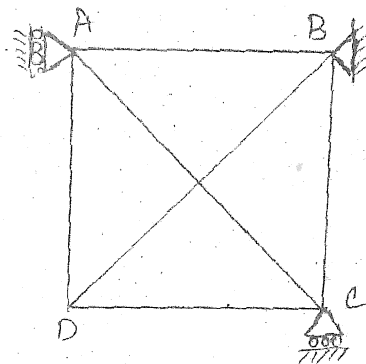
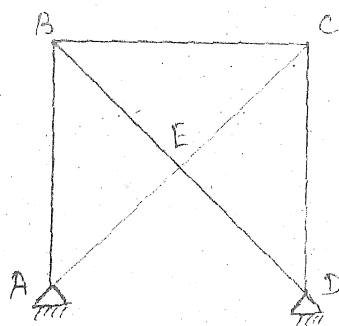
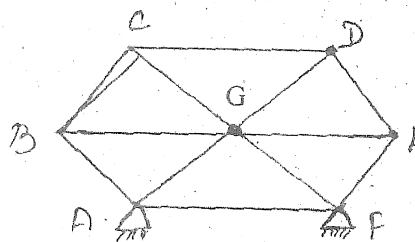
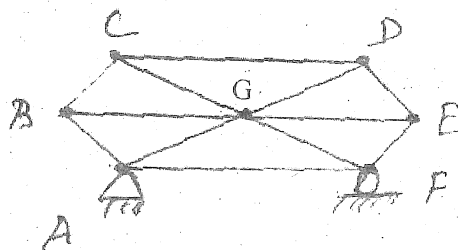
[P.T.O]

- (b) A typical over hanging beam is shown for which I.L.D. for the following is drawn. Reaction of A,B, shear force of D,F.



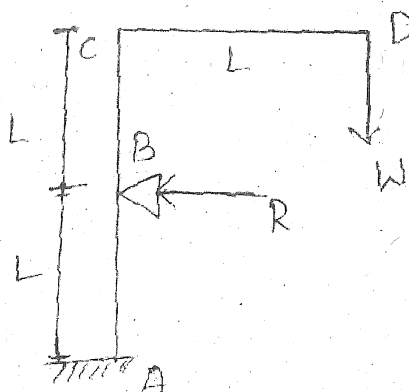
UNIT - II

3. Classify each of the following trusses as statically. Determine (or) indeterminate. If indeterminate specify the degree of static indeterminacy and also find degree of kinematic indeterminacy.



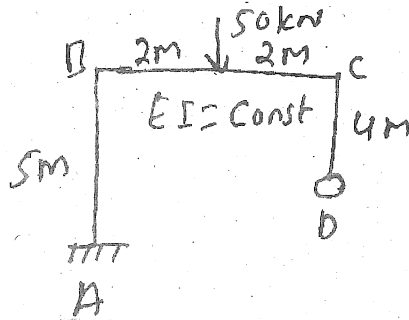
Or

4. Find reactive tuvle R at B due to action of a vertical load W at D as shown. Sketch B.M.D. use castiglianu's theorem.



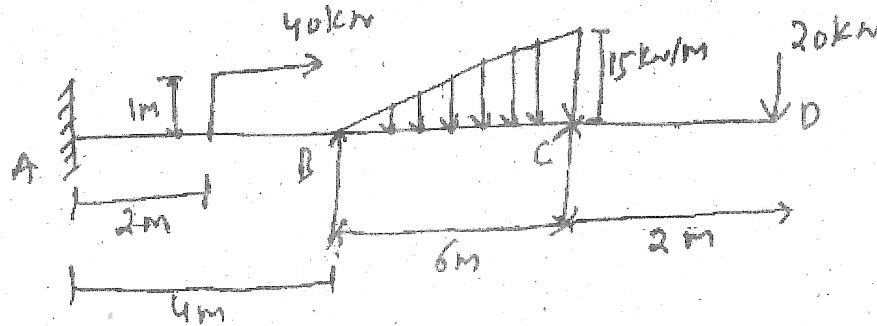
UNIT - III

5. Analyse the following frame by slope-deflection method. Sketch B.M. and S.F.D.



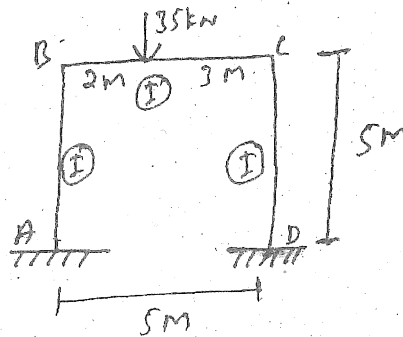
Or

6. (a) Explain sway analysis with sketches.  
 (b) Analyse following beam by moment distribution method.



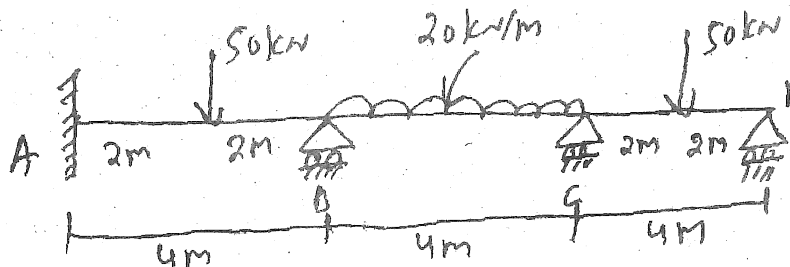
UNIT - IV

Analyse the following portal frame by Kani's method. Sketch bending moment diagram.



Or

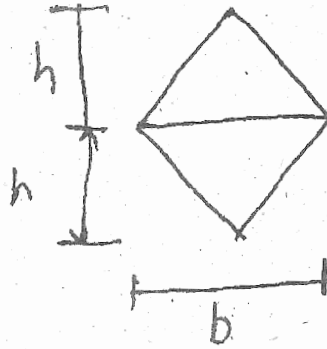
8. (a) Explain about portal method and cantilever method with neat sketches.  
 (b) Analyse the following continuous beam using Kani's method. It is constant through out.



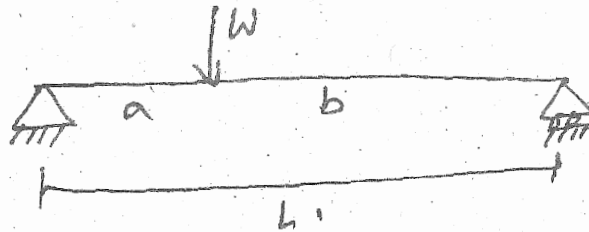
(10 CE 26)

UNIT - V

9. (a) Obtain the shape factor for following :

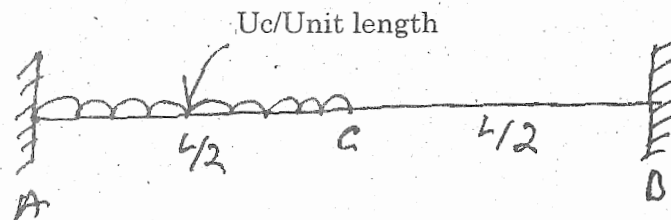


- (b) Determine the collapse load in the simply supported beam as shown :



Or

10. Determine the collapse load in a fixed beam of span "L" carrying U.D.L over on half of span. The plastic moment capacity is  $n p$  through out.



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(10 ME 18)

FOUR YEAR B.Tech. DEGREE EXAMINATION, MAY 2014

THIRD YEAR/SECOND SEMESTER

Branch – ME

OPERATIONS RESEARCH

Time : 3 Hours

Max. Marks : 60

Answer ONE questions from each Unit.

UNIT - I

1. (a) Define operation research. Give the main characteristics of operation research. (6)  
(b) Explain the scope of operation research. (6)

Or

2. (a) Define :  
(i) Feasible solution  
(ii) Unbounded solution  
(iii) Basic feasible solution  
(iv) Degeneracy. (4)

- (b) Maximize :  $Z = 2x_1 + x_2$

Subject to

$$4x_1 + 3x_2 \leq 12$$

$$4x_1 + x_2 \leq 8$$

$$4x_1 - x_2 \leq 8$$

$$\text{and } x_1, x_2 = 0.$$

(8)

UNIT - II

3. (a) What is degeneracy in a transportation problem? Explain the procedure to resolve degeneracy with an example. (6)  
(b) Determine on initial basic feasible solution to the following transportation problem and find the optimal solution. (6)

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	Supply
O <sub>1</sub>	6	4	1	5	14
O <sub>2</sub>	8	9	2	7	16
O <sub>3</sub>	4	3	6	2	5
Demand	6	10	15	4	

Or

[P.T.O.]

4. (a) State the degeneracy in an assignment problem and list out its limitations. (4)  
 (b) A company has machines on which to do 3 jobs. The cost of each job on each machine is given in the following table: (8)

	M/C	W	X	Y	Z
	A	18	24	28	32
Job	B	8	13	17	19
	C	10	15	19	22

Find the job assignment to minimize the cost.

### UNIT - III

5. (a) Explain briefly the importance of replacement analysis. (4)  
 (b) The cost of M/C is Rs. 5,000 and its scrap value is only Rs. 75. The maintenance cost are found from experience. (8)

Year :	1	2	3	4	5	6	7	8
Maintenance cost in Rs.:	100	150	250	400	600	900	100	1,250

When should machine be replaced?

Or

6. (a) Define sequencing problem. (2)  
 (b) Give Johnson's method for determining the optimal sequence for processing in jobs on two machines with example. (10)

### UNIT - IV

7. (a) Define inventory. What are the different types of inventories in Industries? (4)  
 (b) An aircraft uses rivets at an approximately constant rate of 5,000 kg per year. The rivets cost Rs. 20 per kg and the company personnel estimate that it costs Rs. 200 to place an order and the carrying cost of inventory is 10% per year.  
 (i) How frequently should orders for rivets be placed, and what quantities should be ordered for?  
 (ii) If the actual costs are Rs. 500 to place an order and 15% for carrying cost. How much is the company losing imperfect year because of imperfect cost information? (8)

Or

8. (a) What is ABC analysis? Why is it necessary? (4)  
 (b) What is selective inventory control? From the following data, draw a plan of ABC selective control. (8)

Item :	1	2	3	4	5	6	7	8	9
Unit C :	7	24	1.5	0.6	38	40	60	3	29
Unit cost :	5	3	10	22	1.5	0.5	0.2	3.5	8.4

UNIT - V

9. (a) Explain briefly main characteristics of queuing system. (4)
- (b) On an average 96 patients per 24 hour day require the service of an emergency clinic. Also on average, a patient requires 10 minutes of active attention. Assume that the facilities can handle only one emergency at a time. Suppose that it cost the clinic Rs. 100 per patient treated to obtain an average servicing time of 10 minutes and that each minute of decrease in this average time would cost Rs. 10 per patient treated. How much would have to be budgeted by the clinic to decrease the average size of the queue from  $1\frac{1}{3}$  patient to  $\frac{1}{2}$  patient. (8)

Or

10. (a) Explain the following terms : (6)
- (i) Two person zero sum game
- (ii) Pure strategy in a game
- (iii) Mixed strategy in a game
- (iv) Principle of dominance.
- (b) Solve the following game using dominance principle : (6)

		Player B				
		I	II	III	IV	V
Player A	I	3	5	4	9	6
	II	5	6	3	7	8
	III	8	7	9	8	7
	IV	4	2	8	5	3

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FOUR YEAR B.Tech. DEGREE EXAMINATION, MAY 2014.

THIRD YEAR / SECOND SEMESTER

Branch - ECE

DIGITAL SIGNAL PROCESSING

Time : 3 Hours

Max. Marks : 60

Answer ONE question from each Unit.

## UNIT - I

1. (a) Find the Z-transform and the R.O.C. of the signal  $x(n) = [3 \cdot (2)^n - 4 \cdot (3)^n] u(n)$ . (6)
- (b) Determine the casual signal  $x(n)$  having the Z-transform  $x(z) = \frac{1}{(1+z^{-1})(1-z^{-1})^2}$ . (6)

Or

2. (a) A casual discrete time L.T.I. system is describe by  $y(n) = \frac{3}{4}y(n-1) - \frac{1}{8}y(n-2) + x(n)$ . Where  $x(n)$  and  $y(n)$  are the input and output of the system respectively them. Determine the system function and impulse of the systems. (6)
- (b) What are the properties of region of convergence? (6)

## UNIT - II

3. (a) Find the 8 point DFT of a sequence  $x(n) = \{1, 2, 3, 4\}$ . (8)
- (b) Distinguish between circular convolution and linear convolution with example. (4)

Or

4. (a) An 8 point sequence is given by  $x(n) = \{1, 2, 3, 4, 4, 3, 2, 1\}$  then compute 8 point DFT of sequence  $x(n)$  by radix-2 DIT FFT algorithm. (8)
- (b) State computational requirements of FFT. (4)

## UNIT - III

5. (a) Realize the system with difference equation  $y(n) = \frac{3}{4}y(n-1) - \frac{1}{8}y(n-2) + \frac{1}{3}x(n-1)$  in cascade form. (6)
- (b) Obtain the direct form and cascade form realizations for the transfer function of a FIR system is given by  $H(z) = \left(1 - \frac{1}{4}z^{-1} + \frac{3}{8}z^{-2}\right) \left(1 - \frac{1}{8}z^{-1} - \frac{1}{2}z^{-2}\right)$ . (6)

Or

6. (a) Obtain the direct form-I and direct form-II realizations for the system described by the following difference equation

$$y(n) = 2y(n-1) + 3y(n-2) + x(n) + 2x(n-1) + 3x(n-2) \quad (8)$$

- (b) Explain about Lattice structure. (4)

#### UNIT - IV

7. (a) Convert the analog filter with system function  $H(s) = \frac{1}{(s+1)(s+2)}$  into digital IIR filter using impulse invariant method assume  $T = 1$  sec. (8)

- (b) What is an IIR filter? Compare its characteristics with a FIR filter. (4)

Or

8. (a) Design a Chebyshev filter for the following specifications using Bilinear transformation method.

$$\begin{aligned} 0.8 \leq |H(e^{jw})| \leq 1 & \text{ for } 0 \leq w \leq 0.2\pi \\ |H(e^{jw})| \leq 0.2 & \text{ for } 0.6\pi \leq w \leq \pi \end{aligned} \quad (8)$$

- (b) Distinguish between Butterworth filter & chebyshev filters. (4)

#### UNIT - V

9. (a) Derive the frequency response of linear phase FIR filters using Fourier series method. (8)

- (b) What is Gibbs phenomenon? (4)

Or

10. (a) Design a high pass filter using Hamming window with cut off frequency 1.2 rad/sec and  $N = 9$ . (8)

- (b) What are the advantages of FIR filters? (4)

FOUR YEAR B.Tech. DEGREE EXAMINATION, MAY 2014.

THIRD YEAR / SECOND SEMESTER

Branch — EEE

POWER SYSTEMS — II

Time : 3 Hours

Max. Marks : 60

Answer ONE question from each Unit.

UNIT - I

1. (a) Explain the classification of lines based on their length of transmission.  
(b) A transmission line has series impedance of  $(20 + j 10) \Omega$  and shunt admittance of  $4 \times 10^{-4} \Omega$ . Find A,B,C,D constants based on (i) Nominal T-method (ii) Nominal  $\pi$ -method.

Or

2. (a) Explain the series capacitor and shunt capacitor compensation of transmission lines.  
(b) Explain the Ferranti effect.

UNIT - II

3. (a) Starting from the first principles show that surges behaves as travelling waves. Find expression for surge impedance and wave velocity.  
(b) An over head line with a surge impedance of  $500 \Omega$  and an effective resistance of  $6 \Omega$  per km. If a surge of  $400 \text{ km}$  enters the line at a certain point, calculate the magnitude of the surge after it has travelled  $10 \text{ km}$  and calculate, power loss and heat loss of the wave over the distance. Assume if any data required.

Or

4. (a) How can Bewleys lattice be drawn? Discuss its use.  
(b) Discuss the following cases at line terminations :  
(i) Open circuited line.  
(ii) Short circuited line.

UNIT - III

5. (a) Define the following terms :  
(i) Earth electrode (ii) Earth current (iii) Step potential (iv) Touch potential  
(b) Explain soil resistivity.

Or

6. Discuss the following methods of neutral grounding :  
(a) Arc suppression coil grounding.  
(b) Resistance grounding.

UNIT - IV

7. (a) Write the symbols of different equipment in sub-stations.  
 (b) Explain different bus-bar arrangement with neat diagrams.

Or

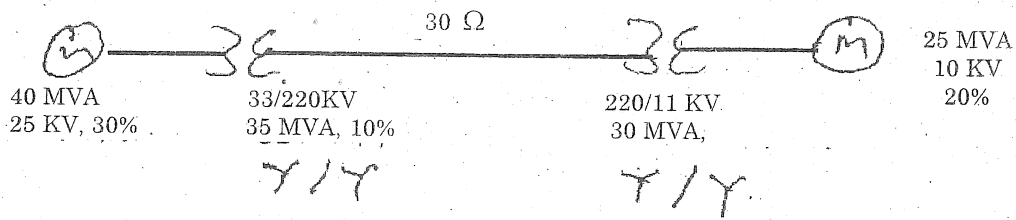
8. (a) Explain the layout of HVDC system.  
 (b) Explain the different types of DC links.

UNIT - V

9. (a) Explain how base quantities can be selected and derive formula for base impedance.  
 (b) Explain the advantages of PG system.

Or

10. (a) For the power system shown in Fig. draw the equivalent reactance diagram by selecting generator as base values.



- (b) Draw the circuit representation of synchronous machine, two winding and three winding transformer.

FOUR YEAR B.Tech. DEGREE EXAMINATION, MAY 2014

THIRD YEAR/SECOND SEMESTER

Branch — ECE

DIGITAL IC APPLICATIONS

Time : 3 Hours

Max. Marks : 60

Answer ONE question from each Unit.

UNIT - I

1. (a) Draw the schematic circuit diagram of 4 bit successive approximation A/D converter and explain its operation.  
(b) Compare weighted resistor D/A converter and R-2R D/A converter.

Or

2. (a) Draw the schematic block diagram of Dual-Slope A/D converter and explain its operation.  
(b) Define the following terms as related to DAC.
  - (i) Accuracy
  - (ii) Resolution.

UNIT - II

3. (a) Write notes on VHDL history.  
(b) Write the VHDL program for 2-bit comparator.

Or

4. (a) Write notes on Hardware modeling issues.  
(b) Write VHDL design flow.

UNIT - III

5. (a) Write down VHDL code for  $4 \times 16$  decoder.  
(b) Explain in detail about code converters.

Or

6. (a) Draw the combinational logic circuit equivalent to  $8 \times 1$  multiplexer.  
(b) What is the difference between encoder and multiplexer.

[P.T.O.]

UNIT - IV

7. (a) Write the VHDL code of JK flip flop.  
(b) Write notes on CAD tools.

Or

8. (a) Write the differences between Asynchronous and synchronous.  
(b) Explain the concept of ring and Johnson counter.

UNIT - V

9. Write a brief notes on physical design.

Or

10. (a) Explain :  
(i) BIST  
(ii) Testing of PCB.  
(b) Explain fault model with a suitable example.
-

FOUR YEAR B.Tech. DEGREE EXAMINATION, MAY 2014

THIRD YEAR/SECOND SEMESTER

Branch - ME

PRINCIPLES OF MACHINE DESIGN

Time : 3 Hours

Max. Marks : 60

Answer ONE question from each Unit.

## UNIT - I

1. (a) Define the following properties of a material. (4)
- Ductility
  - Toughness
  - Hardness
  - Creep.
- (b) Explain general procedure in machine design and also list out the general considerations in machine design. (8)

Or

2. (a) Differentiate b/w maximum shear stress theory and maximum strain energy theory. (4)
- (b) The load on a bolt consists of an axial pull of 25 kN together with a transverse shear force of 15 kN. Find the dia of the bolt required according to maximum shear stress theory and maximum distortion energy theory. (8)

## UNIT - II

3. (a) Define stress concentration and explain methods for reducing stress concentration. (4)
- (b) A cantilever beam made of cold drawn carbon steel of circular c/s as show in figure 2.1 is subjected to a load which varies from  $(-F)$  to  $(2F)$ . Determine maximum load that this member can withstand by using factor safety is '2'. The theoretical stress concentration factors is 1.42 and the notch sensitivity is 0.9. Assume ultimate stress as 550 MPa, yield stress as 470 MPa and endurance limit as 275 MPa. (8)

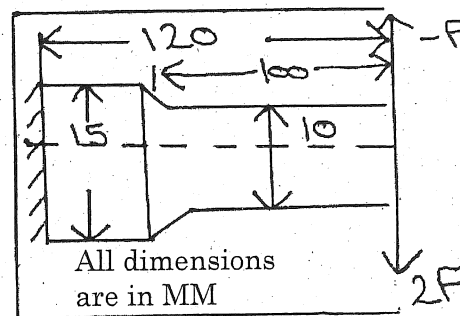


Fig. 2.1

Or

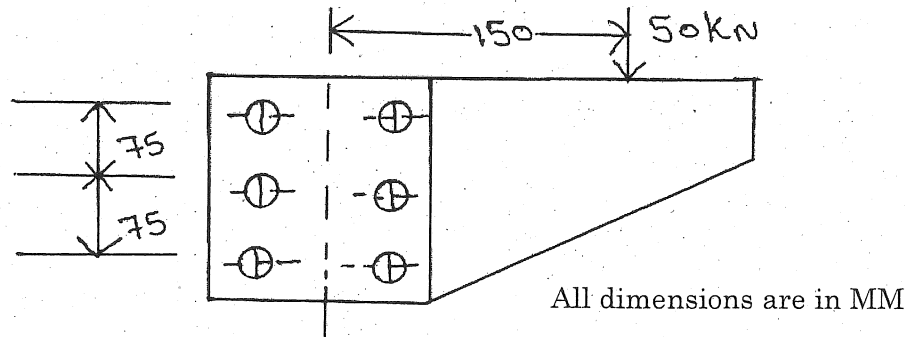
4. (a) Define the following : (4)
- Endurance limit
  - Size factor
  - Notch sensitivity
  - Surface finish factor.
- (b) Determine the diameter of a circular rod made of ductile material with a fatigue strength of 250 MPa and a tensile yield strength of 350 MPa. The member is subjected to a varying load of 500 kN to (-400 kN). Consider  $K_t = 1.8$  and F.S. = 2. (8)

### UNIT - III

5. (a) Explain different stresses induced in threaded joints. Derive an expression for finding torque required for bolt tightening. (6)
- (b) A over loaded safety valve has a diameter of 100 mm and the blow of pressure is 1.5 N/mm<sup>2</sup>. Find the diameter of the threaded part of the fulcrum if the permissible tensile stress is limited to 50 MPa and leverage ratio is 8. (6)

Or

6. (a) Explain the concept of Bolt of uniform strength. (4)
- (b) A bracket is bolted to a column by 6 bolts of canal size as shown in figure. It carries a load of 50 kN at a distance of 150 mm from the center of the column. If the maximum stress in the bolt is to be limited to 150 MPa. Determine diameter of bolt. (8)



### UNIT - IV

7. (a) What do you understand by term welded joint? How it differs from riveted joint. (4)
- (b) A plate 75 mm wide and 12.5 mm thick is jointed to another plate by a single transverse weld and a double parallel fillet weld as shown is fig. 4.1. The maximum tensile and shear stress are 70 MPa and 56 MPa respectively. Find the length of each parallel fillet weld, if the joint is subjected to both static and fatigue loading. (8)

Or



8. (a) Explain different types of welded joints with neat sketches. (4)
- (b) Determine the length of the weld run for a plate of size 120 mm wide and 15 mm thick to be welded to another plate by means of (8)
- (i) A single transverse weld and
- (ii) Double parallel fillet welds when the joint is subjected to variable loads.

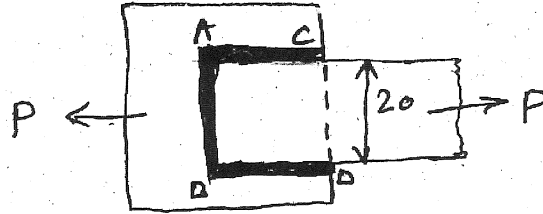


Fig. 4.7 (All Dimensions are in mm)

### UNIT - V

9. (a) Classify the springs according to their shapes. Draw neat sketches indicating in each case whether stresses are induced by bending or torsion. (4)
- (b) A helical spring made of a wire of 6 mm diameter and has outside diameter of 75 mm. If the permissible shear stress is 350 MPa and modulus of rigidity 84 kN/mm<sup>2</sup>. Find the axial load which the spring can carry and the deflection per active turn. (8)

Or

10. (a) What is nipping in a leaf spring? Explain. (4)
- (b) A truck spring has 10 leaves, two of which are full length leaves. The spring supports are 1.05 m apart and the central band is 80 mm wide. The central load is to be 5.4 kN with a permissible stress of 280 MPa. Determine the thickness and width of the steel spring leaves. The ratio of total depth to the width of spring is '3'. Also determine the deflection of the spring. (8)



FOUR YEAR B.Tech. DEGREE EXAMINATION, MAY 2014

THIRD YEAR — SECOND SEMESTER

Branch — CSE

NETWORK SECURITY AND COMPUTER ETHICS

Time : 3 Hours

Max. Marks : 60

Answer ONE question from each unit.

UNIT I

1. (a) Explain in detail about public key infrastructure in Authentications Applications. (1 × 6 = 6)
- (b) What are Authentication Protocol? Explain out way Authentication Protocol. (1 × 6 = 6)

Or

2. (a) Explain about Authentication Procedure in X. 509. (1 × 6 = 6)
- (b) What is a Digital Signature? Explain in detail about them. (1 × 6 = 6)

UNIT II

3. (a) Discuss in detail about IP security Authentication Header. (1 × 6 = 6)
- (b) How do we encapsulate security payload? Explain. (1 × 6 = 6)

Or

4. (a) Discuss in brief about five security principal services in PGP. (1 × 6 = 6)
- (b) Explain in detail about Public Key Management in Pretty Good Privacy. (1 × 6 = 6)

UNIT III

5. (a) What is secure electronic transition? Explain about SET payment processing. (1 × 6 = 6)
- (b) What is web security? Discuss about web security threats and web traffic security approach. (1 × 6 = 6)

Or

6. (a) Discuss about New-Policies and Vaccum of policies in Ethics and how can we fill the Vaccum. (1 × 6 = 6)
- (b) What are Ethics? Why do we need computer Ethics and what are the new possibilities? (1 × 6 = 6)

#### UNIT IV

7. (a) Explain in detail about Harking and Harker Ethics. (1 × 6 = 6)  
(b) Discuss about various policy approaches of online ethics. (1 × 6 = 6)

Or

8. (a) Write short notes on the following:  
(i) Professional ethics.  
(ii) Software Engineering  
(iii) Professional Relationships. (1 × 6 = 6)  
(b) Explain in detail about code of Ethics and professional conduct. (1 × 6 = 6)

#### UNIT V

9. (a) How privacy is related to computer? Explain. (1 × 6 = 6)  
(b) Discuss in detail about Technology and social change and how does it affect and cure. (1 × 6 = 6)

Or

10. (a) What is privacy? How important is privacy as a social good. (1 × 6 = 6)  
(b) Discuss about the legislative background of social privacy. (1 × 6 = 6)
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FOUR YEAR B.Tech. DEGREE EXAMINATION, MAY 2014

THIRD YEAR/ SECOND SEMESTER

Branch - EICE

ANALYTICAL INSTRUMENTATION

Time : 3 Hours

Max. Marks : 60

Answer ONE question from each unit.

UNIT I

1. (a) Explain the different regions of electro magnetic radiation.  
(b) Electromagnetic radiation with a wavelength of 700nm is visible redlight. Determine the frequency and wave number of the radiation. Calculate the wave length.

Or

2. (a) Explain the basic measurements arrangements used in different atomic spectrometric techniques.  
(b) Explain Beer-Lamberts law.

UNIT II

3. (a) Describe the components of double beam spectrophotometer.  
(b) Write in detail about vibration – rotational energies related to molecular spectra.

Or

4. (a) Explain the sampling handling techniques of gas cells.  
(b) Explain an instrumentation techniques for analyzing solid samples.

UNIT III

5. Give the constructions details of NMR spectrometer with a neat diagram.

Or

6. (a) Write briefly about components of single focusing mass spectrometer.  
(b) Explain the principle of electron ionization.

UNIT IV

7. With a neat diagram explain the working of scintillation counter.

Or

8. (a) Explain the principles of flame photometry with neat diagram.  
(b) Explain about isotope dilution technique.

[P.T.O]

UNIT V

9. (a) Draw and explain the instrumentation of high pressure liquid chromatography.  
(b) Describe the electrical conductivity of liquids, dependence on impurity concentration.

Or

10. (a) Explain various kinds of electro chemical method.  
(b) Write about conductivity measurements using high frequency methods.
-

FOUR YEAR B.Tech. DEGREE EXAMINATION, MAY 2014

THIRD YEAR/SECOND SEMESTER

Branch - CE

FOUNDATION ENGINEERING

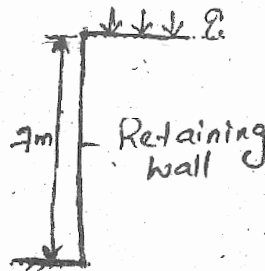
Time : 3 Hours

Max: Marks : 60

Answer ONE question from each Unit.

UNIT - I

1. (a) Briefly explain assumptions Coulomb's earth pressure theory. (6)  
(b) Determine the total active earth pressure and point of application  $\gamma = 16 \text{ kN/m}^3$ ,  $\phi = 40^\circ$ ,  $H = 7 \text{ m}$ ,  $q = \text{surchage load} = 50 \text{ kN/m}^2$ . (6)

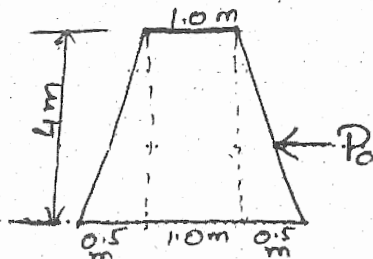


Or

2. (a) Explain with neat sketch Culmann's graphical method for active case with purely frictional soil. (6)  
(b) Derive the depth of tension crack in active case  $C - \phi$  soils with surcharge load. (6)

UNIT - II

3. (a) Write the classification of retaining structures. (6)  
(b) Determine the stability of retaining wall  
 $\gamma = 16.5 \text{ kN/m}^3$ ,  $\phi = 30^\circ$   
 $\gamma_c = 25 \text{ kN/m}^3$ ,  $\mu = 0.55$   
 $K_a = \frac{1}{3}$ ,  $Q_a = 200 \text{ kN/m}^2$



Or

4. (a) Explain the stability and design for retaining wall. (8)  
(b) Write the types of joints in retaining walls. (4)

**UNIT - III**

5. (a) Explain the number and disposition of trial pits and borings with reference to sub soil investigation. (6)  
(b) Explain with neat graph, how can you determine bearing capacity from plate load test data. (6)

**Or**

6. (a) Explain the design features affecting the sample disturbance. (8)  
(b) Difference between static cone penetration test and dynamic cone penetration test. (4)

**UNIT - IV**

7. (a) Explain briefly types of shallow foundations and their applicability with neat sketches. (6)  
(b) Explain methods to reduce differential settlements. (6)

**Or**

8. (a) Explain Skempton's bearing capacity analysis for Clayey soils. (6)  
(b) Briefly explain IS code method for bearing capacity. (6)

**UNIT - V**

9. (a) Discuss various dynamic formulae in pile foundations. (6)  
(b) Discuss different methods for installation of piles. (6)

**Or**

10. (a) What is the necessity of pile foundation? (4)  
(b) Determine the load carrying capacity of a pile in cohesive soils and cohesion less soils. (8)



FOUR YEAR B.Tech. DEGREE EXAMINATION, MAY 2014

THIRD YEAR/SECOND SEMESTER

Branch - EEE

POWER ELECTRONICS

Time : 3 Hours

Max. Marks : 60

Answer any ONE question from each Unit.

UNIT - I

1. Explain in detail the Turn-on and Turn-off Mechanism of an SCR? Draw the Turn on and Turn off Characteristics. (12)

Or

2. Draw an Explain the necessity of static and Dynamic Equilizing circuit for series Connected SCRs? Derive relations used for determining the values of shunt resistor R and Capacitor 'C' in this circuit. (12)

UNIT - II

3. Explain the operation of Three phase fully Controlled bridge converter with resistive load. Describe in detail the following modes of operation with associated wave forms
- (a) Discontinuous conduction mode
- (b) Continuous conduction mode

Or

4. Explain in detail the operation of a single phase and Three phase Dual converters with circulating and without circulating current modes.

UNIT - III

5. (a) Describe the principle of step-up chopper. Derive an expression for the average output in terms of input voltage and duty cycle. State the assumptions made. (8)
- (b) A step-up chopper has output voltage of two to four times the input voltage. For a chopping frequency of 2000hz, determine the range of off periods for the gate signal. (4)

Or

6. (a) Discuss the main types of DC choppers. (3)
- (b) Sketch output voltage, output current, source current and Thyristor current wave forms for Type-C chopper for its operation in first quadrant. (6)

#### UNIT - IV

7. With the help of neat circuit diagram and wave-forms, explain briefly the operation of three phase bridge inverter with resistive load in
- (a) 180° conduction mode
  - (b) 120° conduction mode. (12)

Or

8. Draw and explain the operation of single phase capacitor commutated current source Inverters with resistive load. Draw the related voltage and current waveforms. (12)

#### UNIT - V

9. (a) Explain the basic principle of operation of a cyclo converter. (6)
- (b) A Six pulse blocked group cyclo converter is fed from a three phase 600V, 50Hz Supply. The supply has an inductance of 1.146mH/phase, if the cyclo converter is supplying a variable resistive load with a current of 28A, estimate the peak and RMS value of load voltage for firing angle of 0°, 30° and 60°. (6)

Or

10. Describe the basic principle of working of a single phase to single phase Cyclo-converter for both continuous and discontinuous conductions for a bridge type cyclo-converter. (12)

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FOUR YEAR B.Tech. DEGREE EXAMINATION, MAY 2014

THIRD YEAR/SECOND SEMESTER

Branch - ECE

PRINCIPLES COMPUTER NETWORKS

Time : 3 Hours

Max. Marks : 60

Answer ONE question from each Unit.

UNIT - I

1. (a) Discuss briefly about TCP/IP reference model with a neat diagram. (6)
- (b) Discuss in detail about Internet. (6)

Or

2. (a) Discuss about various network topologies with neat diagrams. (6)
- (b) Write short notes on ARPANET and NOVELL networks. (6)

UNIT - II

3. (a) What is Error correction and Error detection? Explain about CRC. (6)
- (b) What is Transmission media? Explain about guided transmission media. (6)

Or

4. (a) Explain about simplex stop and wait protocol. (6)
- (b) Discuss in detail about HDLC protocol. (6)

UNIT - III

5. (a) What is optimality principle? Explain about Hierarchical routing. (6)
- (b) What are different categories of routing algorithms. Discuss about multicast routing. (6)

Or

6. (a) What is LAN? Discuss in detail about wireless LANs. (6)
- (b) Explain about various of ALOHA protocols. (6)

[P.T.O]

UNIT - IV

7. (a) How different is TCP from UDP? Explain in detail about TCP Header segment. (6)
- (b) Write short notes on the following elements of Transport protocols
- (i) Flow control and buffering
- (ii) Crash recovery. (6)

Or

8. (a) What is ATM network? What is the size of an ATM cell? Discuss about ATM reference model with a neat diagram. (6)
- (b) Discuss in detail about TCP connection management. (6)

UNIT - V

9. (a) Explain in detail about DNS. (6)
- (b) Explain about electronic mail and world wide web architectures. (6)

Or

10. (a) What are digital signatures? Discuss about symmetric key digital signatures. (6)
- (b) Explain about AES symmetric key algorithm. (6)
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FOUR YEAR B.Tech. DEGREE EXAMINATION, MAY 2014

SECOND YEAR/SECOND SEMESTER

Branch — EEE

UTILIZATION OF ELECTRIC POWER

Time : 3 Hours

Max. Marks : 60

Answer ONE question choosing from each Unit.

UNIT - I

1. (a) What is an integrating sphere? Explain its use in illumination engineering.  
(b) Discuss inverse square law and cosine law of illumination. (6 + 6)

Or

2. (a) What are the various types of lighting schemes? Explain with relevant diagrams.  
(b) Explain with neat diagram the principle of operation of sodium vapour lamp. (6 + 6)

UNIT - II

3. (a) Discuss the various methods of heat dissipation.  
(b) Explain the principle of Di-electric heating. Give the advantages and disadvantages of di-electric heating. (6 + 6)

Or

4. (a) What are the advantages of electric heating?  
(b) Explain the design procedure of an heating element when the power and voltage of the oven is known. (5 + 7)

UNIT - III

5. (a) Discuss various factors that govern the choice of a motor for the given service.  
(b) A 440 V shunt motor while running at 1500 rpm takes an armature current of 30 A and delivers an output of 15 HP. With a load torque varies as the square of speed. Calculate the value of the resistance to be connected in series with the armature for reducing motor speed to 1300 rpm. (6 + 6)

Or

6. (a) Derive an expression for temperature rise of an electric machine.  
(b) Discuss the terms "Continuous", "Intermittent" and "Variable" loads with examples. (6 + 6)

[P.T.O.]

#### UNIT - IV

7. Describe how plugging, rheostatic braking and regenerative braking are employed with DC series motor. (12)

Or

8. What are the different systems of track electrification? Discuss the merits and demerits of track electrification. (12)

#### UNIT - V

9. (a) Discuss the main features of various train services.  
(b) For a trapezoidal speed time curve of an electric train derive expression for maximum speed and distance between stations. (6 + 6)

Or

10. (a) What is specific energy consumption of a train? Discuss various factors effecting it.  
(b) Explain coefficient of adhesion. (8 + 4)

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FOUR YEAR B.Tech. DEGREE EXAMINATION, MAY 2014

THIRD YEAR/SECOND SEMESTER

Branch — CE

RAILWAY, AIRPORT AND HARBOUR ENGINEERING

Time : 3 Hours

Max. Marks : 60

Answer ONE question from each Unit.

UNIT - I

1. (a) What are the function of rails in a Railway track?  
(b) What are the difference between wooden sleeper and concrete sleeper?

Or

2. (a) What are the requirements of sleepers in a railway track?  
(b) What are the different types of rails, write briefly?

UNIT - II

3. (a) What are the requirements of good ballast?  
(b) Draw the permanent way of track and explain briefly.

Or

4. (a) Draw the neat sketch of flat footed and double head rails write briefly.  
(b) What is sleeper density? What are the functions of sleepers?

UNIT - III

5. What are the different types of station yards? Write briefly.

Or

6. (a) Write the site selection for station yards.  
(b) Differentiate between the following :
  - (i) Station and yard
  - (ii) Junction and terminal stations.

UNIT - IV

7. (a) What are the data required before site selection of airport?  
(b) What is terminal area and parking area?

Or

8. (a) What are the points required for site selection of airport?  
(b) What are the characteristics of Air craft? Write briefly.

UNIT - V

9. (a) What are the advantages and disadvantages of water transport system?  
(b) What is harbour and site selection of harbour?

Or

10. (a) What are the different methods of dredging write briefly?  
(b) Differentiate between the following :  
(i) Tidal basin and wet dock  
(ii) Harbours and river ports  
(iii) Sliding caisson and ship caisson.
-



FOUR YEAR B.Tech. DEGREE EXAMINATION, MAY 2014  
THIRD YEAR/SECOND SEMESTER

Branch — ME

ANALYSIS OF PRODUCTION SYSTEMS AND RELIABILITY ENGINEERING

Time : 3 Hours

Max. Marks : 60

Answer ONE question from each Unit.

UNIT - I

1. What is Intermittent production system and explain its characteristics, advantages and demerits. (12)

Or

2. (a) What is Agile manufacturing and explain its applications. (6)  
(b) What is Group technology and explain with one example. (6)

UNIT - II

3. (a) Explain the principles of plant layout. (6)  
(b) Explain the computer based layout technique CORELAP with one example. (6)

Or

4. (a) Explain the procedure of plant layout. (6)  
(b) When to use process, product and fixed position layout. (6)

UNIT - III

5. (a) What is forecasting and explain types of forecasting. (6)  
(b) The demand for an item is observed for 15 months and recorded below : (6)

Month :	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Demand :	280	288	266	295	302	310	303	328	309	315	320	332	310	308	320

Calculate 3 monthly and 4 monthly moving averages.

Or

6. What is MRP? Explain inputs and outputs of MRP. Explain the procedure of MRP and what are its benefits? (12)

#### UNIT - IV

7. (a) What are the assumptions in flow shop scheduling? (4)  
(b) Distinguish between Flow shop problem and Job shop problem. (4)  
(c) What are the assumptions in Job shop scheduling? (4)

Or

8. (a) Distinguish between CPM and PERT. (5)  
(b) What are the time estimates used in PERT? (2)  
(c) Distinguish between Single machine scheduling and Flow shop scheduling. (5)

#### UNIT V

9. (a) Explain about System Reliability's series, parallel and mixed configurations. (6)  
(b) What is Reliability? Briefly explain the importance of reliability and benefits also. (6)

Or

10. (a) Explain about Maintainability and Availability. (6)  
(b) Explain about element, unit and standby redundancies. (6)

(10CS03)

B.TECH FOUR YEAR DEGREE EXAMINATION MAY-2014  
THIRD YEAR SECOND SEMESTER  
BRANCH: COMPUTER SCIENCE  
PAPER : ADVANCED COMPUTER ARCHITECTURE

Time: 3 Hours

Max. Marks:60

Answer Any One Question From Each Unit

UNIT-I

1. What are Instruction –Level Parallelism (ILP)? Explain the Challenges.  
OR
2. Discuss the Basic Compiler Techniques for Exposing ILP.

UNIT-II

3. What is the ILP support to Exploit Thread-Level Parallelism? Discuss  
OR
4. Explain the performance and efficiency in advanced Multiple-Issue Processors.

UNIT-III

5. Discuss the issues with Scheduling and Structuring Code for Parallelism.  
OR
6. Explore the Hardware Support for Exposing Parallelism.

UNIT-IV

7. What are the Characteristics of Scientific applications? Discuss.  
OR
8. Describe the Performance of Scientific Applications on Shared-Memory Multiprocessors.

UNIT-V

9. Explain the AMD Opteron Memory Hierarchy.  
OR
10. Discuss the Advanced Optimization Techniques for Cache Performance.

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FOUR YEAR B.Tech. DEGREE EXAMINATION, MAY 2014

THIRD YEAR – SECOND SEMESTER

Branch – CSE

WIRELESS NETWORKS

Time : 3 Hours

Max. Marks : 60

Answer ONE question from each Unit.

UNIT – I

1. (a) Write the major issues in designing a MAC protocol for Ad Hoc Wireless Networks? (6)
- (b) Explain about Five-Phase Reservation Protocol? (6)

Or

2. (a) Explain the Operation of Multi Channel MAC Protocol? (6)
- (b) Explain about Distributed Priority Scheduling? (6)

UNIT – II

3. (a) Explain about Hierarchical State Routing Protocol? (6)
- (b) Explain about TCP-Bus? (6)

Or

4. (a) Explain about Split TCP? Write the advantages and disadvantages of Split TCP? (6)
- (b) Explain about Hidden and Exposed Terminal Problems? (6)

UNIT – III

5. (a) Explain about Direct diffusion and sequential Assignment Routing? (6)
- (b) Explain about Clustereal Sensor Network Architecture? (6)

Or

6. (a) Explain about Data Gathering? (6)
- (b) Compare Sensor Networks with Ad Hoc Wireless Networks? (6)

UNIT – IV

7. (a) Explain about Sensor Network Localization? (6)
- (b) Explain about QOS routing in Ad Hoc Wireless Networks? (6)

Or

[P.T.O]

8. (a) Explain about Ad Hoc On-Demand Distance-Vector Routing Protocol? (6)  
(b) Explain about Cluster TDMA? (6)

**UNIT - V**

9. (a) Explain about self-configuration and auto configuration? (6)  
(b) Explain about capacity models? (6)

**Or**

10. (a) Write about Vehicular Mesh Networks? (6)  
(b) Explain about 802.11 Mesh Architecture? (6)
-

(10 EI 15)

FOUR YEAR B.Tech. DEGREE EXAMINATION, MAY 2014

THIRD YEAR — SECOND SEMESTER

Branch — EICE

OPTO ELECTRONIC AND LASER INSTRUMENTATION

Time : 3 Hours

Max. Marks : 60

Answer any ONE questions from each Unit.

(Marks :  $5 \times 12$  marks = 60 marks)

**UNIT - I**

1. (a) Briefly explain about light guidance.  
(b) What are the different types of fibers? List out their properties.

**Or**

2. (a) Explain about source coupling.  
(b) Write short notes on splicers and connectors.

**UNIT - II**

3. (a) Explain about mode locking.  
(b) With a neat block diagram explain the working of Ruby Laser.

**Or**

4. (a) What are modulators? Explain the working of Magneto Optic Modulator.  
(b) Explain the working principle of LED.

**UNIT - III**

5. (a) Explain the measurement of pressure using Bourdan Gauge Method  
(b) Briefly describe about IR sources.

**Or**

6. (a) Explain the measurement of liquid level.  
(b) What do you mean by fiber optic gyroscope? Explain.

**UNIT - IV**

7. (a) What is the principle of Holography?  
(b) What are the methods of holography?

**Or**

[P.T.O]

8. (a) Briefly explain about Holographic Interferometers.  
(b) List out the industrial applications of lasers.

**UNIT - V**

9. (a) What do you mean by tissue interaction? Explain.  
(b) Explain how laser instruments are used for plastic surgery.

**Or**

10. (a) Explain how laser instruments are used for dermatology.  
(b) What do you mean by laser interaction? Explain.
-