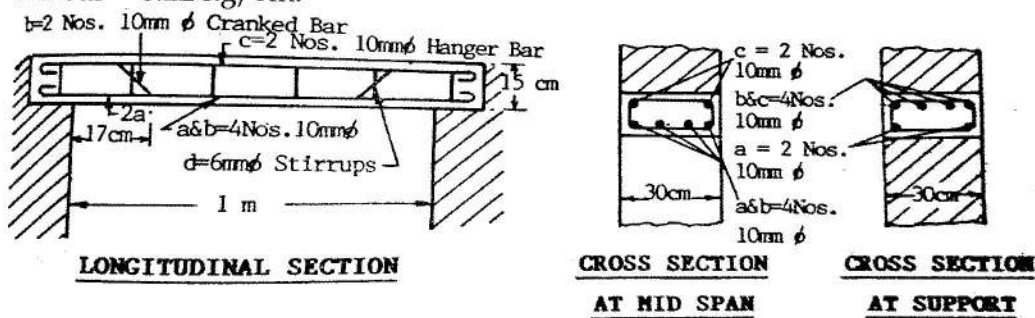


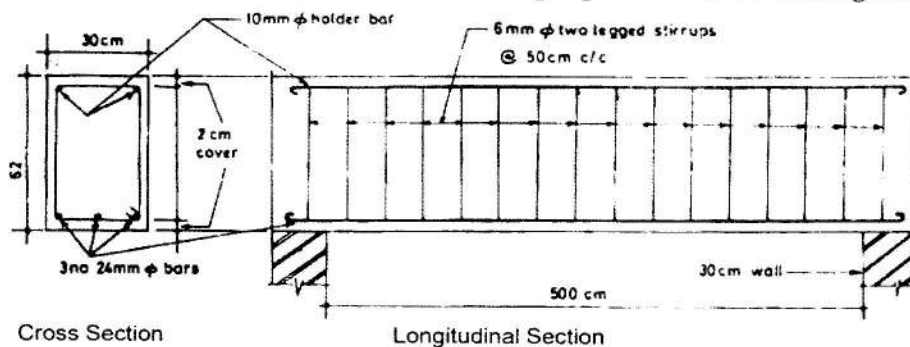
UNIT - III

6. Prepare a schedule of bars for the RCC lintel shown in figure assuming bearing of the lintel be 15 cm on walls at each side. Weight of 100 mm dia bar = 0.62 kg/rm and 6 mm dia bar = 0.22 kg/rm. 10M



OR

7. The following figure shows the longitudinal section & cross section of a simple beam of clear span 5.0 m. The thickness of support wall is 300 mm. Workout the total quantity of the reinforcement in the beam. Also prepare the bar bending schedule. 10M



UNIT - IV

8. Work out rate per cu.m for RCC work in beams and slabs with 1:1½:3 cement concrete. 10M

OR

9. (a) Prepare rate per cu.m for excavation over area for a basement in hard soil, depth 1.5 m and removing the material through a distance of 50 m. 5M
 (b) Prepare rate per sq.m for laying Mosaic or Terrazo tile floor. 5M

UNIT - V

10. (a) Write detailed specifications for white washing and colour washing. 5M
 (b) Mention detail specifications for doors and windows. 5M

OR

11. What are different specifications for first class brick work. 10M

Code: 18EC0412

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)

B.Tech III Year I Semester (R18) Regular Examinations Feb/Mar 2021
ELECTROMAGNETIC THEORY AND TRANSMISSION LINES
(ECE)

Time: 3 hours

Max.Marks: 60

PART-A

(Compulsory Questions)

Answer the following: (5 X 2 = 10 Marks)

1. (a) Define Coulombs law 2M
- (b) State Magnetic flux density 2M
- (c) Define Faradays law 2M
- (d) Define Propagation constant. 2M
- (e) Define Micro strip transmission line 2M

PART-B

(Answer all five units, 5 x 10 =50 Marks)

UNIT - I

2. State Gauss Law? Discuss how Gauss Law is applied to evaluate the electric flux density at a point P due to the point charge located at the origin. 10M

OR

3. (a) Three Point Charges $Q_1=1$ mC, $Q_2=2$ mC and $Q_3=-3$ mC located at (0,0,4), (-2,6,1) and (3, -4, -8) respectively. Determine the Electric force and electric field on charge Q_1 due to charges Q_2 and Q_3 . 5M

- (b) Define Electric Potential. With the help of a neat diagram estimate the electric potential for a point charge that is located at origin. 5M

UNIT - II

4. (a) Explain Biot-Savart's Law with a neat diagram and list the applications of Biot-Savart's Law 5M

- (b) Derive the Magnetic Field Intensity obtained due to the current passing through an Infinite sheet element. 5M

OR

5. State Ampere's Law? Apply Ampere's law to Explain two applications of Ampere's law 10M

UNIT - III

6. (a) Explain the motional EMF with a neat diagram 5M
- (b) Discuss the Inconsistency nature of Ampere's law 5M

OR

7. Define Faraday's law and Determine the Transformer EMF for the time varying fields. 10M

UNIT - IV

8. (a) Explain the wave propagation in lossy dielectric and derive the necessary Equations. 5M
- (b) Evaluate the wave equation in lossy dielectric medium for sinusoidal time variations. 5M

OR

9. State and Derive Poynting Theorem, hence obtain expression for time average power crossing a surface 10M

UNIT - V

10. (a) Deliberate in detail about Transmission line Parameters. 5M

- (b) A telephone line has the following parameters: $R = 30 \Omega/\text{km}$, $G = 0$, $L = 100\text{mH}/\text{km}$, $C = 20\mu\text{F}/\text{m}$. At 1kHz, calculate the characteristic impedance, propagation constant and velocity of the signal. 5M

OR

11. Elucidate the need of Smith chart. Illustrate how smith chart helps for finding the SWR and Reflection co-efficient. 10M

Code: 18HS0812

R18

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)

B.Tech III Year I Semester (R18) Regular Examinations Feb/Mar 2021

MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS

(EEE & CSE)

Time: 3 hours

Max.Marks: 60

PART-A

(Compulsory Questions)

1. Answer the following; (5 X 2 = 10 Marks)

- | | |
|---------------------------------------|----|
| (a) Define Managerial Economics. | 2M |
| (b) What is Opportunity cost? | 2M |
| (c) What is Monopolistic competition? | 2M |
| (d) What is Working capital? | 2M |
| (e) What is a Trial balance? | 2M |

PART- B

(Answer all five units, 5 x 10 =50 Marks)

UNIT - I

2. What is Elasticity of demand? Explain the different types of Elasticity of Demand. 10M

OR

- | | |
|--|----|
| 3. (a) Define the law of demand and what are its exceptions? | 5M |
| (b) Discuss the various techniques of demand forecasting. | 5M |

UNIT - II

4. Define 'Cost'. How are costs classified? Explain any five important cost concepts that are useful for managerial decisions. 10M

OR

5. What are the limitations and uses of Break-even analysis chart? 10M

UNIT - III

6. Explain how price is determined under perfect competition. 10M

OR

7. Define Oligopoly and state its features in detail. 10M

UNIT - IV

8. Discuss the different methods of capital budgeting. 10M

OR

9. The cost of a project is Rs.100,000 which has an expected life of 5 years. The expected cash inflows for the next 5 years are Rs.30, 000; Rs.34, 000; Rs.20,000; Rs.15000 and Rs.16,000 respectively. Determine the Payback period of the project. 10M

UNIT - V

- | | |
|---|----|
| 10. (a) Write about various types of accounts and their rules governing each account. | 5M |
| (b) Explain briefly about various types of ratios. | 5M |

OR

11. A firm sold goods worth Rs.5,00,000 and its gross profit is 20% of sales value. The inventory at the beginning of the year was Rs. 16,000 and at the end of the year were 14,000. Compute inventory turnover ratio and the inventory holding period 10M

Code: 18HS0860

R18

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)

B.Tech III Year I Semester (R18) Regular Examinations Feb/Mar 2021

Supply Chain Management
(Mechanical Engg.)

Time: 3 hours

Max.Marks: 60

PART-A

(Compulsory Questions)

1. Answer the following; (5 X 2 = 10 Marks)

- | | |
|---------------------------------------|----|
| (a) What is Amalgamation of Shipment? | 2M |
| (b) What is worldwide sourcing? | 2M |
| (c) Define Transit Time. | 2M |
| (d) What is Revenue Management? | 2M |
| (e) Define supply chain process. | 2M |

PART- B

(Answer all five units, 5 x 10 =50 Marks)

UNIT - I

2. What is outsourcing of distribution logistics? Explain reasons for outsourcing. 10M

OR

- | | |
|--|----|
| 3. (a) What is supply chain management? Explain its evolution. | 5M |
| (b) How do you test supply chain performance? | 5M |

UNIT - II

4. What is worldwide sourcing? Explain its significance in supply chain management. 10M

OR

5. Distinguish between Market Vs Hierarchy with examples. 10M

UNIT - III

- | | |
|---|-----|
| 6. (a) Explain detailed about the influencing options. | 10M |
| (b) How would you prove network designing is important for organizations? | |

OR

- | | |
|--|-----|
| 7. (a) What is the significance of facility and location? | 10M |
| (b) How does decisions making helps in Supply Chain Performance? | |

UNIT - IV

8. What is uncertainty? How do you identify uncertainty in the supply chain? Explain. 10M

OR

- | | |
|---|----|
| 9. (a) What is product life cycle? Explain its process. | 5M |
| (b) Define risk pooling with suitable examples. | 5M |

UNIT - V

- | | |
|--|----|
| 10. (a) Explain the current trends in SCM. | 5M |
| (b) Explain supply chain current nature and scope. | 5M |

OR

11. Examine the reasons underlying supply chain failure in India. 10M

Code: 18CS0510

R18/SS

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)

B.Tech III Year I Semester (R18) Regular Examinations Feb/Mar 2021
Operating System
(CSE)

Time: 3 hours

Max.Marks: 60

PART-A

(Compulsory Questions)

1. Answer the following; (5 X 2 = 10 Marks)

- | | |
|--|----|
| (a) What is an Operating system?. | 2M |
| (b) What are the types of scheduler? | 2M |
| (c) Define race condition | 2M |
| (d) MENTION few Page Replacement Strategies. | 2M |
| (e) Define UFD And MFD | 2M |

PART- B

(Answer all five units, 5 x 10 =50 Marks)

UNIT - I

2. Define Operating System and explain the various types of Operating Systems? 10M

OR

3. (a) Explain difference between Multitasking and Multi Programming? 5M
(b) Explain briefly User and Operating System Interface 5M

UNIT - II

4. Consider 3 processes P1, P2 and P3, which require 5, 7 and 4 time units and arrive at time 0, 1 and 3. Draw the Gant chart, process completion sequence and average waiting time for. (i) Round robin scheduling with CPU quantum of 2 time units. (ii) FCFS. 10M

OR

5. (a) Write the difference between user level thread and kernel level thread? 5M
(b) What is synchronization? What are the different synchronization mechanisms? Explain in detail. 5M

UNIT - III

6. (a) What are the methods for handling deadlock. 5M
(b) Write about deadlock and starvation? 5M

OR

7. Write about Deadlock Prevention Methods? 10M

UNIT - IV

8. Discuss about page replacement algorithms with example 10M

OR

9. (a) What is virtual memory? Discuss the benefits of virtual memory techniques. 5M
(b) Write a short notes on Disk management. 5M

UNIT - V

- 10 (a) Discuss about File type 5M

- (b) Explain about File operation. 5M

OR

- 11 Explain about bit vector and linked list free space management Technique 10M

Code: 18CE0115

SIDDHARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)

B.Tech III Year I Semester (R18) Regular Examinations Feb/Mar 2021
STRUCTURAL DESIGN
(Civil Engineering)

Time: 3 hours

Max.Marks: 60

PART - A

(Compulsory Questions)

Answer the following: (5 X 2 = 10 Marks)

1. (a) What is the partial safety factor for material and partial safety factor for load?
(b) State the minimum requirement of shear reinforcement
(c) Define short column and long column.
(d) Define tension member.
(e) Define Slenderness ratio.

2M
2M
2M
2M
2M

PART - B

(Answer all five units, 5 x 10 =50 Marks)

UNIT - I

2. A singly reinforced rectangular beam of width 230mm and 335mm effective depth is subjected to a bending moment of 90KNm at working loads. Find the steel area required. The material used are M20 grade concrete and Fe 415 grade steel.

10M

OR

3. Design a reinforced concrete beam of rectangular section of effective span 8m to support a design working live load of 30 KN/m. The overall size of the beam has to be restricted to 300 mm x 650 mm. Use M20 grade concrete and Fe 415 grade steel. Effective cover is 50 mm.

10M

UNIT - II

4. A reinforced concrete beam of rectangular section 300 mm wide is reinforced with four bars of 25 mm diameter at an effective depth of 600 mm. The beam has to resist a factored shear force of 400 KN at support section. Assume $f_{ck} = 25 \text{ N/mm}^2$ and $f_y = 415 \text{ N/mm}^2$, design vertical stirrups for the section.

10M

OR

5. Design a two-way slab for a room of size 4 m x 5 m with discontinuous and simply supported edges on all the sides with corners prevented from lifting to support alive load of 4 KN/m² and weight of weathering course over the slab is 0.6 KN/m². Adopt M20 grade concrete and Fe 415 grade steel.

10M

UNIT - III

6. Design the reinforcement in a column of size 400 mm x 600 mm, subjected to an axial working load of 2000 KN. The column has an unsupported length of 3 m and is braced against side way in both directions. Use M 20 grade concrete and Fe 415 steel.

10M

OR

7. With neat sketches show various types of shallow footings and briefly explain

10M

UNIT - IV

8. Design a double angle tension member connected on each side of a 10 mm thick gusset plate to carry an axial factored load of 375 KN. Use 20 mm black bolts. Assume shop Connection.

10M

OR

9. (a) What are the advantages and disadvantages of welded connections?
(b) Define welding. Explain various types of weld connections with neat sketches.

5M
5M

UNIT - V

10. A column 4 m long has to support a factored load of 6000 KN. The column is effectively held at both ends and restrained in direction at one of the ends. Design the column using beam sections and plates.

10M

OR

11. Design a simply supported I-section to support the slab of hall 9m x 24m with beam spaced at 3m centre to centre. Thickness of slab is 100mm. Consider floor finish load 0.5 KN/m² and live load of 3 KN/m². The grade of steel is E=250. Assume that adequate lateral support is provided to compression flange.

10M

Code: 18EE0211

SIDDHARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)

B.Tech III Year I Semester (R18) Regular Examinations Feb/Mar 2021
Control Systems
(EEE & ECE)

R18

Time: 3 hours

Max.Marks: 60

PART - A

(Compulsory Questions)

Answer the following. (5 X 2 = 10 Marks)

1. (a) What is feedback? What type of feedback is employed in control systems?
- (b) List the time domain specifications?
- (c) What is the necessary condition for stability?
- (d) What is phase and gain cross over frequency?
- (e) Define state variable?

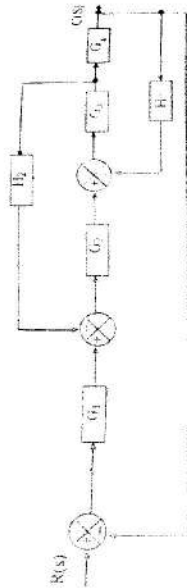
2M
2M
2M
2M
2M

PART - B

(Answer all five units, 5 x 10 = 50 Marks)

UNIT - I

2. For the system represented in the given figure determine transfer function $C(S)/R(S)$.



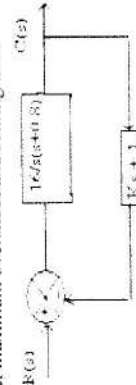
OR

3. (a) Compare open loop and closed loop control systems based on different aspects?
- (b) Distinguish between Block diagram Reduction Technique and Signal Flow Graph?

5M
5M

UNIT - II

4. A positional control system with velocity feedback shown in figure. What is the response $c(t)$ to the unit step input. Given that damping ratio=0.5. Also determine rise time, peak time, maximum overshoot and settling time.



OR

5. A For servo mechanisms with open loop transfer function given below what type of input signal give rise to a constant steady state error and calculate their values.

$$G(s)H(s) = \frac{20.5s+2}{s^2+1.1s+3}$$

10M

UNIT - III

6. With the help of Routh's stability criterion find the stability of the following systems represented by the characteristic equations:

10M

(a) $s^5 + s^4 + 2s^3 + 2s^2 + 3s + 5 = 0$

(b) $9s^5 - 20s^4 + 10s^3 - s^2 - 9s - 10 = 0$

OR

7. Sketch the root locus of the system whose open loop transfer function is

10M

$$G(s)H(s) = \frac{K}{s(s^2+4s+13)}$$

UNIT - IV

8. Draw the Bode plot for the following Transfer Function $G(s)$ $H(s) =$

10M

$$\frac{20(0.1s+1)}{s^2+0.2s+1(1+0.02s+1)}$$

OR

9. (a) Define and derive the expression for resonant frequency.

5M

- (b) Given $\xi = 0.7$ and $\omega_n = 10 \text{ rad/sec}$. Calculate resonant peak, resonant frequency and bandwidth.

5M

UNIT - V

5M

10. (a) Derive the expression for the transfer function and poles of the system from the state model. $\dot{X} = Ax + Bu$ and $y = CX + Du$

5M

- (b) Diagonalize the following system matrix $A = \begin{pmatrix} 4 & 1 & -2 \\ 1 & 0 & 2 \\ 1 & -1 & 3 \end{pmatrix}$

OR

11. Obtain a state model for the system whose Transfer function is given by

10M

$$G(s)H(s) = \frac{.7s^2+.12s+.8}{.3s^2+.11s+.9}$$

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)

B.Tech III Year I Semester (R18) Regular Examinations Feb/Mar 2021

**CAD/CAM
(MECH)**

Time: 3 hours

Max. Marks: 60

PART-A

(Compulsory Questions)

1. Answer the following; (5 X 2 = 10 Marks)

- | | | |
|-----|--|----|
| (a) | Why should we go for CAD? | 2M |
| (b) | What are the Fundamentals of solid modeling | 2M |
| (c) | What are all the problems encountered with NC system | 2M |
| (d) | What is FMS? | 2M |
| (e) | Define the MRP-I and MRP-II. | 2M |

PART- B

(Answer all five units, 5 x 10 =50 Marks)

UNIT - I

2. Briefly explain the term scaling, translation and rotation used in Graphics. 10M

OR

- | | | |
|--------|---|----|
| 3. (a) | Draw the product cycle and CAD/CAM product cycle with neat sketch | 5M |
| (b) | List the Evaluation criteria CAD standards | 5M |

UNIT - II

4. Explain the Constructive Solid Geometry (CSG) method to create models. 10M

OR

5. Explain detail surface modeling and their representation. 10M

UNIT - III

6. (a) List out and Explain about basic components of an NC system and CNC system. 5M

(b) Briefly explain about NC Coordinate systems. 5M

OR

7. (a) Explain cutter radius compensation, length compensation and canned cycles With neat sketch 10M

UNIT - IV

8. Explain the various contact inspection method 10M

OR

9. (a) Explain briefly optical non-contact inspection methods 5M

(b) Explain detail about Machine cell design 5M

UNIT - V

10. (a) Explain the Generative CAPP type system with neat sketch. 5M

(b) Write Short notes on MRP-II and advantage and disadvantage 5M

OR

11. Explain the Retrieval type system with neat sketch and explain the Benefits of CAPP? 10M

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)

B.Tech III Year I Semester (R18) Regular Examinations Feb/Mar 2021
COMPUTER NETWORKS
(CSE)

Time: 3 hours

Max.Marks: 60

PART-A**(Compulsory Questions)**

1. Answer the following; (5 X 2 = 10 Marks)

- | | | |
|-----|--|----|
| (a) | List the layers in OSI reference model | 2M |
| (b) | State the use of forward error correction | 2M |
| (c) | Define spanning tree. | 2M |
| (d) | Give the Use of multiplexing. | 2M |
| (e) | Label the types of messages in HTTP transaction. | 2M |

PART- B**(Answer all five units, 5 x 10 =50 Marks)****UNIT - I**

- | | | |
|----|---|-----|
| 2. | Explain in detail about TCP /IP Network model | 10M |
|----|---|-----|

OR

- | | | |
|----|---|----|
| 3. | (a) Describe about various network types | 5M |
| | (b) Illustrate the architecture of Internet | 5M |

UNIT - II

- | | | |
|----|-------------------------------------|-----|
| 4. | Classify Various CSMA/CA protocols. | 10M |
|----|-------------------------------------|-----|

OR

- | | | |
|----|--|-----|
| 5. | Generalize the Controlled access protocols which are used in MAC sublayer. | 10M |
|----|--|-----|

UNIT - III

- | | | |
|----|---|----|
| 6. | (a) Calculate the Shortest Path Algorithm considering an example. | 5M |
| | (b) Explain Flooding. | 5M |

OR

- | | | |
|----|---|-----|
| 7. | Sketch and explain in detail about IPV4 protocol. | 10M |
|----|---|-----|

UNIT - IV

- | | | |
|----|---|-----|
| 8. | Illustrate the different Primitives used for transport service. Elaborate them. | 10M |
|----|---|-----|

OR

- | | | |
|----|---|-----|
| 9. | Explain in detail about each field of TCP segment header. | 10M |
|----|---|-----|

UNIT - V

- | | | |
|-----|---|----|
| 10. | (a) Name the basic functions of E-Mail. | 5M |
| | (b) Write about TELNET. | 5M |

OR

- | | | |
|-----|---|-----|
| 11. | Discuss in detail about World Wide Web. | 10M |
|-----|---|-----|

2/3/21

Code:18CE0116

SIDDHARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)

B.Tech III Year I Semester (R18) Regular Examinations Feb/Mar 2021
GEOTECHNICAL ENGINEERING
(CIVIL ENGINEERING)

Time: 3 hours

Max.Marks: 60

PART - A

(Compulsory Questions)
Answer the following: (5 X 2 = 10 Marks)

- (a) State Darcy's law. 2M
- (b) Write short notes on zero air void line. 2M
- (c) Write short notes on stress distribution in soil. 2M
- (d) List out various types of slope failures. 2M
- (e) List out various types of borings for soil exploration 2M

PART - B

(Answer all five units, 5 x 10 =50 Marks)

UNIT - I

2. (a) Classify various types of soil structures with neat sketch. 5M
- (b) Explain clay mineralogy 5M

OR

3. (a) Using three phase diagram of soil, develop an expression for void ratio, water content, specific gravity and degree of saturation. 5M
- (b) Define flow net and various applications of flow net. 5M

UNIT - II

4. In a consolidation test the following results have been obtained. When the load was changed from 50 kN/m² to 100 kN/m² the void ratio changed from 0.70 to 0.65. Determine compression index, coefficient of volume change and coefficient of consolidation. 10M

OR

5. Write short notes on 10M
(a) Compaction phenomenon
(b) Method of compaction

UNIT - III

6. Develop an expression for the vertical stress at a point due to a point load, using Boussinesq's theory. 10M

OR

7. Write brief critical notes on 10M
(a) Mohr's circle of stress.
(b) Explain the Mohr-Coulomb strength theory.

UNIT - IV

8. Analyze the slope, if it is made of clay having $c = 30 \text{ kN/m}^2$, $\phi' = 20^\circ$, $e = 0.65$ and $G = 2.67$ and under the following conditions 10M
(i) When the soil is dry
(ii) When water seeps parallel to the surface of the slope
(iii) When the slope is submerged slope angle = 25°

OR

9. (a) What are the factors causes the slope failures. 5M
(b) Explain different types of slope failures with neat sketches. 5M

UNIT - V

10. (a) What are the different stages in sub soil exploration? 5M
(b) Explain various uses of site investigations. 5M
- OR**
11. (a) Explain various salient features of a soil exploration report 5M
(b) A SPT was conducted in a dense sand deposit at a depth of 22m and a value of 48 was observed for N. The density of the sand was 15 kN/m^3 . What is the value of N corrected for over burden pressure. 5M

Code: 18EC0413

R18

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)

B.Tech III Year I Semester (R18) Regular Examinations Feb/Mar 2021

Electronic Measurements and Instrumentation

(ECE)

Time: 3 hours

Max.Marks: 60

PART-A

(Compulsory Questions)

1. Answer the following; (5 X 2 = 10 Marks)

- | | |
|---|----|
| (a) What is Relative error? | 2M |
| (b) What are the various probes of CRO? | 2M |
| (c) List the types of AF Oscillators? | 2M |
| (d) List out the advantages of bridge circuit | 2M |
| (e) What are the passive transducers? | 2M |

PART- B

(Answer all five units, 5 x 10 =50 Marks)

UNIT - I

2. Explain about static characteristics of measuring instrument. Define the terms in dynamic characteristics i) Speed of Response ii) Fidelity iii) Lag. 10M

OR

- | | |
|---|----|
| 3. (a) Explain the dynamic response of an instrument. | 5M |
| (b) Explain about multirange AC voltmeter. | 5M |

UNIT - II

4. Discuss about important CRT features. Draw the block diagram of a dual beam oscilloscope & explain its working. 10M

OR

- | | |
|--|----|
| 5. (a) Draw the block diagram of Delay line circuit and explain its working. | 5M |
| (b) With neat sketch explain about vertical amplifier. | 5M |

UNIT - III

6. With the help of block diagram explain the functioning of a conventional standard signal generator. Write about fixed AF oscillator and variable AF oscillator. 10M

OR

7. With a neat diagram discuss the operation of a pulse generator. 10M

UNIT - IV

8. Explain any Two ac bridges to measure unknown Inductance. 10M

OR

- | | |
|---|----|
| 9. (a) Describe in detail about EMI & EMC with suitable examples. | 5M |
| (b) Explain the working principle & operation of Capacitance & Inductance bridge circuit. | 5M |

UNIT - V

- | | |
|---|----|
| 10. (a) Draw the diagram of Resistance Thermometer & explain briefly. | 5M |
| (b) Explain the operation of thermocouples and thermistors? | 5M |

OR

11. Explain strain gauge for resistance measurement & its applications. 10M

Code: 18EE0210

SIDDHARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)

B.Tech III Year I Semester (R18) Regular Examinations Feb/Mar 2021

Power Systems-I

(EEE)

Time: 3 hours

Max Marks: 60

PART - A

(Compulsory Questions)

Answer the following; (5 X 2 = 10 Marks)

1. (a) Draw 3-core cable and indicate its parts. 2M
- (b) What is skin effect? 2M
- (c) Explain why string efficiency should be kept high. 2M
- (d) Explain two part tariff method. 2M
- (e) What are different components of nuclear power station? 2M

PART - B

(Answer all five units, 5 x 10 =50 Marks)

UNIT - I

2. (a) Draw the block diagram of thermal power station (TPS) showing paths of coal, steam, water, air, ash and flue gases and explain principle of operation briefly. 10M

OR

3. (a) Write Short notes on (a) Fast Breeder Reactor (b) Pressurized Water Reactor (c) Boiling Water Reactor 10M

UNIT - II

4. (a) Explain the principle of operation and working of Solar Thermal System 10M

OR

5. (a) Explain the following tariff methods briefly. 10M

(i) Flat rate (ii) Block-rate (iii) Two-part (iv) Three-part (v) Power factor

UNIT - III

6. (a) A 100km long, 3-phase, 50Hz transmission line has following line constants: 10M
Resistance/ph/km=0.1ohm, Reactance/ph/km=0.5ohm, Susceptance/ph/km= 10^{-4} Siemens.
If the line supplies load of 20MW at 0.9 p.f lagging at 66KV at the receiving end, calculate (i) Sending end power factor (ii) % regulation (iii) Transmission efficiency. By using nominal π method

OR

7. (a) Derive expression for voltage regulation of medium transmission lines using nominal -T method with equivalent circuit and necessary phasor diagram. 10M

UNIT - IV

8. (a) Explain about the improvement of string efficiency by grading of units and guard ring. 5M
- (b) An overhead line has a span of 150 m between level supports. The conductor has a cross sectional area of 2cm^2 . The ultimate strength is 5000kg/cm^2 and safety factor is 5. The specific gravity of the material is 8.9gm/cm^3 . The wind pressure is 1.5kg/m . Calculate the height of the conductor above the ground level at which it should be supported if a minimum clearance of 7 m is to be left between the ground and the conductor. 5M

OR

9. (a) What are the factors affecting corona? And derive the expressions for critical disruptive and visual critical voltage. 5M
- (b) Determine the corona characteristics of a 3-phase line 160km long, conductor diameter 1.036cm, 2.44m delta spacing, air temperature 26.67°C , altitude 2440m, corresponding to an approximate barometric pressure of 73.15cm of Mercury, operating voltage 110kv at 5M

50Hz. Assume data if required. (irregularity factor etc.)

UNIT - V

10. (a) Distinguish between Underground cables and overhead lines. 5M
 - (b) Explain the pressure cables with a neat sketch. 5M
- OR
11. (a) Show that in a three core belted cable the neutral capacitance to earth conductor C_n is equal to $C_s + 3C_c$ where C_s and C_c are capacitances of each conductor to sheath and to each other respectively. 5M
 - (b) Show that the ratio of maximum potential gradient to the minimum potential gradient is R/r . Where r and R are the conductor radius and sheath radius. 5M

Code: 18CS0516

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)

B.Tech III Year I Semester (R18) Regular Examinations Feb/Mar 2021
DESIGN AND ANALYSIS OF ALGORITHM
(CSE)

Time: 3 hours

Max.Marks: 60

PART-A

(Compulsory Questions)

Answer the following: (5 X 2 = 10 Marks)

- (a) List out the steps that need to design an algorithm.
- (b) List out the formulas for Strassen's matrix multiplication.
- (c) What is Knapsack problem?
- (d) Define Branch-and-Bound method
- (e) Define NP- hard problem.

PART-B

(Answer all five units, 5 x 10 =50 Marks)

UNIT - I

OR

2. Simplify steps involved in performance analysis with example. 10M

3. (a) What do you mean by algorithm? List some of the properties of it? 5M

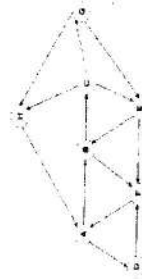
(b) Apply the Master's theorem. Solve the following Recurrence relations
i) $T(n) = 4T(n/2) + n$ ii) $T(n) = 2T(n/2) + n \log n$ 5M

UNIT - II

4. What is divide and conquer strategy? Explain the working strategy of Binary Search and find element 60 from the below set by using the above technique: { 10, 20, 30,40,50, 60,70}. Analyze time complexity for binary search. 10M

OR

5. Explain DFS algorithm and trace out minimum path for DFS for the following example. 10M



UNIT - III

6. (a) Explain in detail about greedy method and its applications. 5M

(b) Simplify the algorithm for Knapsack problem with example by using greedy method. 5M

OR

7. Explain 0/1 knapsack problem by using dynamic programming with an examples. 10M

UNIT - IV

8. Explain sum of subsets by using backtracking with an example. 10M

R18

OR

9. Distinguish in detail 8-queens problem using back tracking with state space tree. 10M

UNIT - V

10. Distinguish between deterministic and non-deterministic algorithms. 10M

OR

11. Estimate the strategy to prove that a problem steps of NP-hard. 10M

Code: 18ME0313

SIDDHARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)

B.Tech III Year I Semester (R18) Regular Examinations Feb/Mar 2021

DESIGN OF MACHINE ELEMENTS-I
(ME)

R18

Time: 3 hours

Max.Marks: 60

PART-A

(Compulsory Questions)

Answer the following: (5 X 2 = 10 Marks)

1. (a) Define Factor of safety.
- (b) Define endurance limit.
- (c) Define the terms Caulking and Fullering.
- (d) What are the main functions of the knuckle joints?
- (e) What are the types of keys?

PART-B

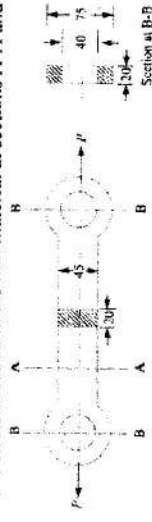
(Answer all five units, 5 x 10 = 50 Marks)

UNIT - I

2. (a) What are the general design consideration should be followed while designing a machine element. 5M
- (b) Derive an expression for the impact stress induced due to a falling load. 5M

OR

3. (a) Classify the manufacturing consideration that is followed while designing a machine element. 5M
- (b) A cast iron link, as shown in Fig. is required to transmit a steady tensile load of 45 kN. Find the tensile stress induced in the link material at sections A-A and B-B. 5M



UNIT - II

4. Explain stress concentration in detail and various methods to reduce stress concentration in machine members? 10M

OR

5. A machine component is subjected to a flexural stress which fluctuates between + 300 MN/m² and - 150 MN/m². Determine the value of minimum ultimate strength according to 1. Gerber relation; 2. Modified Goodman relation; and 3. Soderberg relation. Take yield strength = 0.55 Ultimate strength; Endurance strength = 0.5 Ultimate strength; and actor of safety = 2. 10M

UNIT - III

6. (a) Explain stress in screw fasteners due to Combined Forces? 5M
- (b) Explain the term "bolts of uniform strength" with suitable examples of such bolts for practical applications. 5M

OR

7. Find the efficiency of the following riveted joints : 10M
1. Single riveted lap joint of 6 mm plates with 20 mm diameter rivets having a pitch of 50 mm.
2. Double riveted lap joint of 6 mm plates with 20 mm diameter rivets having a pitch of 65 mm.

Assume:

Permissible tensile stress in plate = 120 MPa

Permissible shearing stress in rivets = 90 MPa

Permissible crushing stress in rivets = 180 MPa

UNIT - IV

8. (a) What is a cotter joint? Explain with the help of a neat sketch, how a cotter joint is made? 5M
- (b) Find the diameter of a solid steel shaft to transmit 20 kW at 200 r.p.m. The ultimate shear stress for the steel may be taken as 360 MPa and a factor of safety as 8. If a hollow shaft is to be used in place of the solid shaft, find the inside and outside diameter when the ratio of inside to outside diameters is 0.5. 5M

OR

9. Design and draw a spigot and socket cotter joint to support a load varying from 30 kN in compression to 30 kN in tension. The material used is carbon steel for which the following allowable stresses may be used. The load is applied statically. Tensile stress = compressive stress = 50 MPa, shear stress = 35 MPa and crushing stress = 90 MPa. 10M

UNIT - V

10. (a) What is a key? State its function with neat sketch. 5M
- (b) Design the rectangular key for a shaft of 50 mm diameter. The shearing and crushing stresses for the key material are 42 MPa and 70 MPa. 5M

OR

11. Describe, with the help of neat sketches, the types of various shaft couplings mentioning the uses of each type. 10M

Code: 18CE0117

SIDDHARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY, PUTTUR
(AUTONOMOUS)

B.Tech III Year I Semester (R18) Regular Examinations Feb/Mar 2021

Hydrology and Water Resources Engineering
(CE)

Time: 3 hours

Max. Marks: 60

PART-A

(Compulsory Questions)

Answer the following: (5 X 2 = 10 Marks)

- What is the mean by sub surface run-off?
- Explain in detail about porosity with sketch?
- Illustrate the terms crop overlapping allowance.
- Write about the types of investigation carried for reservoir planning.
- Elaborate arch dam with sketch.

PART-B

(Answer all five units, 5 x 10 =50 Marks)

UNIT - I

- 2 (a) Compute the weekly evaporation from a reservoir using the water-budget method from the following data recorded during the week. Average inflow into the reservoir is $32.5 \text{ m}^3/\text{s}$, average out flow from the reservoir is $40.2 \text{ m}^3/\text{s}$, rainfall during the week is 73.6 mm , average water spread area is 15.8 km^2 , estimated seepage is 0.25 million m^3 storage at the beginning of the week is 9180 ha-m and storage at the end of the week is 8360 ha-m .

(b) What do you mean by Hydrograph and Unit Hydrograph?

OR

- 3 (a) Demonstrate your understanding about precipitation.
(b) Explain types and forms of precipitation.

(b) Explain the water budget method and the energy balance method.

UNIT - II

- 4 (a) Explain ground water well and basic assumptions.
(b) In certain alluvial basin of 120 km^2 , 100 Mm^3 of ground water was pumped in a year and the ground water table dropped by 5 m during the year. Assuming no replenishment, estimate the specific yield of the aquifer. If the specific retention is 12% , what is the porosity of the soil?

OR

- 5 (a) Enumerate in detail about factor affecting duty of irrigation water.
(b) Explain in detail about the methods of improving duty

UNIT - III

- 6 (a) Design a Sarada type fall for the following set of data. Full Supply Discharge- $14 \text{ m}^3/\text{s}$, Bed width- 18 m , Full Supply Depth (FSD) - 1.5 m , Full Supply Level (U/S) - 101.00 m , Full Supply Level (D/S) - 100.00 m , U/S Bed Level - 99.5 m , D/S Bed Level - 98.5 m , Natural Surface Level - 99.5 m (D/S), Bagn's Coefficient (c) is -8 .
(b) Explain any five irrigation efficiencies

OR

- 7 (a) Write the function of cross regulators and distributor head regulators.
(b) Write the criteria to design the crest level and length of downstream floor in cross regulator design.
(b) Explain with neat sketch about the types of fall in dam irrigation.

UNIT - IV

8. (a) Illustrative the criteria's to select the suitable type of cross drainage work.
(b) Write the three classifications of aqueducts.

OR

9. (a) Explain the mass inflow curve and demand curve.
(b) Write a procedure for calculation of life of a reservoir.
(b) What are the various factors on which the selection of the site of a reservoir depends.

UNIT - V

10. (a) Classify all the various classifications of dams according to use in detail with sketches.
(b) Explain the stability analysis for dam carried out by analytical method.

OR

11. (a) Draw and explain the elementary profile of a gravity dam.
(b) Discuss in detail various modes of failure of a gravity dam.

Code: 18EC0414

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)

B.Tech III Year I Semester (R18) Regular Examinations Feb/Mar 2021
Digital Signal Processing
(EEE & ECE)

Time: 3 hours

Max.Marks: 50

PART - A

(Compulsory Questions)

Answer the following: (5 X 2 = 10 Marks)

1. (a) Identify the differences and similarities between DIF and DIT algorithms. 2M
(b) How can you design digital filters from analog filters? 2M
(c) What is recursive and non-recursive realization? 2M
(d) What is coefficient quantization error? What is its effect? 2M
(e) What are the factors that influence the selection of DSP's? 2M

PART - B

(Answer all five units, 5 x 10 =50 Marks)

UNIT - I

2. Compute 8-point DFT of the sequence $x(n) = \{0,1,2,3,4,5,6,7,8\}$ using radix-2 DIT-FFT Algorithm. 10M

OR

3. (a) Compute the 4-point DFT of the sequence and plot magnitude and phase response 5M

$$x(n) = \begin{cases} 1 & ; 0 \leq n \leq 2 \\ 0 & ; \text{otherwise} \end{cases}$$

- (b) Explain the relationship between DFT to the Z-Transform. 5M

UNIT - II

4. Determine an analog Chebyshev filter transfer function that satisfies the constraints 10M

$$\frac{1}{\sqrt{2}} \leq |H(j\Omega)| \leq 1 ; 0 \leq \Omega \leq 2 \quad \text{and} \\ |H(j\Omega)| < 0.1 ; \Omega \geq 4$$

OR

5. Construct the parallel form structure of the system with difference equation 10M

$$y(n) = \frac{3}{4}y(n-1) - \frac{1}{8}y(n-2) + x(n) + \frac{1}{3}x(n-1)$$

UNIT - III

6. Develop an ideal Low pass filter with a frequency response 10M

$$H_d(e^{j\omega}) = \begin{cases} 1 & -\frac{\pi}{2} \leq |\omega| \leq \frac{\pi}{2} \\ 0 & \frac{\pi}{2} \leq |\omega| \leq \pi \end{cases}$$

Find the values of $h(n)$ for $N=11$. Find $H(z)$ and plot the magnitude response.

OR

7. (a) Explain the Fourier Series method of Designing FIR Filters. 7M
(b) Distinguish between FIR and IIR Filter. 3M

UNIT - IV

8. Explain the characteristics of limit cycle oscillation with respect to the system. describe difference equation $y(n) = 0.7y(n-1) + x(n)$. Determine the dead band range of the sy

OR

9. (a) Compare floating point with fixed point arithmetic. 5M
(b) What is quantization noise? Derive the expression for quantization noise power. 5M
- UNIT - V
10. (a) What is meant by memory mapped register? How is it different from a memory? 5M
(b) Discuss the various Circular Buffer Registers in detail. 5M
- OR
11. (a) Explain in detail the application of PDSF's in the field of communication systems. 5M
(b) Discuss the role of PDSF in multimedia applications. 5M

Code: 18CS0514

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)

B.Tech III Year I Semester (R18) Regular Examinations Feb/Mar 2021
Compiler Design
(CSE)

Time: 3 hours

Max.Marks: 60

PART - A
(Compulsory Questions)

Answer the following: (5 X 2 = 10 Marks)

1. (a) Define the Role of Lexical Analyzer.
- (b) Define Ambiguous Grammar.
- (c) Differences between SLR, CLR, LALR parsers?
- (d) Define Activation Record.
- (e) Give applications of DAG

PART - B

(Answer all five units, 5 x 10 = 50 Marks)

UNIT - I

2. How to design the compiler by using the source program position: =initial+rate*60? 10M

OR

3. Discuss the following terms

- (a) Specifications of Tokens and
- (b) Recognition of Tokens

UNIT - II

4. Consider the grammar

$S \rightarrow AB \mid A\text{Bad}$
 $A \rightarrow d$
 $E \rightarrow b$
 $D \rightarrow b \mid \epsilon$
 $B \rightarrow c$

Construct the predictive parse table and check whether the given grammar is LL(1) or not.

OR

5. Write about ambiguous grammar and Explain how to eliminate ambiguity in 10M grammar with an Example.

UNIT - III

6. Define augmented grammar? Construct the LR(0) items for the following Grammar? 10M

$S \rightarrow L = R$
 $S \rightarrow R$
 $L \rightarrow *R$
 $L \rightarrow id$
 $R \rightarrow L$

OR

7. (a) Write about handle pruning. 5M
- (b) Write about SLR parsing. 5M

UNIT - IV

8. Draw the format of Activation Record in stack allocation and explain each field in it. 10M

OR

9. (a) Define Symbol table. Explain any two types of Data structure for symbol table 5M
- (b) Write about operations on symbol table. 5M

UNIT - V

10. (a) Write about all issues in code generation. Describe it. 5M
- (b) Write about loop optimization techniques? 5M

OR

11. Describe about global data flow analysis. 10M

Code: 18ME0314

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)

B.Tech III Year I Semester (R18) Regular Examinations Feb/Mar 2021
Machine Tools

(Mechanical Engineering)

Time: 3 hours

Max.Marks: 60

PART-A

(Compulsory Questions)

Answer the following: (5 X 2 = 10 Marks)

1. (a) Define cutting ratio. 2M
- (b) Define cutting speed, feed rate, and depth of cut in turning operation. 2M
- (c) List the different types of lathes. 2M
- (d) What are the general characteristics of an end mill? 2M
- (e) What is the different lap materials generally used in lapping operation? 2M

PART-B

(Answer all five units, 5 x 10 =50 Marks)

UNIT - I

2. Explain the importance and functions of different tool angles associated with the geometry of a single point cutting tool with neat sketch. 10M

OR

3. (a) Differentiate between the orthogonal and oblique cutting. 5M
- (b) Explain the types of chip breakers. 5M

UNIT - II

4. In orthogonal turning of a 60 mm diameter M5 bar on a lathe, the following data were obtained: Rake angle 10°, cutting velocity 120 m/min, feed rate 0.3mm/rev, cutting force 170 kg, feed force 65kg. Calculate the shear plane angle, coefficient of friction, cutting power, chip flow velocity and shear force, if chip thickness is 0.4mm 10M

OR

5. Explain the various cutting tool materials and types of cutting fluids used in metal cutting operations. 10M

UNIT - III

6. (a) Explain lathe machine accessories with neat sketches. 5M
- (b) Describe the features of turret lathe headstock. List also different types of headstocks. 5M

OR

7. (a) List the common tools and attachments used on Turret and Capstan lathes. 5M
- (b) What are the different types of taper turning methods? Discuss any one method with suitable diagram. 5M

UNIT - IV

8. (a) Explain the types of cutters, work holding and tool holding devices used in drilling machine. 5M
 - (b) Give the comparison among planer, shaper and slotter operations. 5M
- OR**
9. (a) Draw the block diagram of a shaper machine and explain briefly its various parts 5M

- and operations performed.
- (b) Describe with a line diagram of Whitworth quick return mechanism used in slotter. 5M
- UNIT - V**
10. (a) Define jigs and Fixtures. Differentiate them? 5M
 - (b) Give the comparison among Grinding, lapping and honing operations. 5M
- OR**
11. (a) What is broaching? How broaches are classified? 5M
 - (b) Explain plain cylindrical grinding machine with neat sketch. 5M

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)
B.Tech III Year I Semester (R18) Regular Examinations Feb/Mar 2021
Digital Communications
(ECE)

Time: 3 hours

Max.Marks: 60

PART - A**(Compulsory Questions)**

Answer the following: (5 X 2 = 10 Marks)

1. (a) What are the differences between PCM and DPCM? 2M
- (b) Define matched filter 2M
- (c) What is geometric representation of signals? 2M
- (d) Compare the difference between coherent & non coherent binary modulation schemes 2M
- (e) What are the coding techniques used for transmission of the digital data? 2M

PART - B**(Answer all five units, 5 x 10 = 50 Marks)****UNIT - I**

2. Explain the delta modulation system with suitable diagrams? 10M

OR

3. (a) Draw the following line codes for 101001110 5M
- i) Unipolar RZ & NRZ ii) polar RZ & NRZ iii) Bipolar RZ & NRZ
- (b) What are the advantages & disadvantages of DPCM? 5M

UNIT - II

4. Derive the expression for the Nyquist criterion for distortion less baseband transmission in the absence of noise in terms of time domain & Frequency domain. 10M

OR

5. Explain duobinary signaling scheme with one example? 10M

UNIT - III

6. (a) Explain signal representation of a signal $N=2$ and $M=3$? 5M
- (b) Derive the condition for Orthogonality for basis function? 5M

OR

7. (a) Explain the geometrical representation of signals? 5M
- (b) With a neat sketch explain the working of correlation receiver 5M

UNIT - IV

8. Sketch with a neat diagram of M-array PSK transmitter and receiver? What is Bandwidth of BPSK, BPSK? 10M

OR

9. (a) Derive the probability of error for a coherent QPSK system? 5M
- (b) A binary data stream 101101100 is to be transmitted using DPSK. Determine the encoded and decoded output? 5M

UNIT - V

10. (a) The parity check matrix for a (7, 4) block code is given below 5M

11. (b)
$$\begin{bmatrix} 1 & 1 & 1 & 0 & 1 & 0 & 0 \\ 1 & 1 & 0 & 1 & 0 & 1 & 0 \\ 1 & 0 & 1 & 1 & 0 & 0 & 1 \\ 1 & 0 & 1 & 1 & 0 & 0 & 1 \\ 0 & 1 & 1 & 1 & 1 & 1 & 1 \end{bmatrix}$$
 Find the generate matrix G.
Draw and explain the block diagram of ARQ system in detail? 5M

OR

11. For a systematic(7,4) linear block code the sub matrix

$$P = \begin{bmatrix} 1 & 1 & 1 \\ 1 & 1 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}$$

Detect and Correct the error using syndrome vector for the code

$$\text{vectors } A)Y_a = [0111110] \quad B)Y_b = [1011100] \quad C)Y_c = [1010000]$$

10M