Code No. 14190

FACULTY OF ENGINEERING

B.E. 4/4 (Civil) I-Semester (Backlog) Examination, March/April 2021

Subject : Water Resources Engineering – II

Time: 2 hours **Max. Marks: 75**

Note: Missing Data, if any, may be suitably be assumed.

PART – A

Answer any seven questions. **(7x3=21 Marks)**

1 Define the terms yield and safe yield from a reservoir.
2 Differentiate between a single purpose and a multipurpose reservoir.
3 What are the relative advantages and disadvantages of gravity dams over other dams?
4 Compute the limiting height of the dam, when the maximum permissible stress in the material is 120 tonnes/m^2 and specific gravity of the material is 2.4.
5 List the different types of structural failures of an earth dam.
6 Differentiate between homogenous and zoned embankments.
7 Differentiate between alternate depth and conjugate depth.
8 What are the components of a stilling basin?
9 Define flow duration curve and write its uses.
10 Distinguish between storage and pondage.

PART – B

Answer any three questions. **(3x18 = 54 Marks)**

11 Explain the various investigations to be carried out for reservoir planning.

12 a) Explain the various forces acting on a gravity dam.
b) Discuss the classification of dams based on the function served, hydraulic design and materials used.

13 Locate the phreatic line in earth dam made of homogenous material with the following data.
Coefficient of permeability K = 4 x 10^{-6} m/s
Height of the dam = 30m
Free board = 3m
Width of top of dam = 7m
U/S slope = 2.5H : 1V
D/S slope = 2H : 1V

14 a) Explain in detail the different types of spillways with sketches.
b) Discuss the different types of Bucket type energy dissipaters.

15 a) Explain the classification of a hydro power plant.
b) A hydro power plant has an installed capacity of 30,000 KW. The yearly output of the plant is 150 x 10^6 KWh. The peak load is 25,000 KW. Determine capacity factor and annual load factor.

16 a) Design the practical profile of a gravity dam of stone masonry, given the following data :
R.L. of base of dam = 1250m
R.L. of H.F.L. = 1280m.
Specific gravity of masonry = 2.4
Safe compressive stress for masonry of dam = 120 t/m^2.
Height of wave = 1m
b) Derive the expression for the phreatic line in earth dam without a filter.

17 Write notes on :
a) Modes of failures of a gravity dam
b) Jump Height Curve and Tail water curve

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Code No. 14206

FACULTY OF ENGINEERING

B.E. 4/4 (Inst.) I – Semester (Backlog) Examination, March / April 2021

Subject : Opto – Electronic Instrumentation

Time: 2 hours **Max. Marks: 75**

Note: Missing Data, if any, may be suitably be assumed.

PART – A

Answer any seven questions. **(7x3=21 Marks)**

1. Mention properties of lasers generation.
2. In a two energy level system transition of higher to lower energy levels emit Wave length of 350nm. Calculate the ratio of the population of two energy levels at 27^{o}c wave gain g1 = g2.
3. List out the laser application in Engineering.
4. Compute the NA, Acceptance angle and the critical angle of the fibre core having Refractive index = 1.0 and cladding refractive index = 1.05.
5. Mention different types of fibre fabrication techniques.
6. What is meant by Acousto-optic modulation technique?
7. Write the advantages of fibre optic sensors over electrical sensor.
8. Explain liquid level measurement using fibre optic sensor.
9. Mention the special features of LDRs.
10. Calculate the efficiency of PIN diode if the responsivity is 0.58 A/W at 800nm.

PART – B

Answer any three questions. **(3x18 = 54 Marks)**

11. a) Explain with necessary diagrams mechanisms of Carbondioxide Lasers.
    b) Explain gas lasers with their respective energy levels with suitable diagram.

12. With necessary diagrams explain the following application of Laser.
    a) Laser Nephelometry b) Laser cutting

13. a) Explain any one type of laser interferometer.
    b) Explain in details of losses in Optical Fibre.

14. a) How fibre optic sensors are classified? What is basic principle of Fibre optic sensor with suitable diagram?
    b) How the current and voltage is measured using optical Fibre?

15. (a) Write plasma display with suitable diagrams. Explain in detail.
    (b) Write short notes on Solar cells.

16. a) Explain the safety precaution while using Lasers.
    b) Write short note on LCD.

17. a) Explain Holographic Technique of reconstructing a 2-D image.
    b) Write short notes on Nd-YAG Lasers.

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Code No. 14220

FACULTY OF ENGINEERING

B.E. 4/4 (ECE) I – Semester (Backlog) Examination, March/April 2021

Subject: Industrial Administration and Financial Management

Time: 2 hours **Max. Marks: 75**

Note: Missing Data, if any, may be suitably be assumed.

PART – A

Answer any seven questions. **(7x3=21 Marks)**

1 State the purpose of the organization.
2 What is a meant by Management?
3 State the purposes of method study.
4 State the objectives of work study.
5 State are objectives of inspection.
6 State features of SQC.
7 State the features of LP
8 State the features of Project network
9 What are overheads?
10 What is depreciation?

PART – B

Answer any three questions. **(3x18 = 54 Marks)**

11 a) Draw the sketch of line organization, state its merits are demerits.
b) Explain the function of Management.

12 a) Explain the steps in conducting a method study.
b) Explain the principles of motion economy for assembly of component in chair sitting posture with work table.

13 a) Explain quality control in (i) attributes, (ii) variables.
b) Explain acceptance sampling OC curves operation.

14 a) Find the LP optimal solution for the conditions
a) $2x_1 – 6x_2 < 9$
b) $4x_1 + 7x_2 < 7$
c) Where $x_1 – x_2 > 0$.
b) A department has 5 employees and 5 jobs to be performed. The time each man will take to perform each job is given in the effectiveness matrix below. How should the job be allocated, one employee, so as to minimize the total man-hours.

	Employees				
Jobs	1	2	3	4	5
A	10	5	13	15	16
B	3	9	18	13	6
C	10	7	2	2	2
D	5	11	9	7	12
E	7	9	10	4	12

15 a) Explain various types of overheads.
b) Explain two methods of calculating depreciating fund.

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16 a) Explain matrix type of organizational structure.
b) Explain the principles of motion economy.

17 a) A manufacturer requires 2000 units of an item per annum. The cost of placing an order is Rs. 10 per order and inventory carrying cost is 16% per year per unit of average inventory. The purchase price is Re. 1 per unit on quantities below 1000 units. A discount of 5% is offered if the item is purchased in lots of 1000 units or above and there is a 7% discount if the whole annual requirement of 2000 units is purchased in a single lot. Find the economic order quantity and the total inventory costs in all the cases. What would be the order quantity for minimum total cost?

b) The following table shows normal time, crash time, normal costs and crash costs.

Activity	Normal		Crash	
	Time (Days)	Cost (Rs)	Time (Days)	Cost (Rs)
1-2	6	60	4	100
1-3	4	60	2	200
2-4	5	50	3	150
2-5	3	45	1	65
3-4	6	90	4	200
4-6	8	80	4	300
5-6	4	40	2	100
6-7	3	45	2	80

Draw the network for the project.

Find the minimum total time of the project after cash and the corresponding cost. Taking into consideration the minimum crash cost.

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Code No. 14260

FACULTY OF ENGINEERING

B. E. 4/4 (Mech/Prod) I – Semester (Backlog) Examination, March/April 2021

Subject: Finite Element Analysis

Time: 2 hours **Max. Marks: 75**

Note: Missing Data, if any, may be suitably be assumed.

PART – A

Answer any seven questions. **(7x3=21 Marks)**

1. Write the element stiffness matrix of a I D axial bar QUADRATIC element.
2. State (i) Principle of virtual energy (ii) Rayleigh Ritz principle.
3. Write the essential and natural boundary conditions of a beam element.
4. Formulate the transformation matrix for a plane truss element from basics.
5. Distinguish between plane stress and plane strain conditions.
6. Show the strain displacement relation-matrix for an axisymmetric element.
7. Enlist the use of Gauss Quadrature.
8. Write the shape functions of a 2D quadrilateral element.
9. Distinguish between consistent mass matrix and lumped mass matrix.
10. Enlist five characteristics of Eigen values and Eigen vectors.

PART – B

Answer any three questions. **(3x18 = 54 Marks)**

11. Determine the nodal displacements and element stresses in the bar shown in Fig.1
E= 200 GPa; $A_1 = 500\ mm^2$; $A_2 = 250 mm^2$;
P = 50 KN; $\alpha = 10 \times 10^{-6}$ per °C $\Delta T = 50°C$

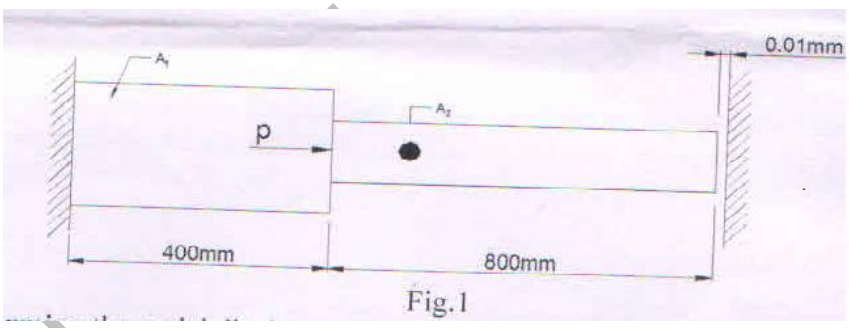

Fig.1

12. Determine the nodal displacements and element stress in the truss shown in Fig.2.
E=80 GPa A_1=600 mm^2; L_1=500 mm; A_2=600 mm^2;
L_2=600 mm; A3=600 mm^2; L_3=500 mm;

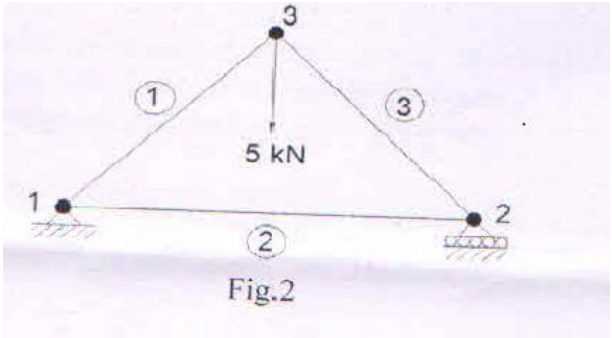

Fig.2

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13. Determine the nodal temperatures of the composite wall shown in Fig.3. There is a uniformly distributed heat source Q = W/m^3 present in the composite layered wall. Thermal conductivities are K_1 = 60 W/m ˚C; K_2 = 0.5 W/m ˚C; Heat flux q" on the surface = 100 W/m^2; Right face is maintained at 25 ˚C;

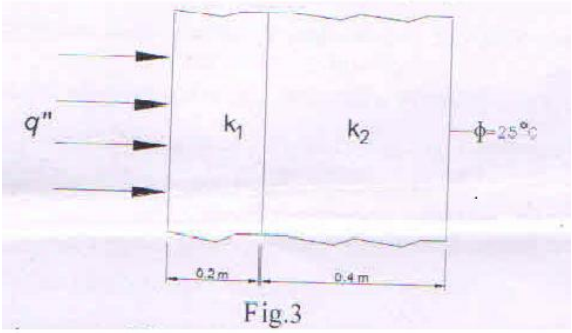

Fig.3

14. Determine the elements stiffness matrix and load vector for the constant strain triangle element shown in Fig.4. Under Plane strain condition, E = 100 GPa; ν = 0.3; Thickness =10mm i) Pressure *p1* = 5 N/mm^{2}acting perpendicular to the side ik ii) Pressure p_2 = 5 N/mm^2 acting perpendicular to the side *jk*. Nodal coordinates in mm are $x_i = 2$; x_j = 6; x_k= 6; y_i = 4; y_j = 1; y_k = 8;

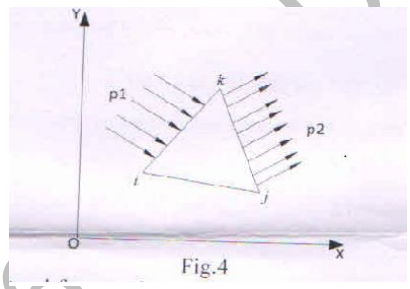

Fig.4

15. Determine the natural frequencies and corresponding eigenvectors for the transverse vibration of beam shown in Fig.5. Use two beam elements with consistent mass matrices.

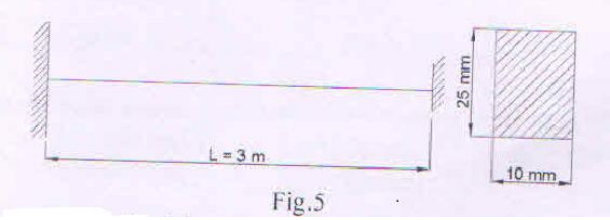

Fig.5

16. a) State Principle of minimum potential energy. Formulate the FE equilibrium equation from the principle of minimum potential energy.
b) Distinguish between sub parametric, super parametric and iso parametric elements wit neat sketch.

17. a) Formulate the element stiffness matrix for a ID circular rod subjected to torsion.
b) List and explain the various steps involved in solving problems using FE software.

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Code No.14249

FACULTY OF ENGINEERING

B.E. IV/IV – I Semester (AE) (Backlog) Examination, March / April 2021

Subject: Vehicle Maintenance

Time: 2 Hours **Max.Marks: 75**

Note: Missing data, if any, may be suitably assumed

PART-A

Answer any seven questions. **(7x3=21 Marks)**

1. List out the importance of maintenance.
2. Explain schedule and unscheduled maintenance.
3. What are the parts of an engine fuel system that require regular maintenance?
4. Explain the inspection procedure of piston.
5. Name the basic troubles of the braking system.
6. If a engine is overheating, list out the possible problems and their solution.
7. Why are fuses incorporated in a circuit?
8. List out the various modern electronic control units which require regular maintenance.
9. List out the major greasing parts of a vehicle.
10. List out anti-corrosion and anti-freeze additives.

PART-B

Answer any three questions. **(3x18=54 Marks)**

11. Explain any two of the following with tables.
    a) Road test report. b) Trip sheet. c) Periodic Maintenance Check Sheet.

12. a) Explain the reconditioning methods of engine.
    b) Explain how valve clearance is adjusted in a four cylinder engine.

13. a) Define clutch drag and clutch slip.
    b) Explain the procedure for brake bleeding operation. Why it is done?

14. a) Why a solenoid is used in the starting circuit of an automobile?
    b) Describe the servicing of starter system of a car.

15. Explain inspection procedure of the following.
    a) Cooling system. b) Lubricating system.

16. a) Explain major and minor repairs of body and window glass.
    b) Name and explain the tests conducted for testing of injectors.

17. Explain briefly step by step procedure for calibration of Fuel injection pump (FIP).

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Code No. 14269

FACULTY OF ENGINEERING

B.E. 4/4 (CSE / IT) I – Semester (Backlog) Examination, March/April 2021

Subject: Information Security

Time: 2 hours **Max. Marks: 75**

Note: Missing Data, if any, may be suitably be assumed.

PART – A

Answer any seven questions. **(7x3=21 Marks)**

1 What are the different types of password attacks?
2 How is policy different from law?
3 What is phishing?
4 What are vulnerabilities? How do you identify them?
5 Differentiate between Risk Appetite and Residual Risk.
6 What is a Firewall? List different uses of firewall.
7 What are the requirements of digital signatures?
8 What is cryptanalysis and cryptography?
9 What is Vernam Cipher?
10 What is trapdoor?

PART – B

Answer any three questions. **(3x18 = 54 Marks)**

11 a) Describe the critical characteristics of information. How are they used in the study of Computer Security?
b) What is threat? Explain any five categories of threat.

12 Explain in detail different risk control strategies.

13 a) What are different types of firewall that you can use in the design of an information security system?
b) Explain about security blue print.

14 a) How can we secure E-mail with S/MIME, PEM and PGP.
b) What are different cryptographic tools?

15 a) Explain different hiring issues in detail.
b) Explain about ISO Network Management Model.

16 a) Discuss how Kerberos works in authenticating a remote login.
b) Who is involved in the security development life cycle process? Who leads the process?

17 Write a short note on:
a) Digital forensics
b) Quantitative Versus qualitative risk
c) Network – based IDS.

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Code No. 14737/CBCS

FACULTY OF ENGINEERING

B. E. (Civil) (CBCS) VII – Semester (Main & Backlog) Examination, March/April 2021

Subject: Prestressed Concrete

Time: 2 hours **Max. Marks: 70**

Note: Missing Data, if any, may be suitably be assumed.

PART – A

Answer any five questions. **(5x2 = 10 Marks)**

1. Explain the term 'Wobbling effect'.
2. Explain the need of high strength materials in prestressed concrete.
3. What are the basic assumptions in analysis of stresses in prestressed concrete?
4. What is pressure line? Explain its significance.
5. Explain the significance of applying the prestressing force at kern point.
6. Define primary moment and secondary moments.
7. Explain how shear and flexure cracks develop in a section.
8. List out different methods used in end block analysis.
9. What is the necessity of control on deflection?
10. Define equivalent prism.

PART – B

Answer any four questions. **(4x15 = 60 Marks)**

11. A pre tensioned beam 250mm wide and 360mm deep is prestressed by 10 wires of 8mm diameter initially stressed to 1000 N/mm^2. The centroid of the steel wires is located at 105mm from the soffit. Determine the max stress in concrete immediately after transfer allowing elastic shortening of concrete only at the level of the centroid of steel. If however, the concrete is subjected to additional shortening due to creep and shrinkage and the steel is subjected to a relaxation of stress of 5% find the final percentage loss of stress in the steel wire. Take Es = 210 kN/mm^2, Ec = 36.85 kN/mm^2, creep coefficient Φ = 1.60, Total residual shrinkage strain = $3x10^{-4}$.

12. A rectangular concerete beam 300 mm wide and 800 mm deep supports two concentrated loads of 20 KN each at the third point of a span of 9m.

    (a) Suggest the suitable cable profile, if the eccentricity of the cable profile 100 mm for the middle third portion of the beam, calculate the prestressing force required to balance the bending effect of the concentrated loads (neglect the self-weight of the beam).

    (b) For the same cable profile, find the effective force in the cable if the resultant stress due to self-weight, imposed loads and prestressing force is zero at the bottom fibre of the mid span section. Density of concrete is 24 KN/m^3.

13. A prestressed concrete beam of rectangular section in 120mm wide and 300 mm deep is continuous over two supports, AB = BC = 8m. The cable with zero eccentricity at the ends and an eccentricity of 50 mm towards the top fibres of the beam over the central support carries and effective force of 500 KN.

    (a) Calculate the secondary moments developed at B.

    (b) If the beam supports concentrated loads of 20 KN each at mid points of span, evaluate the resultant stresses at central support section B.

    (c) Locate also the position of the pressure line at section.

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14. A pretensioned, T-section has a flange 1200 mm wide and 150 mm thick. The width and depth of rib are 300 mm 1500 mm respectively. The high tensile steel tendons have an area of 4700 mm^2 and are located at an effective depth of 1600 mm. The characteristic cube strength of the concrete and the tensile strength of steel are 40 N/mm^2 and 1600 N/mm^2 respectively, calculate the flexural strength of T-section using IS code provisions.

15. A post tensioned concrete beam of rectangular section 250 mm wide and 500 mm deep has a span of 12.50 m and carries a super imposed load of 8.5 kN/m. The tendon is provided with a parabolic profile with a central dip of 180 mm and with no eccentricity at the ends. The effective prestressing force in the tendon is 750 kN. Determine:

    i) The principal stresses at the supports.

    ii) The principal stresses at the supports without prestress.

    Take weight of concrete = 24 kN/m^3.

16. A rectangular concrete beam of cross section 150 mm wide and 300 mm deep is simply supported over a span of 8 m and is prestressed by means of a symmetric parabolic cable, at a distance of 75 mm from the bottom of the beam at mid span and 125 mm from the top of the beam at support sections. If the force in the cable is 350 kN and the modulus of elasticity of concrete is 38 kN/mm^2, calculate

    (a) The deflection at mid-span when the beam is supporting its own weight, and

    (b) The concentrated load which must be applied at mid-span to restore it to the level of supports.

17. The end block of a prestressed concrete girder is 200 mm wide by 300 mm deep. The beam is post-tensioned by two freyssinet anchorages each of 100 mm diameter with their centers located at 75 mm from the top and bottom of the beam. The force transmitted by each anchorage being 2000kN. Compute the bursting force and design suitable reinforcement according to the Indian standards code IS: 1343 code provisions.

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Code No. 14758/CBCS

FACULTY OF ENGINEERING

B. E. (ECE)(CBCS) VII – Semester (Main & Backlog) Examination, March/April 2021

Subject: Industrial Administration and Financial Management

Time: 2 hours **Max. Marks: 70**

Note: Missing Data, if any, may be suitably be assumed.

PART – A

Answer any five questions. **(5x2 = 10 Marks)**

1. State the types of Business Organization.
2. List out the merits and demerits of functional layout.
3. Define the term 'Performance rating Factor'.
4. What do you understand by standard time? How you will calculate it?
5. What are the principles of SQC?
6. What is meant by ISO?
7. State the standard form of Linear Programming and its assumptions.
8. Differentiate between CPM and PERT.
9. Mention the salient factors to be considered for preparing a Capital Budgeting in any manufacturing industry.
10. Explain nature of Financial Management.

PART – B

Answer any four questions. **(4x15 = 60 Marks)**

11. (a) Explain various factors affecting Layout.

    (b) What is the importance of Organization structure? Explain the merits of Line and Staff Organization structure over Line or Military type of organization structure.

12. (a) State the principles of Motion Economy related to arrangement of the Work place.

    (b) An operator works for eight hours a day. A work sampling study shows that he was idle 15% of the day and that he worked the remainder of the day at an average performance index of 110%. The record shows that he turned out 420 pieces of acceptable quality during the day. Find the standard time per piece. Assume 15% allowances.

13. (a) Explain the operating characteristics curve used in Inspection.

    (b) Explain briefly Quality Circle.

14. (a) Derive the simple EOQ and state their assumptions.

    (b) Find the minimum value of $Z = 4x_1 + 2x_2$ by graphical method subject to the constraints:

$$x_1 + 2x_2 \geq 2 \qquad 3x_1 + x_2 \geq 3 \qquad 4x_1 + 3x_2 \geq 6 \qquad \text{and} \qquad x_1, x_2 \geq 0$$

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15. (a) The following table gives a list of activities and their duration.

Activity	A-B	B-E	A-C	A-D	C-E	D-F	E-F
Duration in days	8	10	4	6	6	8	4

You required to:
(i) Draw the network diagram.
(ii) Find EST, EFT, LST, LFT and float of each activity.
(iii) Identify critical path.
(iv) Calculate project completion time.

16. (a) What is meant by depreciation state the causes of it and mention any four methods of calculating depreciation fund.

(b) Explain duties of purchase manager.

17. Write short notes on the following:
(a) Techniques of capital budgeting.
(b) Functions of Management.
(c) Performance appraisal.
(d) Types of Overheads.

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Code No.14767/CBCS

FACULTY OF ENGINEERING

B.E.VII – Semester (M/P) (CBCS) (Main & BL) Examination, March / April 2021

Subject: Production & Operation Management

Time: 2 Hours **Max.Marks: 70**

Note: Missing data, if any, may be suitably assumed

PART – A

Answer any five questions. **(5x2=10 Marks)**

1. What are the factors affecting plant location?
2. Write any four limitations of breakeven analysis?
3. Develop two hand process chart for bolt and nut assembly with summary.
4. Discuss the importance of work sampling in work measurement.
5. What are various forecasting objectives?
6. Mention the principles of motion economy.
7. Enlist all the forecast errors.
8. Enlist the costs involved in aggregate planning.
9. Differentiate between event and activity.
10. Write the types of floats in network management.

PART – B

Answer any four questions. **(4x15=60 Marks)**

11. a) Explain the different types of plant layouts.
    b) Explain the good objectiv3es of plant layout.

12. a) Explain the stop watch study method in work measurement.
    b) Explain any one recording technique in work study.

13. Compute the adjusted exponential forecast for the first week of March for a firm with the following data. Assume the forecast for the first week of January (F_0) as 600 and corresponding initial trend (T_0) as 0. Take α=0.1and β=0.2.

Months	January				February			
Weeks	1	2	3	4	1	2	3	4
Demands	650	600	550	650	625	675	700	710

14. a) Discuss the various types of incentive plans.
    b) Explain the methodology of forecasting by least square.

15. a) Explain the various aggregate planning strategies.
    b) Explain the various MRP inputs and outputs.

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16. A small marketing project consists of the jobs in the table given below. With each job listed its normal time and a minimum of crash time (in days) and the cost (Rs. Per day) of crashing each job are also given.

Job	normal duration (days)	Min.(crash) duration (days)	Cost of crashing (Rs. Per day)
1-2	9	6	15
1-3	8	5	20
1-4	15	10	25
2-4	5	`3	5
3-4	10	6	10
4-5	2	1	35

a) What is the normal project length and min project length?
b) Determine the minimum crashing costs of schedules ranging from normal length down to, and including, the minimum length schedule, find the costs of schedules which are L, L1, L2 and so on days long. Overhead costs total Rs.50/- per day.

17. Write short notes on the flowing:

i) SAP & BANN
ii) Therblings & String diagrams
iii) MSE and MFE

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Code No. 14773/CBCS

FACULTY OF ENGINEERING

B.E. (A.E) VII - Semester (CBCS) (Main & Backlog) Examinations, March/April 2021

Subject : Vehicle Body Engg.

Time : 2 Hours **Max. Marks: 70**

Note: Missing Data, if any, may be suitably be assumed.

PART – A

Note: Answer any Five Questions **(5x2 = 10 Marks)**

1. Sketch the layout of an estate car.
2. State the function of B-C post.
3. Explain front end geometry to reduce drag.
4. How does the rolling moment caused?
5. Define horizontal lozenging load.
6. How does the exit and entrance location influence the bus body layout?
7. Explain the importance of driver's visibility.
8. Explain passive safety.
9. List out the methods of reducing vibrations.
10. Write short notes on automotive vehicle painting.

PART – B

Note: Answer any Four Questions **(4x15= 60 Marks)**

11. Explain in details the construction of Bus body with neat sketches.

12. Explain the various body optimization techniques for minimum drag.

13. (a) How do you optimize the rear end of vehicle for minimum drag?
    (b) Explain open type wind tunnel testing.

14. Explain briefly ergonomics for driver seat design.

15. Classify active safety of a vehicle and explain each one of them.

16. (a) How is vibration a factor for human discomfort?
    (b) Discuss in detail selection of paint

17. Explain the following
    (a) G.R.P. Glass
    (b) Interior Ergonomics
    (c) Flow visualization methods

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Code No: 14777/CBCS

FACULTY OF ENGINEERING

B.E. VII – Semester (CBCS) (CSE) (Main & Backlog) Examination, March/April 2021

Subject: Data Mining

Time: 2 hours **Max. Marks: 70**

Note: Missing Data, if any, may be suitably be assumed.

PART – A

Answer any five questions. **(5x2 = 10 Marks)**

1. List the various data mining functionalities.
2. Briefly outline how to compute the dissimilarity between objects described by Asymmetric binary attributes.
3. Define Closed Frequent Itemset.
4. Define anti-monotone property with an example.
5. What is Bayesian Belief Network?
6. Briefly describe about Gini Index attribute selection measure.
7. What are the major tasks of clustering evaluation?
8. Define (i) Agglomerative hierarchical clustering
   (ii) Divisive hierarchical clustering
9. Write different applications of data mining.
10. What is meant by Multimedia mining?

PART – B

Answer any four questions. **(4x15 = 60 Marks)**

11. (a) What is data mining? Briefly explain the Knowledge discovery process.
    (b) Compute the distance between the data objects given as X = (7, 12, 9, 5, 10) and Y = (5, 10, 11, 8, 13) using Manhattan, Euclidean and Supremum distance.

12. (a) Compute frequent itemsets and strong association rules by using FP-Growth algorithm for the following database where min_sup = 22% and min_conf = 70%

TID	Items Bought
T100	{Onion, Potato, Burger}
T200	{Potato, Burger, Milk}
T300	{Milk, Bread}
T400	{Onion, Potato, Milk}
T500	{Onion, Potato, Burger, Bread}
T600	{Onion, Potato, Burger, Milk, Bread}
T700	{Potato, Burger, Bread}

    (b) Briefly describe any three pattern evaluation measures

…2

13. Explain Naïve Bayesian classification and predict the class label *Buys_computer* for X = (*age* = youth, *income* = medium, *student* = yes, c*redit_rating* = fair)

RID	age	Income	Student	Credit_rating	Class:buys_computer
1	youth	high	no	fair	no
2	youth	high	no	excellent	no
3	middle_aged	high	no	fair	yes
4	senior	medium	no	fair	yes
5	senior	low	yes	fair	yes
6	senior	low	yes	excellent	no
7	middle_aged	low	yes	excellent	yes
8	youth	medium	no	fair	no
9	youth	low	yes	fair	yes
10	senior	medium	yes	fair	yes
11	youth	medium	yes	excellent	yes
12	middle_aged	medium	no	excellent	yes
13	middle_aged	high	yes	fair	yes
14	senior	medium	no	excellent	no

14. (a) Describe the working of DBSCAN algorithm for clustering.
    (b) Explain OPTICS algorithm for clustering.

15. (a) Explain the role of data mining in Science and Engineering.
    (b) What is Text mining? Explain.

16. (a) Explain classification by back propagation.
    (b) Describe Extrinsic and Intrinsic methods of measuring clustering quality.

17 Write short notes on any two of the following
    (a) Support Vector Machines
    (b) Statistical description of data
    (c) K-means clustering

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Code No. 14781 / CBCS

FACULTY OF ENGINEERING

B.E. (I.T) VII – Semester (CBCS) (Main & Backlog) Examination, March/April 2021

Subject: Network Security & Cryptography

Time: 2 hours **Max. Marks: 70**

Note: Missing Data, if any, may be suitably be assumed.

PART – A

Answer any five questions. **(5x2 = 10 Marks)**

1 Write about different security attacks
2 What is Rail-Fence Technique?
3 What are the roles of public key and private key?
4 Define the four stages of AES algorithm
5 Define Message Digest and Hash function
6 Write about HMAC and CMAC
7 Write about the various wireless network security threats
8 Write about phases of TLS handshake protocol
9 Write about combining security association
10 Give the message content types of S/MIME.

PART – B

Answer any four questions. **(4x15 = 60 Marks)**

11 Explain about the symmetric and asymmetric key cryptography in detail.

12 Explain RSA algorithm with an example.

13 Explain in detail about Kerberos Authentication Mechanism.

14 Explain about SSH protocol in detail.

15 What is ESP? Explain the transport and Tunnel Modes of Operation.

16 Briefly explain about X.509 authentication service.

17 Write short notes on the following:
a) Diffie Hellman Key Exchange
b) HTTPS.

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