

FACULTY OF ENGINEERING**B.E. 4/4 (Civil) I-Semester (Main & Backlog) Examination,****November / December 2018****Subject : Water Resources Engineering – II****Time : 3 hours****Max. Marks : 75****Note: Answer all questions from Part-A. Answer any FIVE questions from Part-B.****PART – A (25 Marks)**

- 1 Explain the different zones of storage of a reservoir. 3
- 2 Define mass inflow curve and demand curve. 2
- 3 What is the limiting height of a low dam? Differentiate between the low and a high gravity dam. 3
- 4 What is an elementary profile of a gravity dam? Discuss with a sketch. 3
- 5 Write the functions of filters and drains in earth dams. 3
- 6 Define a phreatic line in earth dam. 2
- 7 What is a spillway? Name the different types of spillways. 3
- 8 Define a hydraulic jump and write its two uses. 2
- 9 Define and write the function of a surge tank. 2
- 10 Define load factor and power plant factor. 2

PART – B (50 Marks)

- 11 a) What are the different types of flood control reservoirs? Discuss the advantages and disadvantages of each type. 5
b) What is reservoir sedimentation? Write its control measures. 5
- 12 A masonry dam 10m high is trapezoidal in section with a top width of 1m and bottom width of 8.25m. The face exposed to water has a slope of 1 : 10. Test the stability of dam. Find the principal stresses at the toe and heel of the dam. Assume unit weight of masonry as 2240 Kg/m³ and permissible shear stress of joint as 14 Kg/cm². 10
- 13 a) Discuss the various causes of hydraulic and seepage failures of earth dams and methods to prevent these failures. 5
b) Discuss the classification of earth dams based on the sections of the dam with sketches. 5
- 14 Discuss in detail the various relative positions of jump height curve and tail water curve and stilling basins provided in each case. 10
- 15 The following table give the average monthly flow in a river for a particular year. 10

Month	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Discharge (m ³ /s)	1000	975	700	632	390	280	250	180	170	165	160	150

- a) Compute and draw monthly flow-duration curve.
- b) Determine the total quantity of water available for power.
- c) Determine the flow available for firm power.
- d) Estimate the storage required for the maximum power.

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- 16 a) Derive the expression for a phreatic line in earth dam with filter. 7
b) For a homogenous earth dam of height 52m and free board 2m, a flow net was constructed and following results were obtained. 3

No. of potential drops = 20

No. of flow channels = 3

The dam has a horizontal filter of 30m length at its downstream end. Calculate the discharge per meter length of the dam, if the coefficient of permeability of dam is 3×10^{-3} cm/s.

- 17 Write notes on the following with the aid of neat sketches. 10
a) Siphon spillway
b) Components of a hydro electric power plant.

FACULTY OF ENGINEERING**B.E. 4/4 (ECE) I-Semester Examination, November / December 2018****Subject: Industrial Administration and Financial Management****Time: 3 Hours****Max. Marks: 75****Note: Answer all questions from Part – A & any five questions from Part – B****Part – A (25 Marks)**

1. State the features considered in design of plant layout
2. State the advantage of locating a plant in urban areas.
3. State the reasons for conducting Job evaluation study
4. State the features of wages
5. What is quality control?
6. State types of sampling plans
7. What is incentive?
8. State the functions of purchase manager.
9. What is cost of capital?
10. What is Time Value of money?

Part – B (50 Marks)

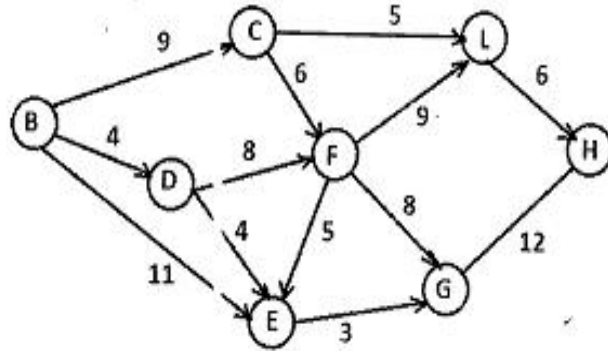
11. a) Draw the process type of plant layout, state five types of Industrial products operated on this type of layout.
b) Explain the factors considered in plant location – steel production.
12. a) Explain two types of Performance Rating of worker.
b) Explain two types of wage payment plants.
13. a) Explain the quality control by different charts.
b) Explain the working of quality circles.
14. a) Derive the equation for EOQ for ideal condition of material flow.
b) Construct P chart for following information; also determine Central Limit, Upper Control Unit and Lower Control Limit.

Date	No. of Pieces inspected	No. of pieces found Defective
November 1	300	25
November 2	300	30
November 3	300	35
November 4	300	40
November 5	300	45
November 6	300	35
November 7	300	40
November 8	300	30
November 9	300	20
November 10	300	70

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15. a) Explain two techniques of capital budgeting
b) Design a 6T SRAM cell? Explain its write operation.
16. a) Explain the steps in conducting method study.
b) Explain any two wage payment plans
17. a) Explain the sampling inspection plans.
b) Determine the Critical Path in the network.



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FACULTY OF ENGINEERING

B.E. 4/4 (M/P) I – Semester (Main & Backlog) Examination, Nov. / Dec. 2018

Subject: Finite Element Analysis

Time: 3 Hours

Max.Marks: 75

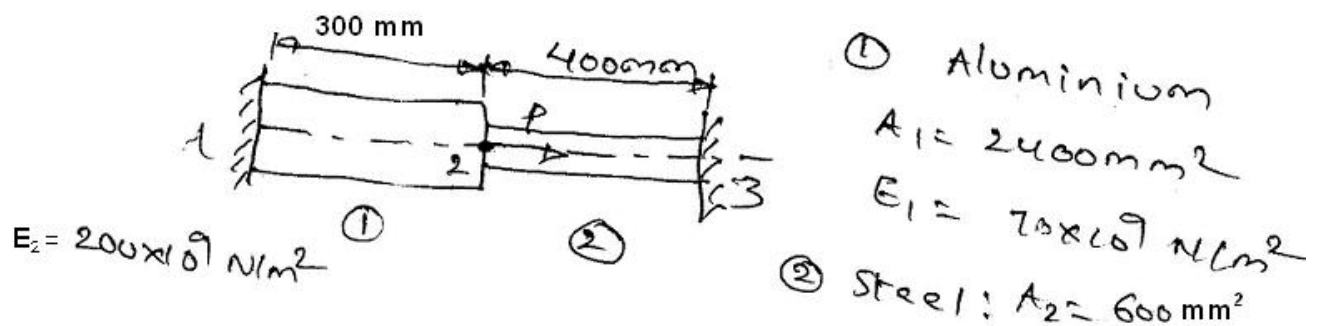
Note: Answer all questions from Part A. Answer any five questions from Part B.

PART – A (25 Marks)

- 1 State strain-displacement relations for a plane stress problem.
- 2 Why polynomial functions are used always to represent shape functions?
- 3 What is meant by isoparametric representation? Represent a one-dimensional bar isoparametrically.
- 4 In what way a truss member will differ from frame member?
- 5 A spring of stiffness 150 N/mm is fixed at one end and a load of 100 N is applied at the other end. Solve for free end displacement by discrete method.
- 6 Give an example of a finite element which will follow both C^0 and C^1 continuity.
- 7 State the conditions that are to be satisfied by an axi-symmetric problem.
- 8 Explain the significance of Jacobian in isoparametric formulation.
- 9 Discuss about the properties of eigen values and eigen vectors.
- 10 State the governing differential equation of a beam element.

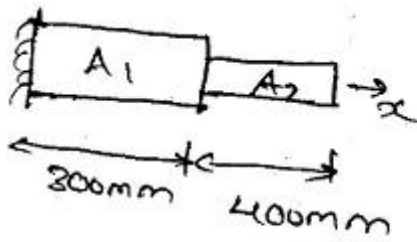
PART – B (5x10 = 50 Marks)

- 11 a) Discuss briefly the steps involved in finite element method. 5
- b) What are the assumptions made in plane stress and write stress-strain relations for plane stress? 5
- 12 A stepped bar is shown in Fig. 1. An axial load of $p = 250$ KN is applied. Determine
 - a) Nodal displacements
 - b) Stress in each material
 - c) Reaction forces 10



- 13 Find the deflection at the tip of a cantilever beam subjected to a point load at the free end by finite element method. 10
- 14 a) Derive and draw neatly the shape functions of a constant strain triangle element. 8
- b) State the material matrix for plane stress and plane strain conditions. 2

- 15 Determine eigen values and eigen vectors of a stepped bar shown in Fig. 2 by characteristic polynomial method. 10



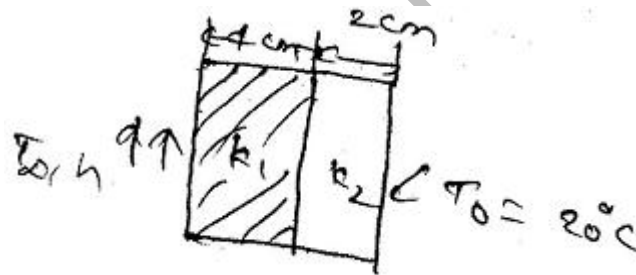
$$E = 200 \text{ GPa}$$

$$\rho = 7840 \text{ kg/m}^3$$

$$A_1 = 1200 \text{ mm}^2 \quad A_2 = 900 \text{ mm}^2$$

- 16 Why numerical integration is required in FEM? Explain numerical integration with one point and two points. 10

- 17 Determine the temperature distribution of the composite wall shown in Fig. 3. Assume $k_1 = 0.5 \text{ W/m}^\circ\text{C}$, $k_2 = 0.05 \text{ W/m}^\circ\text{C}$, $h = 0.1 \text{ W/m}^2^\circ\text{C}$, $T_\infty = -5^\circ\text{C}$. 10



FACULTY OF ENGINEERING
B.E. 4/4 (AE) I - Semester (Main & Backlog) Examination,
November / December 2018

Subject : Vehicle Maintenance

Time : 3 Hours

Max. Marks: 75

Note: Answer all questions from Part-A & answer any five questions from Part-B.

PART – A (25 Marks)

- 1 Illustrate a typical maintenance log sheet of a automobile.
- 2 List out the benefits of preventive maintenance of vehicle.
- 3 What are the various cleaning methods to be adopted for the cleaning of major engine components?
- 4 List out the special tools to be used in the maintenance of an engine.
- 5 Name the basic troubles of the brake system.
- 6 Mention two main reasons for gear slip of a vehicle.
- 7 What are the various checks to be carried and in a battery?
- 8 List the basic troubles of the sport plug.
- 9 When and why the fuel injection pump is to be calibrated?
- 10 List out the components of cooling system.

PART – B (50 Marks)

- 11 Discuss about the preparation of maintenance check list and explain the various forms used for vehicle maintenance.
- 12 (a) Give a procedure for testing and measuring a cylinder bore of an engine.
(b) Explain how cylinder head is to be tightened.
- 13 What are the possible causes and remedies of the following engine troubles.
(a) Excessive oil consumption
(b) Excessive fuel consumption
(c) Low oil pressure
- 14 (a) Give a detailed procedure for brake adjustment.
(b) Discuss the gear box troubles and remedies.
- 15 (a) Describe briefly the ignition system maintenance.
(b) Discuss the various causes of battery failure.
- 16 (a) What are the possible causes and remedy for engine overheating due to Lubricating system?
(b) State causes and remedy for not building up of cooling in engine.
- 17 Write short notes on the following:
(a) Maintenance of carburetor
(b) Clutch
(c) Fuel system

FACULTY OF ENGINEERING
B.E. 4/4 (CSE/IT) I-Semester (Main & Backlog) Examination,
November / December 2018

Subject : Information Security

Time : 3 Hours

Max. Marks: 75

Note: Answer all questions from Part-A & any five questions from Part-B.

PART – A (25 Marks)

- | | |
|---|---|
| 1 What are the 3 main goals of information security? | 3 |
| 2 What is the role of proxy server? | 2 |
| 3 Write any 3 issues covered by WTO TRIPS agreement . | 3 |
| 4 How is policy different from laws? | 2 |
| 5 Define firewall and specify its characteristics. | 3 |
| 6 Write about packet filtering firewall. | 3 |
| 7 When to use IR plan? | 2 |
| 8 Write about digital forensics. | 3 |
| 9 What security protocols are used to protect E-mail? | 2 |
| 10 What are different biometric access controls? | 2 |

PART – B (50 Marks)

- | | |
|--|----|
| 11 a) What is security SDLC? | 4 |
| b) What are the different threats to information system? Explain. | 6 |
| 12 What is IDPS? Explain different types of IDPS in detail. | 10 |
| 13 a) List the 5 generations of firewall technology? Which generations are still in use? | 4 |
| b) Write about screened host firewall and screened subnet firewall with DMZ. | 6 |
| 14 a) Discuss different attacks on crypto system. | 5 |
| b) Explain about public key infrastructure. | 5 |
| 15 What are the technical and non-technical aspects of information system. implementation in detail? | 10 |
| 16. a) What is RADIUS? What advantages does it has over TACAC? | 6 |
| b) What is VPN? Specify some reasons why it is widely popular? | 4 |
| 17 Write a short note on: | 10 |
| a) Honey pot | |
| b) Biometric Control | |
| c) Bully's Eye model | |

FACULTY OF ENGINEERING
B.E. 4/4 (Inst.) I-Semester (Main & Backlog) Examination,
November / December 2018

Subject : Opto Electronic Instrumentation

Time : 3 Hours

Max. Marks: 75

Note: Answer all questions from Part-A & any five questions from Part-B.

PART – A (25 Marks)

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|---|---|
| 1 Explain the process of population inversion in Lasers. | 3 |
| 2 Mention the biomedical application of laser. | 2 |
| 3 Define the optical feedback in laser. | 2 |
| 4 In a Michelson's interferometer 200 fringes are in field of view when the movable mirror is moved through 0.0589 mm. Calculate the wavelength of light used. | 2 |
| 5 Based on performance and cost compare the various techniques of Laser fabrication. | 3 |
| 6 Calculate the radius of curvature for optical fiber bend loss given core Refractive index = 1.49 and cladding refractive index = 1.46 for a wave Length of 850nm? | 3 |
| 7 Describe the principle of operation of fiber optic phase sensor. | 3 |
| 8 What are the characteristics of optical fiber which are useful for sensor design? | 2 |
| 9 List various photo detectors used for optical instruments. | 2 |
| 10 When LED has 2V applied to its terminals, it draws 100mA and produces 2mw of optical power. What is the LED's conversion efficiency? | 3 |

PART – B (50 Marks)

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|---|----|
| 11 With its construction and energy level diagram explain ND-YAG laser. | 10 |
| 12 Describe Q-switching and explain any two methods of Q-switching in detail. | 10 |
| 13 a) Explain threshold condition laser losses with necessary equations. | 5 |
| b) Explain beam modulation telemetry in laser. | 5 |
| 14 a) Explain laser strain gauge with a diagram. | 5 |
| b) Explain any two applications of laser machining. | 5 |
| 15 a) With a diagram explain double crucible method of fibre perform manufacturing. | 6 |
| b) Explain electric arc fusion optical fibre splicing. | 4 |
| 16. Explain measurement of the following parameters using optic fiber sensor. | 10 |
| i) Voltage ii) Pressure | |
| 17 a) Explain the features of plasma display and draw its structural diagram. | 5 |
| b) With an equivalent circuit explain PIN photo diode. | 5 |