Code No.2784/CBCS

FACULTY OF ENGINEERING
B.E. (Civil) VIII-Semester (CBCS) (Main) Examination, September 2020

Subject : Construction Management & Technology

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

PART – A

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

1 What are the objectives of planning?
2 Differentiate clearly total float, free float and independent float.
3 Explain direct project cost and indirect project cost.
4 Discuss briefly crash cost?
5 Discuss the limitations of Operation Research?
6 Differentiate feasible solution and feasible region?
7 Define artificial variable and slack variable?
8 Define basic solution and optimum solution?
9 Define direct and indirect loss due to accident?
10 Mention the most common safety hazards in construction?

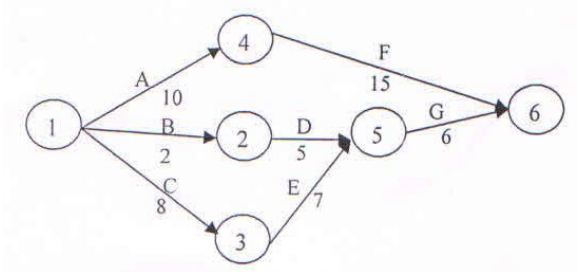
PART – B

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

11 a) What are the various stages in construction? Describe each stage briefly with special reference to the economy that can be exercised in each?
b) Differentiate between bar chart scheduling and critical path method?

12 Determine the optimum time duration and optimum cost for a project represented by the network given. Indirect cost is rupees 10,000/- per month.

Activity	Normal		Crash	
	Time (months)	Cost (rupees)	Time (months)	Cost (rupees)
1-2	2	30,000	1	32,000
1-3	8	40,000	6	46,000
1-4	10	50,000	5	75,000
2-5	5	10,000	3	15,000
3-5	7	25,000	6	26,000
4-6	15	70,000	10	1,00,000
5-6	6	15,000	4	23,000



…..2

13 a) Explain various steps involved in solving Simplex method. Explain the algorithm.

b) Solve the following linear programming model graphically.

$$\text{Max } Z = 5X_1 + 7X_2$$

Subject to $X_1 + X_2 \leq 10$

$2X_1 + 3X_2 \leq 40$

$5X_1 + X_2 \leq 25$

$X_1, X_2 \geq 0$

14 Solve the following linear programming problem using simplex method for optimal solution.

$$\text{Minimize } Z = X_1 - 3X_2 + 2X_3$$

Subject to Constraints : $3X_1 - X_2 + 2X_3 \leq 7$

$-2X_1 + 4X_2 \leq 12$

$-4X_1 + 3X_2 + 8X_3 \leq 10$

15 a) Describe the safety measures required in excavation to avoid accidents.

b) Describe the methods of avoiding fire hazards in buildings during and after construction?

16 Explain in detail about the sequence of work in Building Construction.

17 Write short notes on the following:

a) Limitations for bar charts

b) Crash Programme

c) Role of Operations Research in decision Making

d) Safety in storage and handling of materials and equipments.

****

Code No: 853/2827/CBCS

FACULTY OF ENGINEERING

B.E. (CBCS) (M/P) VIII - Semester (Main) Examination, September 2020

Subject : Design of Solar Energy System (Elective-III)

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

PART – A

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

1. What do you mean by solar time?
2. What are different solar measuring instruments?
3. Define pyranometer?
4. Define Collector Efficiency Factor?
5. What are the different sources of energy?
6. Define Solar insulation?
7. Give three types of Solar energy collectors?
8. What are different types of solar water heater?
9. On what principal solar water heater works?
10. Define Latitude and longitude?

PART – B

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

11. a) Briefly explain Solar Powered Mobile Power bank systems?
    b) Define and explain the following with neat diagrams:
    i) Solar azimuth angle ii) declination angle?

12. a) What are the points to be considered for Solar Radiation measurement Data?
    b) What are the main components of a flat collector? Explain the function of each?

13. a) Describe the working principal of solar pond?
    b) Why orientation is needed in concentrating type collectors?

14. a) What are the advantages and limitations of renewable energy sources? Explain the prospects On non-conventional energy sources in India.
    b) Explain the principle of conversion of solar energy into heat energy?

15. a) With a neat diagram explain the working of a solar cooker?
    b) What are the major advantages and disadvantages of a solar PV system Advantages and Disadvantages of Photovoltaic?

16. a) Write short notes on solar radiation on tilted surfaces?
    b) With a neat diagram? Explain the solar water pumping system?

17. a) What do you mean by solar energy device?
    b) Write about the availability energy consumption pattern and growth rate in India?

****

Code No. 855/2829/CBCS

FACULTY OF ENGINEERING

B.E. (M/P/E) (CBCS) VIII – Semester (Main) Examination, September 2020

Subject : Composite Materials (E-II)

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

PART – A

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

1 Define composite materials and list few applications of it.
2 List the types of matrix materials used in composites.
3 Define weight fraction and volume fraction of matrix in composite materials.
4 The weight fraction of fiber is 0.8, it specific gravity of fiber and matrix are 2.5 and 1.2 respectively find the density of composite.
5 Distinguish between anisotropic and monoclinic materials.
6 Mention any two characteristics of angle ply and cross ply.
7 Discuss the failure mechanics of unidirectional composite under tensile loading condition.
8 Write the causes for delamination failure of composite materials.
9 Write the equation of simple support rectangle plate under bending.
10 What is levy solution for plates of composite materials?

PART – B

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

11. a) Explain the manufacturing of Glass fiber with neat sketch.
    b) Differentiate between thermoset resin and thermo plastic resin.

12. a) Explain the two principal effects of changes in hygrothermal. Environment on the mechanical behavior of polymer composites.
    b) What is a rule of mixture? Derive an expression in terms of volume fraction to determine the density of composite.

13. a) Reduce the monoclinic stress strain relationship to those of orthotropic materials.
    b) Write the reduced stiffness and the compliance matrix for anisotropic, monoclinic, orthotropic and isotropic materials.

14. Discuss the failure mechanisms in fibre reinforced polymer matrix composites and describe a failure theory which is widely used for testing of polymer composites.

15. a) What are the assumptions in the thin plate laminate theory?
    b) Discuss about bending of rectangular laminated plates.

16. a) Differentiate between composite and alloy.
    b) Explain Tsai-Hill Failure theory.

17. a) Explain about the bending of laminated composite beams.
    b) Briefly explains the load transfer from matrix to fiber.

****

Code No. 856/2830/CBCS

FACULTY OF ENGINEERING

B.E. (M/P) VIII-Semester (CBCS) (Main) Examination, September 2020

Subject : Non-Destructive Testing (Elective – II)

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

PART – A

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

1 Compare destructive and non-destructive Testing.
2 Write the principle of Liquid Penetrate Inspection.
3 What is the principle of Eddy Current Testing?
4 List out the applications of Ultrasonic Testing.
5 State the principle of Radiography.
6 Write the basic principle of acoustic emission.
7 State the limitations of magnetic particle inspection.
8 Define sensitivity and calibration in ultrasonic testing.
9 How to produce X-rays in radiography?
10 Define thermography.

PART – B

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

11 (a) Explain the Liquid Penetrate Inspection method. State its Advantages and Limitations.
(b) Describe the Magnetic Particle Inspection method. State its advantages and limitations.

12 (a) Explain the Eddy Current Testing method. State its advantages and limitations.
(b) Define : (i) Lift- off factor(ii) Edge effect (iii) Skin effect

13 (a) Discuss the Ultrasonic Testing of a material. State its advantages and limitations.
(b) Discuss the cracks detection with eddy currents.

14 (a) With the schematic diagram explain the working principle of radiography.
(b) Explain the principle of operation of fluoroscope.

15 (a) Discuss the acoustic emission inspection with the help of schematic diagram.
(b) Explain the laser induced ultrasonic test system.

16 (a) List out the applications of
(i) Liquid Penetrate Inspection.
(ii) Magnetic Particle Inspection.
(b) State the applications of Eddy Current Testing.

17 (a) Write about the neutron radiography.
(b) Describe the surface texture analysis.

*****

Code No: 2845/CBCS

FACULTY OF ENGINEERING

B.E. (CBCS) (A.E) VIII - Semester (Main) Examination September 2020

Subject : Autotronics (Elective-II)

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

PART – A

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

1. State out need for electronics in automotive control system.
2. List out any 6 electronics components used in automobiles.
3. State few advantages of electronic ignition compared with the contact breaker system.
4. Discuss the difference between a hot and cold spark plug.
5. Describe what is meant by 'Engine management'.
6. Sketch to show an exhaust gas recirculation system.
7. Discuss few advantages of traction control system.
8. State the advantages of electromagnetic interference suppression.
9. List out the types of mirrors used in vehicles and importance.
10. State few advantages of air bags.

PART – B

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

11. a) Draw a graph showing the output signal of a Hall sensor used in an ignition distributor5
    b) Explain any three circuits used in automotive electronics.

12. a) Explain CRDI with help of neat sketch.
    b) Sketch and explain multi - point injection system

13. a) Explain combined ignition and fuel management system with help of block diagram.
    b) State any five digital control techniques.

14. a) Explain briefly active suspension system
    b) Describe the purpose of on-board diagnostics (OBD)

15. a) Describe briefly six features of a high-end ICE system.
    b) Explain central locking system.

16. a) Explain the structure of vehicle electronics systems.
    b) Explain MPFI with help of neat sketch

17. a) Explain Anti-lock Braking system with a neat sketch
    b) Describe, with the aid of a block diagram, the operation of a cruise control system

****