

(04 Hours)

Marks: 80

Instructions:

1. Question No. 1 is **Compulsory**.
2. Answer **any Three Questions** from the **remaining**.
3. Each **full question** carries **20 marks**.
4. **Assume** suitable data, if needed and **state** it clearly.
5. Use of **relevant IS codes** is **permitted**.

Q. 1 Answer **any four**.

- a) Explain the conditions for which an underground water tank is designed. 05
- b) Draw neat sketches showing the behavior of vertical stem wall and heel slab of counterfort retaining wall. What is the reason of providing vertical and horizontal ties in counterfort part? 05
- c) Write a note on open well staircase with a neat sketch. 05
- d) State various factors governing the seismic design. Explain any one factor. 05
- e) What are the advantages of pre-stressed concrete? 05

Q. 2 Design (4 m x 6 m) interior panel of a two-way continuous slab for a live load of 3000 N/m². Use M20 concrete and Fe415 steel. Draw neat sketch showing reinforcement details. Use limit state method. 20**Q. 3** Design a dog legged staircase for floor-to-floor height of 3.1 m subjected to live load of 3 kN/m² and floor finish of 1 kN/m². Available room size is (3.2 m x 5 m). Draw reinforcement details for both the flights. Use M20 grade of concrete and Fe415 steel. Use limit state method. 20**Q. 4** Design a RCC cantilever type retaining wall having a 5 m tall stem. The wall retains soil level with its top. The soil weighs 18000 N/m³ and has angle of repose of 30°. The safe bearing capacity of soil is 200 kN/m². Coefficient of friction between soil and concrete is 0.55. Use M20 concrete and Fe415 steel. Draw the reinforcement details. Use limit state method. 20**Q. 5** Answer the following

- a) Design a circular water tank resting on firm ground for the following particulars 10
Diameter of tank = 3.50 m
Depth of water – 3.00 m
Wall and base slab are not monolithic with each other
Specific weight of water = 9810 N/m³
Use M25 concrete and Fe415 steel. Use working stress method.
- b) What is the importance of ductile design and detailing in earthquake resisting structures? Discuss in detail. 10

Q. 6 Answer the following

- a) What are different types of losses in pre-stressed concrete? Explain loss due to creep of concrete. 10
- b) Write a short note on various joints in water tank. 10

Duration: 3 hrs

[Max Marks:80]

- N.B. : (1) Question No 1 is Compulsory.
(2) Attempt any three questions out of the remaining five.
(3) All questions carry equal marks.
(4) Assume suitable data, if required and state it clearly.

- 1 Attempt any FOUR [20]
a) Discuss the career opportunities in the field of Environmental management.
b) What is meant by disaster? Write a note on industrial Disaster.
c) Explain the concept of TQEM?
d) Define Renewable and Non-Renewable energy with examples.
e) What are the objectives of Wildlife (Protection) Act?
- 2 a) What is Sustainable Development? Elaborate on the need and goals of Sustainable Development. [10]
b) Describe the energy scenario in India. [10]
- 3 a) Discuss the role of Regulatory Agencies and Pollution Control Boards in obtaining Environmental Clearance for a Project. [10]
b) Discuss the loss of Biodiversity and also state the link between Biodiversity and Climate Change. [10]
- 4 a) What is Corporate Environmental Responsibility? Explain it. [10]
b) With reference to EMS, explain PDCA cycle with neat diagram. [10]
- 5 a) Write short note on:
(a) Atomic hazards
(b) Biomedical hazards [10]
b) Discuss the salient features of the Water (Prevention and Control of Pollution) Act. [10]
- 6 a) Define food chain and food web. What is ecological pyramid? Discuss different types of ecological pyramid. [10]
b) What is ISO 14000? What are the benefits of ISO 14000? Why it is important? [10]

(3 Hours)

(80 marks)

- N.B.: (1) Q. No. 1 is compulsory
 (2) Answer any THREE questions from the remaining questions.
 (3) Figures to the right indicate full marks.
 (4) Illustrate answers with neat sketches where ever required.

1. Write short note on. (Any Four) 20
- (a) Triple constraints
 - (b) Work Breakdown structure (WBS)
 - (c) Scope creep
 - (d) GANTT chart
 - (e) Goldratt's critical chain
 - (f) Lessons learned analysis

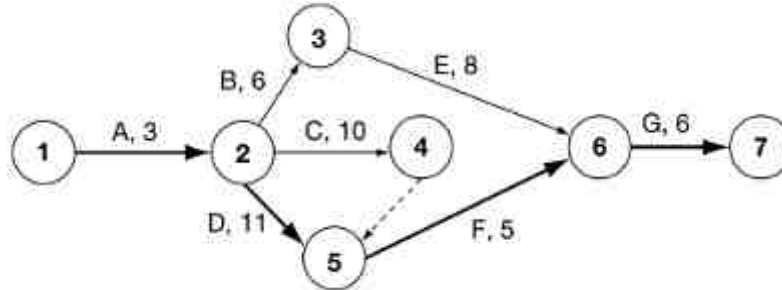
2. (a) Describe PM knowledge areas as per Project Management Institute (PMI) in brief. 10
- (b) Explain process for Project portfolio and Project Charter. 10

3. (a) The time estimates in weeks for the activities of a PERT network are given in Table below: 10

Activity	Optimistic time (to)	Most likely time (tm)	Pessimistic time (tp)
A-B	1	1	7
A-C	2	5	8
A-D	2	2	8
C-E	3	6	15
D-E	1	4	7
E-F	2	5	14
B-F	2	5	8

- (i) Draw the network diagram.
 - (ii) Calculate the earliest start (ES) and latest start (LS) for all the activities.
 - (iii) Determine the project completion time.
 - (iv) Calculate the standard deviation and variance of the project.
- (b) Explicate the Top down and bottoms up budgeting approach for a large project. 10

4. (a) Tabulate with example, the Risk response strategies for positive and negative risks in project management. 10
- (b) The total normal direct cost of a project is Rs 450 and its indirect cost is Rs 400. By crashing the activities, the indirect cost decreases by Rs 50 per day. The normal and crash costs with time are given in Table and the network diagram in Figure given below. Find the optimum project duration. 10



Activity	Normal		Crash	
	Time	Cost	Time	Cost
A	3	50	2	70
B	6	80	4	160
C	10	60	9	90
D	11	50	7	150
E	8	100	6	160
F	5	40	4	70
G	6	70	6	70

5. (a) Explicate Earned Value Management techniques for measuring value of work completed in the concerned project. 10
- (b) How ethics in projects are looked upon for successful government's project completion? Illustrate with suitable example. 10
6. (a) What are the four stages for team development and growth? Enlist the barriers for effective team management. 10
- (b) Discuss the reasons of project termination. Describe Process of project termination. 10
