

Total No. of Questions: 8]

SEAT No. :

PB2230

[6263]-67

[Total No. of Pages :2

B.E. (Civil Engineering)
DAMS AND HYDRAULICS STRUCTURES
(2019 Pattern) (Semester-VIII) (401011)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Answer Q.1 or Q.2, Q.3 or Q.4, Q5 or Q6, Q7 or Q8.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right indicate full marks.
- 4) Assume suitable data if necessary and state them in your answer clearly.
- 5) Use non-programmable pocket size electronic calculator is allowed.

- Q1)** a) Explain any one spillway with sketch. [5]
b) Explain main components of spillway. [5]
c) Explain the concept of energy dissipation below spillway. [7]

OR

- Q2)** a) Explain any one type of spillway gates. [5]
b) Explain the concept of energy dissipator & its importance. [5]
c) Design an ogee spillway for concrete gravity dam, for the following data. [7]
i) Average river bed level = 160 m
ii) Slope of D/S = 0.75H: 1V, u/s face is vertical
iii) Spillway crest RL = 265m
iv) Design discharge = 5750 m³/s
v) Spillway length is 6 spans with a clear length of 7 m each.
vi) Pier thickness = 2m.

- Q3)** a) Enlist different causes of failure of earthen dams and explain any one [5]
b) Define earthen dam & explain in details limitations of earth dam [5]
c) Explain various seepage control measures in earthen dam [8]

OR

P.T.O.

- Q4)** a) Explain types earth dam based on method of construction [5]
 b) Draw various component of earthen dam [5]
 c) Determine the factor of safety of downstream slope of (homogeneous section) an earth dam drawn to a scale of 1:650, for the following data:

[8]

Area of N-rectangle=20cm²

Area of T-rectangle=10cm²

Area of U-rectangle=5cm²

Length of slip circle arc=20cm

angle of internal friction=26°

cohesion $c = 24 \text{ kg/m}^2$

specific weight of soil=18 kN/m³

- Q5)** a) What are the advantages of canal lining [5]
 b) Explain the components of canal system with neat sketch [5]
 c) Explain design of canal by Kennedy's theory [7]

OR

- Q6)** a) What is canal? Explain any one types of canals based on function. [5]
 b) What is a Canal Fall? Explain any one types of canal fall. [5]
 c) Enlist & elaborate the steps in designing of trapezoidal lined canal. [7]

- Q7)** a) Explain the concept of weir. [5]
 b) Draw layout plan of diversion head works and label all its components [5]
 c) Explain in brief: [8]
 i) Super passage
 ii) Siphon aqueduct

OR

- Q8)** a) Explain the importance of exit gradient. [5]
 b) Explain lane's creep theories of seepage [5]
 c) Explain in brief: [8]
 i) Level crossing
 ii) Super passage

