Total No. of Questions : 12]

SEAT No. :

P5572

[Total No. of Pages : 3

[5561] - 514

B.E. (Civil) (Semester - II)

DAMS AND HYDRAULIC STRUCTURES

(2015 Pattern)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8, Q.9 or Q.10, Q.11 or Q.12.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***Use of electronic non-programmable calculator is allowed.***
5) ***Assume suitable data if necessary.***

Q1) Discuss the impact of climate change on a water resource project. **[6]**

OR

Q2) Differentiate between Large Dam and Small Dam. What will be your choice and why? **[6]**

Q3) a) Discuss various methods to reduce uplift pressure at the base of gravity dam. **[6]**

b) What are the factors affecting selection of arch dam? **[2]**

OR

Q4) a) What is elementary profile of a gravity dam? How it is modified to get practical profile? **[6]**

b) Enlist any four Load Combinations considered for design of gravity dam. **[2]**

P.T.O.

Q5) Draw a labeled sketch of ogee spillway showing all components. **[6]**

OR

Q6) Enlist types of spillway gates and explain anyone. **[6]**

Q7) a) State different corrections suggested by Khosla. Explain in detail the correction for mutual interference of piles. **[6]**

b) Determine the factor of safety of downstream slope of homogenous earth dam section drawn to a scale of 1 : 500 **[8]**

i) Length of slip circle arc = 15 cm

ii) Total area of N-Rectangles = 16.5 cm^2

iii) Total area of T Rectangles = 7 cm^2

iv) Total area of U - Rectangles = 5 cm^2

v) Angle of Internal friction = 26°

vi) Cohesion = 0.2 kg/cm^2

vii) Specific weight of soil = 1.8 kg/cm^3

c) Explain seepage failure of earthen dam. **[4]**

OR

Q8) a) Briefly explain different causes of failure of earthen dams. **[8]**

b) Differentiate between weir and barrage. **[4]**

c) With the help of expression explain '*Exit Gradient*'. Also give permissible values of it for various soils. **[6]**

Q9) a) What is a canal? Explain three types of canals based on function. **[8]**

b) Design an unlined alluvial canal section to carry a discharge of 10 m^3/s. The longitudinal slope is 1 in 4000 and the side slope is 0.5 H : 1 V. Use Lacey's theory and take silt factor f = 0.9. **[8]**

OR

Q10) a) Design an irrigation channel section to carry a discharge of 5 m^3/s. Assume N = 0.0225 and m = 1, Consider trial depth D = 1.0 m and channel bed slope as 0.0002. **[8]**

b) What is a Canal Fall? Discuss the necessity of it. **[4]**

c) Write a short note on : **[4]**

i) Canal Escape.

ii) Ogee Fall.

Q11) a) Explain necessity of cross drainage work. Explain Syphon Aqueduct in detail with neat sketch. **[4 + 4]**

b) What do you understand by river training work? What are the functions of marginal bunds? **[8]**

OR

Q12) a) Write a short note on : **[8]**

i) Super passage.

ii) Level crossing.

b) Explain in brief : **[8]**

i) Attracting groyne.

ii) Deflecting groyne.