P5572

[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]**

<p align="center">OR</p>

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]**

<p align="center">OR</p>

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]**

<p align="center">OR</p>

Q10) a) Design an irrigation channel section to carry a discharge of 5 m³/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]**

<div align="center">OR</div>

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.

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