Total No. of Questions :12]

SEAT No. :

P2962

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B.E. (Civil)

DAMS AND HYDRAULIC STRUCTURES

(2012 Course) (Semester - II) (End Sem.)

Time : 2½ Hours] *[Max. Marks :70*

Instructions to the candidates:

1) ***Answer any one from questions 1 or 2, 3 or 4, 5 or 6, 7 or 8, 9 or 10, 11 or 12.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right side indicate full marks.***
4) ***Assume suitable data if necessary.***

Q1) a) State the objectives regarding the instrumentation in dam safety. **[3]**

b) Differentiate between large dam and small dam. **[3]**

OR

Q2) a) What are the types of arch dams? Write the merits and demerits of arch dams. **[3]**

b) What factors govern the selection of type of dam? **[3]**

Q3) a) State any three forces acting on gravity dam and write their equations. **[3]**

b) Write short note on: **[3]**

i) Constrution Joint.

ii) Drainage Gallery.

OR

Q4) a) Write a note on galleries in gravity dam with respect to location, size, shape and function. **[3]**

b) Write short note on buttress dams. **[3]**

P.T.O.

Q5) a) Draw neat sketch of any one type of spillway gate and explain. **[4]**

b) Write short note on safety and maintenance of spillway gate. **[4]**

OR

Q6) a) Explain pumped storage type of hydro-electric power plant. **[4]**

b) Write advantages and limitations of hydro power plant. **[4]**

Q7) a) Explain Swedish slip circle method of stability analysis with neat sketch. **[8]**

b) Write note on Khosla's theory application for design of structure on permeable foundations. Also explain the importance of exit gradient. **[8]**

OR

Q8) a) Explain Bilgh's theory of seepage with neat sketch. State its limitations. **[8]**

b) Determine the factor of safety of downstream slope of (homogenous section) an earthen dam drawn to a scale of 1:750 for the following data. **[8]**

i) Area of N- rectangle = 20 cm^2

ii) Area of T- rectangle = 10 cm^2

iii) Length of slip circle arc = 20 cm^2

iv) Angle of internal friction = 26^o

v) Cohesion C' = 4000 Kg/m^2

vi) Specific weight of soil = 1760 Kg/m^3

Q9) a) How irrigation canals are classified? Also describe the various considerations made in the alignment of an irrigation canal. **[8]**

b) Design an irrigation canal in alluvial soil according to lacey's factor theory. **[8]**

i) Full supply discharge = 12 m^3/s,

ii) Lacey's silt factor = 1,

iii) Channel side slope = 1/2:1

OR

Q10)a) State various types of canal falls and explain any one with the help of neat sketch. **[8]**

b) Explain the procedure of designing cross regulator. **[8]**

Q11)a) Write short note on: **[10]**

i) Launching Aprons,

ii) Stepped fall,

iii) Weir type escape,

iv) Hokey head groynes,

v) River training work.

b) What is Groynes? State the classification of Groynes. **[8]**

OR

Q12)a) Write short note on: **[10]**

i) Pipe aqueduct,

ii) Super passages,

iii) Syphon aqueduct,

iv) Level crossing,

v) Inlet and outlet.

b) What do you mean by C.D. works? Write the factors for selection of C.D. Works. Also explain design considerations of it. **[8]**

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