Total No. of Questions :12]

SEAT No. :

P3246

[Total No. of Pages :3

[5670]-514
B.E. (Civil)
DAMS AND HYDRAULIC STRUCTURES
(2015 Pattern) (Semester-II) (401007) (End Sem.)

Time : 2½Hours] *[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.9or Q.10, Q11 or Q12***
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.***

Unit-I

Q1) State various objectives of dam safety and instrumentation. Also state instrument used to measure seepage. **[4+2]**

OR

Q2) Enlist the types of dams based on purpose. Explain any one in detail. **[3+3]**

Unit-II

Q3) What is elementary profile of gravity dam? Explain with the help of diagram, how it is modified to practical profile. **[2+2+4]**

OR

Q4) What is buttress dam? State advantages and limitations of buttress dam.**[2+3+3]**

Unit-III

Q5) What do you mean by auxiliary spillway, service spillway and emergency. spillway? **[2+2+2]**

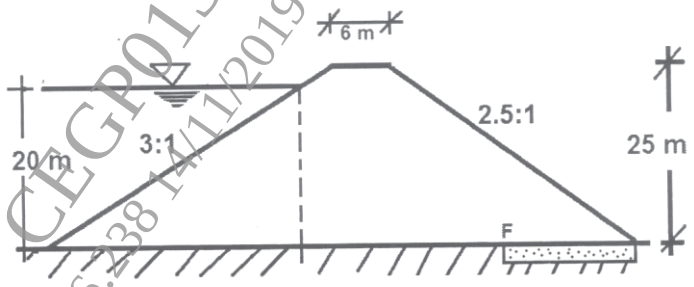
OR

Q6) What is a spillway gate? Briefly explain any two types of gates. **[6]**

P.T.O.

Unit-IV

Q7) a) The adjoining figure shows section of a homogeneous earthen dam. Determine the Phreatic line. Take the interval of x-coordinates as 10 m for calculations. Show the line clearly on neatly drawn section of earth dam. Take length of filter as 25m. Also find seepage discharge if $K=4x10^{-6}m/s$. **[10]**



b) State the corrections suggested by Khosla. Explain in detail the correction for thickness of floor for intermediate sheet pile. **[4+4]**

OR

Q8) a) Draw layout plan of diversion head works and label all its components and write functions of each components. **[8]**

b) What are different seepage control measures taken for the earthen dam for the seepage through embankment and through foundation. **[10]**

Unit-V

Q9) a) What are the guidelines for design of a canal alignment to optimize cost. **[8]**

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

i) Full supply discharge=$15m^3/s$

ii) Lacey's silt factor =1

iii) Channel side slope=½H:1V

OR

Q10)a) Differentiate between design of canal by kennedy's theory and Lacey's regime theory. **[8]**

b) What is canal Fall? State different types of canal falls with neat sketches. Explain any one. **[8]**

Unit-VI

Q11)a) Suggest a suitable cross drainage work for the following situation. Explain it with neat sketch-River bed level and high flood level is in between canal bed level and full supply level. **[2+6]**

b) Enlist objective of river training works. State and explain any three river training works in detail. **[2+6]**

OR

Q12)a) What are the cross drainage works? Explain siphon aqueduct with neat sketch. **[2+6]**

b) Write a short note on: **[4+4]**

i) Guide Bunds

ii) Pitched island