Roll No. ☐☐☐☐☐☐☐☐☐☐☐☐☐   Total No. of Pages : 02

Total No. of Questions : 18

B.Tech. (CE) (2012 to 2017)   (Sem.–7)
HYDROLOGY AND DAMS
Subject Code : BTCE-817
M.Code : 71876

Time : 3 Hrs.   Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :
1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

Answer briefly :

1. What does point rainfall refers to?

2. Name various recording rain gauges.

3. Distinguish between depression storage and interception.

4. What are the various methods of base flow separation?

5. What are the limitations of unit hydrograph?

6. List various forces acting on gravity dam.

7. State major difference between Arch and Gravity dam.

8. What do you mean by phreatic lines?

9. List advantages of Buttress dam.

10. List advantages of gated spillways.

SECTION-B

11. Explain briefly the following relationships relating to the precipitation over a basin :

    a) Depth- Area relationship

    b) Maximum Depth- Area -Duration curves.

    c) Intensity-Duration-Frequency relationship.

12. List the factors affecting infiltration process. Enumerate various types of infiltrometers.

13. List the various assumptions made in the two dimensional design of gravity dams. Enumerate analytical method of two dimensional analysis for analysis of stability of dam.

14. Distinguish between constant radius and constant angle layouts of an arch dam. Obtain the value of the best central angle for the latter.

15. Enumerate different types of buttress dams and explain as to how a slab type of buttress dam differs in its design as compared to a concrete gravity dam?

SECTION-C

16. A basin has 400 sq. km of area, L = 35 km and Lca = 10 km. Assuming Ct = 1.5 and Cp = 0.70 develop a 3-h synthetic unit hydrograph for this basin using Synder's method.

17. a) Enumerate Gumbel's method.

    b) Flood frequency computations for the river Chambal at Gandhinagar dam by using Gumbel's method, yielded the following results :

Return period T (years)	Peak Flood (m^3/s)
50	40809
100	46300

    Estimate the flood magnitude in this river with a return period of 500 years.

18. How would you proceed to determine the phreatic line through homogenous earthen dams provided :

    a) With a horizontal filter

    b) Without a horizontal filter?

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.