JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST - 1 EXAMINATION- 2023

B.Tech. - VII Semester (CE)

COURSE CODE(CREDITS): 18B1WCE736 (3) MAX. MARKS: 15

COURSE NAME: Dam and Reservoir Design

COURSE INSTRUCTORS: Saurabh Rawat MAX. TIME: 1 Hour

Note: *(a)All questions are compulsory.*

(b)Marks are indicated against each question in square brackets.

(c) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

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Q1) Based on the classification of dams, explain the following:

a) Dam classification based on use

b) Dam classification based on hydraulic design ***CO1*** **[1+1 = 2]**

Q2) A contour survey of a reservoir site gives the following data:

Contour value	**Area**
At 200 m contour	6.0 hectares
At 210 m contour	18.1 hectares
At 220 m contour	34.0 hectares

The capacity of the reservoir up to 200 m elevation is found to be 14.1 ha. m. Determine the general equation for the area – elevation curve and capacity – elevation curve. ***CO2*** **[4]**

Q3) With the help of a neat and labelled diagram, explain the storage zones of a reservoir. Also derive the relationship for 'effective storage for flood mitigation'. ***CO1***; ***CO2*** **[2+1 = 3]**

Q4) The lowest portion of the capacity – elevation curve of a proposed irrigation reservoir, draining 20 km^2 of catchment is represented by the following data:

Elevation in m	**Capacity in ha. m**
RL 600	24.2
602	26.2
604	30.3
606	36.8

The rate of silting for the catchment has been assessed to be 300 m^3/km^2/year. Assuming the life of the reservoir to be 50 years. Compute the dead storage and lowest sill level (LSL), if the main canal is 6 km long with a bed slope of 1 in 1000 and the canal bed level at the tail end is at RL 594.5 m. The full supply depth of the canal at the head is 80 cm. The crop water requirement is assessed as 250 ha. m.

If the dependable yield of the catchment is estimated to be 0.29 m, what will be the gross capacity of the reservoir? ***CO1***; ***CO2*** **[2+2+2 = 6]**