Bachelor of Engineering
Eighth Semester Main Examination, June-2021
DESIGN OF HYDRAULIC STRUCTURES (CE-801)
Branch-Civil

Time: 3:00 Hrs   **Max Marks 70**

Note: -   **Attempt any five questions. All questions carry equal marks.**
         Assume suitable data if necessary and state them clearly
         Answer should be precise and to the point only.

Q.1   (a) What are the principal components of a hydroelectric scheme? Discuss the Utility of each component.
         (b) Discuss briefly the various types of energy dissipaters used under different relative Positions of T.W.C. and J.H.C.

Q.2   (a) What is meant by reservoir? What is its use?
         (b) What are the causes of failure of earth dam?

Q.3   (a) Describe the brief various investigations required for reservoir planning.
         (b) How will you calculate the capacity of reservoir by mass inflow and mass demand curves?

Q.4   (a) Discuss practical profile of gravity dam. Discuss step by step the analytical procedure, adopted for analysis of stability of gravity dam.
         (b) What is meant by energy dissipaters? Explain energy dissipaters for various cases with basic principle of energy dissipater?

Q.5   Design the floor on Bligh's theory using coefficient of creep=10. Sketch the longitudinal section of fall. Check the design by Khosla's theory and make changes if necessary. Safe exit gradient may be taken equation to 1/5.

Q.6   Write short notes on the following. (any two)
         (a) Rock fill Dams
         (b) Life of Reservoir
         (c) Weir and Barrage
         (d) Purpose of Galleries

Q.7   (a) Explain Rock Fill dam? And Discuss soil suitable for earthen dam?
         (b) What is the purpose of providing Canal Structure?

Q.8   (a) Explain the design details of a "Syphon Spillway"
         (b) List Different turbines used in Hydro power Station and Mention their selection criteria.

Bachelor of Engineering
Eighth Semester Main Examination, June-2021
TRANSPORTATION BRIDGES AND TUNNELS (CE-802)
Branch-Civil

Time: 3:00 Hrs   **Max Marks 70**

Note: -   **Attempt any five questions. All questions carry equal marks.**
         Assume suitable data if necessary and state them clearly
         Answer should be precise and to the point only.

Q.1   (a) Explain briefly the different types of station yards
       (b) Explain the Transition curve and why it is necessary in railway track. Write down equation for setting this curve.

Q.2   (a) What are the objects of signaling? Describe engineering principles of signaling and explain the different types of signals used in the station yard.
       (b) Explain the economical span of a bridge. Mention the forces acting on a pier

Q.3   (a) What is Dead load? Mention some of important empirical formulas which are used to find it.
       (b) Write short note on- (Any Five)
           • Afflux and its importance,   • Lining of tunnel,
           • Depth of bridge of foundation,   • Shape and size of tunnel
           • Alignment of a bridge,   • The erection of bridges, strengthening
           • Types of Railway Bridge,   of bridges

Q.4   (a) Explain the different types of Railway Bridges with the help of neat sketches.
       (b) Describe the various method of hard rock tunneling and mention the advantages and disadvantages of each of them

Q.5   (a) Explain the various types of coffer dams, where they are constructed also write down procedure of construction
       (b) Explain pile foundation and well foundation for bridges with the neat sketches. Also discuss procedure of sinking of wells.

Q.6   (a) Discuss in brief the various tractions on railways.
       (b) Describe briefly the suitability of various materials which are commonly used as ballast in a railway track.

Q.7   (a) What is Creep? Discuss the theories propounded to explain probable causes of creep and what are the effects of creep?
       (b) Define gauge of Indian railway track. Enumerate different gauges used in India and discuss their suitability at different locations?

Q.8   (a) What is cant deficiency?
       (b) Draw a neat diagram of simple right hand turnout and show its various component parts?

Bachelor of Engineering
Eighth Semester Main Examination, June-2021
STRUCTURAL DESIGN-III (CE-803)
Branch-Civil

<u>**Time: 3:00 Hrs**</u>   <u>**Max Marks 70**</u>

Note: -   **Attempt any five questions. All questions carry equal marks.**
           Assume suitable data if necessary and state them clearly
           Answer should be precise and to the point only.

Q.1   (a) Design an elevated rectangular tank having a capacity of 125000 liters. The tank is open at the top the height of staging is 12m up to the top of the column. Sketch the details.
       (b) Write detailed notes on the following:-
       (i) Design of pressed steel tank   (ii) Design of stand pipe.

Q.2   Discuss the design of chimney base? A self-supporting steel chimney is of height 50m above foundation and its diameter at top is 4.0m. thickness of fire brick lining is 115 mm and this is supported by chimney has two breech openings. The chimney is situated in Indore the topography of the site is flat and the location is of terrain category 2.compute wind loads on different zones of chimney and design plates of lowest zones.

Q.3   (a) What is Retaining Wall? Describe various type and structural behavior of retaining wall? Describe various types of Foundation? Design Raft Foundation with neat sketch?
(b) Define the following: - (1) End bearing for steel bridges (2) Types of trusses

Q.4   (a) Write the steps of designing of hopper portion of silo.
(b) Write short note on:- (1) lining material used for chimney (2) Analysis of towers

Q.5   (a) Write details notes on roller bearing and rocker bearing?
(b) Write design steps with all technical details of pressed steel tank?

Q.6   (a) Write difference between bunker and silo?
(b) Discuss the component of bunker and Design of stiffness in bunker.

Q.7   (a) Design the container of a circular hemispherical bottom water tank for capacity of 175000 liters. Sketch the details.
(b) Write the difference between self-supporting and guyed chimney?

Q.8   (a) Write a short on wind load, calculation for chimney?
(b) Design coal bunker to hold 35 metric tons coals, unit weight of coal is 12KN/M3 and angle of friction is 30°. Sketch the details?

<u>**Time: 3:00 Hrs**</u>   **Max Marks 70**
Note: - Attempt any five questions. All questions carry equal marks.
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Q.1   (a) Explain reservoir operations? How linear programming is useful in water resource management. Discuss with examples
(b) What is importance of linear Programming in system? Analysis of water resources?

Q.2   (a) How dynamic programming is used in resource a location?
(b) Explain the use of DP in reservoir? Describe briefly project of optimality analysis?

Q.3   (a) Explain linear decision rule in system analysis?
(b) Explain flood management techniques in details.

Q.4   (a) Describe the concept of Correlogram? Explain network method their application and limitations.
(b) Write short note on:-
(i) Recording type rain gauge   (ii) Risk analysis   (iii) Depth area duration.

Q.5   (a) Describe updating of network and Probable making flood?
(b) What is Hydrology? Explain S-Curve with sketch?

Q.6   (a) Explain briefly channel routing Muskingum Method?
(b) Describe flood routing? Through Reservoir in details.

Q.7   (a) What do you mean by Rain-gauge? Explain any non-recording type rain gauge?

(b) Explain in details depth area duration analysis?

Q.8   (a) Explain network method, utility in decision making?
       (b) How simplex method is carried out in system analysis?