

## FACULTY OF ENGINEERING AND TECHNOLOGY

BE(Civil) Examination - DEC – 2014

## Water Resources Engg-II(Revised)

[Time: THREE Hours]

[Max. Marks: 80]

“Please check whether you have got the right question paper.”

N.B

- 1) Q.1 and Q.6 are compulsory.
- 2) Answer any two questions from each section A & section B from remaining questions.
- 3) Assume suitable data if necessary.
- 4) Figures to the right indicate full marks.

## SECTION A

- |           |   |    |
|-----------|---|----|
| Q.1       | a) Discuss in brief various investigations required for reservoir planning.   | 05 |
|           | b) What are the various factors on which the selection of the site of a reservoir depend?   | 05 |
| Q.2       | a) Explain briefly with neat sketches the different forces that may act on a gravity dam. Indicate their magnitudes, directions and locations.  | 08 |
|           | b) What do you understand by the elementary profile of a gravity dam? Derive expression for determining base width of such a dam based on   | 07 |
|           | i) Stress criteria.   |    |
|           | ii) Sliding criteria.   |    |
| Q.3       | a) Discuss in brief the causes of failure of earth dams.  | 07 |
|           | b) What are the uses of flow net in an earth dam? Explain the method of construction of flow net? What are the properties of the flow net?  | 08 |
| Q.4       | a) State the conditions under which you would recommend the construction of an ‘arch dam’. Draw neat sketches of various methods of layout of an arch dam.  | 08 |
|           | b) Enumerate the 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.   | 07 |
| Q.5       | a) Briefly explain the functions of drainage gallery provided in gravity dam.   | 08 |
|           | b) Write short on ‘earthquake force on dams.’   | 07 |
| SECTION B |   |    |
| Q.6       | a) Discuss the location of the ‘main spillway’ and ‘subsidiary spillway’ in gravity dams as well as in earthen dams.  | 05 |
|           | b) What is the difference between a weir and barrage?   | 05 |
| Q.7       | a) Discuss in brief with neat sketches the construction and functioning of a ‘Radial Gate’ and ‘Drum Gate’.   | 08 |
|           | b) Enumerate the different types of spillways and draw neat sketches for all the types showing the different parts of each.   | 07 |
| Q.8       | a) Explain the salient features of Kennedy’s theory and mention its limitations.  | 08 |
|           | b) Design an irrigation channel to carry 40 cumecs of discharge with B/D.i.e base width to depth ratio as 2.5. the critical velocity ratio is 1.0. assume a suitable value of kutters rugosity coefficient and use Kennedy’s method | 07 |
| Q.9       | a) Write short note on:   | 08 |
|           | i) Siphon   | 07 |
|           | ii) Siphon aqueduct   |    |
|           | b) Briefly explain khoslas theory and how is it used in design of weir on permeable foundation?   |    |
| Q.10      | a) Write short note on Bligh’s creep theory   | 07 |
|           | b) Draw a neat sketches illustrating each of the following types of canal outlets   | 08 |
|           | i) Non-modular  |    |
|           | ii) Semi –modular   |    |
|           | iii) Rigid module.  |    |