

17502

15116**3 Hours / 100 Marks**

Seat No.

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- Instructions :** (1) All Questions are *compulsory*.
 (2) Illustrate your answers with neat sketches wherever necessary.
 (3) Figures to the right indicate full marks.
 (4) Assume suitable data, if necessary.
 (5) Use of Non-programmable Electronic Pocket Calculator is permissible.
 (6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks**1. Attempt any TEN :****20**

- Define water spread area.
- Define crop rotation.
- Define Rainfall.
- State the meaning of yield of drainage basin.
- State any two purposes of canal lining.
- Enlist any four types of material used for canal lining.
- State any two limitations of Bhandhara Irrigation.
- State any two advantages of Bhandhara Irrigation.
- State any two advantages of spillway gates in Dam.
- Classify Irrigation project based on purpose with one example each.
- State any two ill effects of Irrigation.
- Define command area.
- Define flood absorption capacity.

2. Attempt any FOUR :**16**

- Enlist any eight advantages of Irrigation.
- List any eight factors affecting on Duty.

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- (c) Differentiate between practical profile & theoretical profile of Dam with sketch.
- (d) Explain how Percolation Tank differs from Irrigation tank.
- (e) Distinguish between weir & barrages.
- (f) Design the section of an unlined channel from following data :

$$Q = 60 \text{ m}^3/\text{sec.} \quad V = 1.2 \text{ m/sec.} \quad \frac{B}{D} = 6, N = 0.0225$$

3. Attempt any TWO : 16

- (a) Draw a typical cross section of Earthen Dam showing all its components and state the functions of any four components.
- (b) State the joints used in construction of Gravity Dams. Explain the joints with sketch.
- (c) State the various cropping seasons in Maharashtra State with their period & common crops taken.

4. Attempt any FOUR : 16

- (a) State the factors which affect runoff and maximum flood discharge.
- (b) Derive a relation between Duty, Delta and Base period.
- (c) State the purpose of spillway in a Dam. Name the different types of spillways.
- (d) State the four advantages of Drip Irrigation.
- (e) What is meant by weir ? State the different types of weir.
- (f) State the points to be considered while fixing alignment of canal.

5. Attempt any FOUR : 16

- (a) Differentiate between surface irrigation and lift irrigation.
- (b) State the considerations for the selection of a site for Bhandhara.
- (c) Explain Thiessen's polygon method for calculating the average rainfall.
- (d) A tank has a catchment area of 150 km^2 of which 30 km^2 is independent. The average annual rainfall of the catchment is 85 cm. The runoff of average bad year is 20% of the rainfall for an average bad year. The runoff from the intercepted catchment available for this tank is 20% of actual runoff. Calculate the assured yield.

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- (e) Draw a layout of typical barrage & show all component part of it.
- (f) Enlist the various data required for calculation of design discharge.

6. Attempt any FOUR :

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- (a) State four advantages of lining of a canal.
 - (b) State the properties of good lining material.
 - (c) Give functions of the following :
 - (i) Divide wall
 - (ii) Scouring sluices
 - (iii) Fish ladder
 - (iv) Stilling Pond
 - (d) State merits of Gravity Dam over Earthen Dam.
 - (e) Enlist the various forces acting on Gravity Dam.
 - (f) Discuss the relative merits & demerits of sprinkler irrigation.
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