Code No: **R41012** **R10** **Set No. 1**

**IV B.Tech I Semester Regular/Supplementary Examinations, Nov/Dec - 2015**

# DESIGN AND DRAWING OF IRRIGATION STRUCTURES

**(Civil Engineering)**

**Time: 3 hours** **Max. Marks: 75**

**Note: Answer any ONE of the following two questions**
**Assume any other data if required**
**Khosla curves are allowed**
*********

1. Design a surplus weir for an irrigation tank with the following particulars. Draw suitable and appropriate views on drawing sheet.

   | | |
   |---|---|
   | Flood to be discharged from tank | : 80 $m^3$ |
   | Full water level in the tank | : +12.00 m |
   | Maximum water level in the tank | : +12.75 m |
   | The general ground level | : +11.00 m |
   | Top width of the tank bund | : 1.8 m |
   | Top level of the tank bund | : + 14.50 |
   | Slopes of the bund on either sides | : 2:1 |

   Assume any additional data if required, suitably.

**(OR)**

2. Design and draw a trapezoidal notch fall for a canal system with the following details. Any missing data may suitably assumed.

   | | |
   |---|---|
   | Full supply discharge | : 62.5 $m^3$/sec (US/DS) |
   | Full supply level | : 240m US / 238m DS |
   | Full supply depth | : 2.0m(US/DS) |
   | Bed width | : 18 m(US/DS) |
   | Bed level | : 238m US/236m DS |
   | Drop | : 2m |

Code No: **R41012** **R10** **Set No. 2**

**IV B.Tech I Semester Regular/Supplementary Examinations, Nov/Dec - 2015**

# DESIGN AND DRAWING OF IRRIGATION STRUCTURES

**(Civil Engineering)**

**Time: 3 hours** **Max. Marks: 75**

**Note: Answer any ONE of the following two questions**
**Assume any other data if required**
**Khosla curves are allowed**
*********

1. The details of a canal regulator are given below. Design the regulator and draw important views on a separate drawing sheet

| | |
|---|---|
| Flow in Main canal | : 90 cumecs |
| Flow in distributor | : 20 cumecs |
| FSL of Main canal | : 218m US / 217.80 DS |
| Bed width of main canal | : 40m US /38m DS |
| Depth of water in main canal | : 2.5m US/2.5m DS |
| Depth of water in distributor | : 1.5m |
| Bed width of distributor | : 15m |
| FSL of distributor | : 217m |

**(OR)**

2. Define a syphon aqueduct. Design a siphon aqueduct type III for the data given below. Draw important views on a separate drawing sheet.

***Canal***

| | |
|---|---|
| Discharge of the canal | : 42 cumecs |
| Bed width of canal | : 20 m |
| Depth of water in canal | : 1.5m |
| Bed level of canal | : 160m |

***Drainage***

| | |
|---|---|
| Flood discharge | : 200 cumecs |
| High flood level | : 160.5 m |
| Bed level of drainage | : 158m |
| General ground level | : 160m |

Code No: **R41012** **R10** **Set No. 3**

**IV B.Tech I Semester Regular/Supplementary Examinations, Nov/Dec - 2015**

**DESIGN AND DRAWING OF IRRIGATION STRUCTURES**

**(Civil Engineering)**

**Time: 3 hours** **Max. Marks: 75**

**Note: Answer any ONE of the following two questions**
**Assume any other data if required**
**Khosla curves are allowed**
*********

1. A sluice from an irrigation tank serves 350 hectares at 1200 duty. The tank details and sluice details are given below. Assume any missing data suitably.

| | |
|---|---|
| Top width of the tank bund | : 2.00 m |
| Full water level | : +37.00 m |
| Maximum water level | : +38.00 m |
| Top level of bund | : + 40.00 m |
| Ground level at site | : + 35.00 m |
| The sill level of sluice | : +34.00 m |
| The channel bed level | : +34.00 m |
| Full supply depth in channel | : 60 cm |
| Bed width of the channel | : 1.5 m |
| Top level of side banks | : +36.00 m |
| Side slopes of banks | : 1.5: 1 |

Design tank sluice with tower head and draw important views.

**(OR)**

2. Design a trapezoidal notch fall for the following data. Assume important missing data. Draw the important views on a drawing sheet

| | |
|---|---|
| Full supply discharge | : 20 $m^3$/sec (US/DS) |
| Full supply level | : 101m US/100m DS |
| Full supply depth | : 2 m US/ 2 m DS |
| Bed width | : 10m US/10m DS |
| Bed level | : 99 m US / 98 m D/S |
| Drop | : 1m |

Code No: **R41012** **R10** **Set No.4**

**IV B.Tech I Semester Regular/Supplementary Examinations, Nov/Dec - 2015**

# DESIGN AND DRAWING OF IRRIGATION STRUCTURES

**(Civil Engineering)**

**Time: 3 hours** **Max. Marks: 75**

**Note: Answer any ONE of the following two questions**
**Assume any other data if required**
**Khosla curves are allowed**
*********

1. Design a canal regulator for the following data. Draw important views on a separate drawing sheet

| | |
|---|---|
| Discharge of parent channel | : 120 $m^3$/sec |
| Discharge in distributor | : 30 $m^3$/sec |
| FSL of parent channel | : 218m US / 217.80 DS |
| Bed width of parent channel | : 52m US /49 m DS |
| Depth of water in parent channel | : 2.5m US/2.5m DS |
| Depth of water in distributor | : 1.5m |
| Bed width of distributor | : 15m |
| FSL of distributor | : 217m |

**(OR)**

2. Design a Type III siphon aqueduct for the data given below. Draw important views on a separate drawing sheet.
Assume any missing data suitably

| | |
|---|---|
| Discharge of the canal | : 60 cumecs |
| Bed width of canal | : 20 m |
| Depth of water in canal | : 2m |
| Bed level of canal | : 160m |
| Flood discharge | : 320 cumecs |
| High flood level | : 161.5 m |
| Bed level of drainage | : 158m |
| General ground level | : 160m |