Code No: RR310102 | **RR** | | **Set No. 2** |

III B.Tech I Semester Examinations,November 2010
WATER RESOURCES ENGINEERING-I
Civil Engineering

Time: 3 hours Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks
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1. (a) Explain how evapotranspiration can be estimated using Blaney-criddle and Thornth waite equation.

   (b) Define infiltration and percolation. What are the factors affecting infiltration.
   [8+8]

2. (a) Describe national water policy, briefly mention its salient features. Why is it being revised.

   (b) What is irrigation. What has been its impact on human environment. [8+8]

3. (a) What do you mean by diversion head works. Describe various investigations required for diversion head works.

   (b) What are the functions of canal head regulator. Discuss the general design considerations of a head regulator. [8+8]

4. (a) Distinguish between
      i. Confined aquifer and unconfined aquifer
      ii. Artesian well and flowing well
      iii. Aquifer and Aquifuge.

   (b) The elevation of water table in an unconfined aquifer at two locations separated by a distance of 100 m is 1026.2 m and 1025.0 m respectively. If the permeability of the aquifer is 12 m/ day and porosity is 15%, what is the actual velocity of flow in the aquifer. [9+7]

5. (a) What are different types of earth lining. Discuss.

   (b) Derive an expression for the silt supporting capacity of a channel according to Kennedy's theory. [8+8]

6. (a) Explain the factors on which duty depends.

   (b) Determine the frequency of irrigation at the following stage of growth of crop
   [8+8]

Field capacity of soil	=	30%
Permanent wilting point	=	10%
Effective root zone depth	=	0.75 m
Consumptive use	=	12 mm/day
Apparent specific gravity of soil	=	1.6.

1

7. (a) What do you understand by critical gradient. What will happen if the critical gradient is exceeded. What is Khoslas safe exit gradient.

   (b) Explain how Khoslas theory is modification over Bligh's theory. [8+8]

8. (a) What is a master depletion curve. How it is constructed and used to separate base flow from total runoff.

   (b) The following are the ordinates of the hydrograph of flow from a catchment area of 770 km^2 due to 6 hr rainfall. Derive the ordinates of 6 hr unit hydrograph. Assume a constant baseflow of 40 m^3/sec. [8+8]

Time (hr)	0	6	12	18	24	30	36	42	48	54	60	66	72
Discharge (m^3/sec)	40	65	215	360	400	350	270	205	145	100	70	50	42

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2

Code No: RR310102 $\boxed{\textbf{RR}}$ $\boxed{\textbf{Set No. 4}}$

III B.Tech I Semester Examinations,November 2010
WATER RESOURCES ENGINEERING-I
Civil Engineering

Time: 3 hours Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks
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1. (a) Explain the factors on which duty depends.

   (b) Determine the frequency of irrigation at the following stage of growth of crop
   [8+8]

Field capacity of soil	=	30%
Permanent wilting point	=	10%
Effective root zone depth	=	0.75 m
Consumptive use	=	12 mm/day
Apparent specific gravity of soil	=	1.6

2. (a) What are different types of earth lining. Discuss.

   (b) Derive an expression for the silt supporting capacity of a channel according to Kennedy's theory. [8+8]

3. (a) Distinguish between
      i. Confined aquifer and unconfined aquifer
      ii. Artesian well and flowing well
      iii. Aquifer and Aquifuge.

   (b) The elevation of water table in an unconfined aquifer at two locations separated by a distance of 100 m is 1026.2 m and 1025.0 m respectively. If the permeability of the aquifer is 12 m/ day and porosity is 15%, what is the actual velocity of flow in the aquifer. [9+7]

4. (a) What do you understand by critical gradient. What will happen if the critical gradient is exceeded. What is Khoslas safe exit gradient.

   (b) Explain how Khoslas theory is modification over Bligh's theory. [8+8]

5. (a) Describe national water policy, briefly mention its salient features. Why is it being revised.

   (b) What is irrigation. What has been its impact on human environment. [8+8]

6. (a) What is a master depletion curve. How it is constructed and used to separate base flow from total runoff.

   (b) The following are the ordinates of the hydrograph of flow from a catchment area of 770 km^2 due to 6 hr rainfall. Derive the ordinates of 6 hr unit hydrograph. Assume a constant baseflow of 40 m^3/sec. [8+8]

Time (hr)	0	6	12	18	24	30	36	42	48	54	60	66	72
Discharge (m^3/sec)	40	65	215	360	400	350	270	205	145	100	70	50	42

3

$\boxed{\textbf{RR}}$ $\boxed{\textbf{Set No. 4}}$

7. (a) Explain how evapotranspiration can be estimated using Blaney-criddle and Thornth waite equation.

   (b) Define infiltration and percolation. What are the factors affecting infiltration. [8+8]

8. (a) What do you mean by diversion head works. Describe various investigations required for diversion head works.

   (b) What are the functions of canal head regulator. Discuss the general design considerations of a head regulator. [8+8]

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FIRSTRANKER

Code No: RR310102 | **RR** | **Set No. 1**

III B.Tech I Semester Examinations,November 2010
WATER RESOURCES ENGINEERING-I
Civil Engineering

Time: 3 hours   Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks
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1. (a) What do you understand by critical gradient. What will happen if the critical gradient is exceeded. What is Khoslas safe exit gradient.

   (b) Explain how Khoslas theory is modification over Bligh's theory.   [8+8]

2. (a) What do you mean by diversion head works. Describe various investigations required for diversion head works.

   (b) What are the functions of canal head regulator. Discuss the general design considerations of a head regulator.   [8+8]

3. (a) Explain how evapotranspiration can be estimated using Blaney-criddle and Thornth waite equation.

   (b) Define infiltration and percolation. What are the factors affecting infiltration.
                                                                                [8+8]

4. (a) Distinguish between
        i. Confined aquifer and unconfined aquifer
       ii. Artesian well and flowing well
      iii. Aquifer and Aquifuge.

   (b) The elevation of water table in an unconfined aquifer at two locations separated by a distance of 100 m is 1026.2 m and 1025.0 m respectively. If the permeability of the aquifer is 12 m/ day and porosity is 15%, what is the actual velocity of flow in the aquifer.   [9+7]

5. (a) What is a master depletion curve. How it is constructed and used to separate base flow from total runoff.

   (b) The following are the ordinates of the hydrograph of flow from a catchment area of 770 km^2 due to 6 hr rainfall. Derive the ordinates of 6 hr unit hydrograph. Assume a constant baseflow of 40 m^3/sec.   [8+8]

Time (hr)	0	6	12	18	24	30	36	42	48	54	60	66	72
Discharge (m^3/sec)	40	65	215	360	400	350	270	205	145	100	70	50	42

6. (a) Explain the factors on which duty depends.

   (b) Determine the frequency of irrigation at the following stage of growth of crop
                                                                                [8+8]

Field capacity of soil	=	30%
Permanent wilting point	=	10%

5

Effective root zone depth	=	0.75 m	
Consumptive use	=	12 mm/day	
Apparent specific gravity of soil	=	1.6.	

7. (a) What are different types of earth lining. Discuss.

   (b) Derive an expression for the silt supporting capacity of a channel according to Kennedy's theory. [8+8]

8. (a) Describe national water policy, briefly mention its salient features. Why is it being revised.

   (b) What is irrigation. What has been its impact on human environment. [8+8]

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Code No: RR310102 | **RR** | **Set No. 3**

III B.Tech I Semester Examinations,November 2010
WATER RESOURCES ENGINEERING-I
Civil Engineering

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks
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1. (a) Distinguish between
    i. Confined aquifer and unconfined aquifer
    ii. Artesian well and flowing well
    iii. Aquifer and Aquifuge.
   (b) The elevation of water table in an unconfined aquifer at two locations separated by a distance of 100 m is 1026.2 m and 1025.0 m respectively. If the permeability of the aquifer is 12 m/ day and porosity is 15%, what is the actual velocity of flow in the aquifer.   [9+7]

2. (a) What do you mean by diversion head works. Describe various investigations required for diversion head works.
   (b) What are the functions of canal head regulator. Discuss the general design considerations of a head regulator.   [8+8]

3. (a) What is a master depletion curve. How it is constructed and used to separate base flow from total runoff.
   (b) The following are the ordinates of the hydrograph of flow from a catchment area of 770 km^2 due to 6 hr rainfall. Derive the ordinates of 6 hr unit hydrograph. Assume a constant baseflow of 40 m^3/sec.   [8+8]

Time (hr)	0	6	12	18	24	30	36	42	48	54	60	66	72
Discharge (m^3/sec)	40	65	215	360	400	350	270	205	145	100	70	50	42

4. (a) What do you understand by critical gradient. What will happen if the critical gradient is exceeded. What is Khoslas safe exit gradient.
   (b) Explain how Khoslas theory is modification over Bligh's theory.   [8+8]

5. (a) Explain the factors on which duty depends.
   (b) Determine the frequency of irrigation at the following stage of growth of crop   [8+8]

Field capacity of soil	=	30%
Permanent wilting point	=	10%
Effective root zone depth	=	0.75 m
Consumptive use	=	12 mm/day
Apparent specific gravity of soil	=	1.6.

6. (a) What are different types of earth lining. Discuss.

7

(b) Derive an expression for the silt supporting capacity of a channel according to Kennedy's theory. [8+8]

7. (a) Describe national water policy, briefly mention its salient features. Why is it being revised.

(b) What is irrigation. What has been its impact on human environment. [8+8]

8. (a) Explain how evapotranspiration can be estimated using Blaney-criddle and Thornth waite equation.

(b) Define infiltration and percolation. What are the factors affecting infiltration. [8+8]

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