Code No: R05310104 **R05** **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) Define the following terms:
   i. Gross Command Area,
   ii. Kor period,
   iii. Outlet factor,
   (b) Find the capacity of a soil for the following data.
   Root zone depth: 2m,
   Existing water content: 5%,
   Dry density of soil:1.5g/cm^3,
   Water applied to the soil:500m^3,
   Water loss due to evaporation: 10%,
   Area of plot: 1000sq.meters [6+10]

2. Explain the following
   (a) Drip method of irrigation
   (b) Sprinkler method of irrigation [8+8]

3. (a) Discuss the analysis of rainfall data with respect to time, space, frequency and intensity.
   (b) What is a raingauge and raingauge density. How does it affect the accuracy of rainfall measurements. Discuss ISI norms for the raingauge density. [8+8]

4. (a) Distinguish between
   i. Maximum probable flood and Design flood
   ii. Annual series and partial series
   iii. Return period and exceedence probability
   (b) For a river reach K is 28 h and X is 0.25. Route the following inflow hydrograph. Take $O_1 = I_1$ for the beginning step. Determine the values of attenuation and translation of the peak. [8+8]

Time (h)	0	0	6	12	18	24	30	36	42	48	54
Inflow (m^3/sec)	30	62	242	170	114	78	56	44	38	34	30

5. (a) Discuss briefly the problems that arise and the methods which are adopted while designing the sections for irrigation canals in India.

(b) An area of 40,000hectares has to be irrigated by a canal for growing wheat, water requirement for which is 10cm per month. Design and draw a suitable canal section with the data given below.
Mean slope of the ground = 1 in 3400
Manning's roughness coefficient = N=0.0225
Side slopes = $\frac{1}{2}$:1
Use Kennady's formula. Try a depth equal to 2m. [8+8]

6. (a) Explain how the evapotranspiration can be estimated using the Blaney-Criddle and Thornthwaite equations.

(b) What are the factors which affect infiltration. Explain any one method of determining the infiltration capacity of soil surface. [8+8]

7. (a) Discuss briefly the design principles involved in the design of a strainer type of tube well.

(b) A well 3 m in diameter has a normal water level of 3 m below ground level (b.g.l) By pumping, the water level in the well depressed to 9 m below ground level. In a time interval of 4 hours the water level rises by 4.5m. Determine the specific yield of the well. What is the safe yield of the well if the working depression head is 3.5 m. [8+8]

8. (a) What is a S-curve hydrograph. How is it constructed. What are its uses.

(b) The ordinates of a 1-h UH are given below. Compute S-hydrograph and derive a 3-h UH from the data. [8+8]

Time (h)	0	1.5	3	4.5	6	7.5	9	10.5	12
4 h UH ordinate (m^3/sec)	0.3	1.2	15	4	1.4	0.9	0.5	0.15	0.0

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Code No: R05310104 **R05** **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) Discuss the analysis of rainfall data with respect to time, space, frequency and intensity.
   (b) What is a raingauge and raingauge density. How does it affect the accuracy of rainfall measurements. Discuss ISI norms for the raingauge density. [8+8]
2. Explain the following
   (a) Drip method of irrigation
   (b) Sprinkler method of irrigation [8+8]
3. (a) Discuss briefly the design principles involved in the design of a strainer type of tube well.
   (b) A well 3 m in diameter has a normal water level of 3 m below ground level (b.g.l) By pumping, the water level in the well depressed to 9 m below ground level. In a time interval of 4 hours the water level rises by 4.5m. Determine the specific yield of the well. What is the safe yield of the well if the working depression head is 3.5 m. [8+8]
4. (a) Distinguish between
      i. Maximum probable flood and Design flood
      ii. Annual series and partial series
      iii. Return period and exceedence probability
   (b) For a river reach K is 28 h and X is 0.25. Route the following inflow hydrograph. Take $O_1 = I_1$ for the beginning step. Determine the values of attenuation and translation of the peak. [8+8]

Time (h)	0	0	6	12	18	24	30	36	42	48	54
Inflow (m^3/sec)	30	62	242	170	114	78	56	44	38	34	30

5. (a) Discuss briefly the problems that arise and the methods which are adopted while designing the sections for irrigation canals in India.
   (b) An area of 40,000hectares has to be irrigated by a canal for growing wheat, water requirement for which is 10cm per month. Design and draw a suitable canal section with the data given below.
   Mean slope of the ground = 1 in 3400
   Manning?s roughness coefficient = N=0.0225
   Side slopes = $\frac{1}{2}$:1
   Use Kennady's formula. Try a depth equal to 2m. [8+8]

6. (a) Define the following terms:
   i. Gross Command Area,
   ii. Kor period,
   iii. Outlet factor,

   (b) Find the capacity of a soil for the following data.
   Root zone depth: 2m,
   Existing water content: 5%,
   Dry density of soil:1.5g/cm^3,
   Water applied to the soil:500m^3,
   Water loss due to evaporation: 10%,
   Area of plot: 1000sq.meters [6+10]

7. (a) Explain how the evapotranspiration can be estimated using the Blaney-Criddle and Thornthwaite equations.

   (b) What are the factors which affect infiltration. Explain any one method of determining the infiltration capacity of soil surface. [8+8]

8. (a) What is a S-curve hydrograph. How is it constructed. What are its uses.

   (b) The ordinates of a 1-h UH are given below. Compute S-hydrograph and derive a 3-h UH from the data. [8+8]

Time (h)	0	1.5	3	4.5	6	7.5	9	10.5	12
4 h UH ordinate (m^3/sec)	0.3	1.2	15	4	1.4	0.9	0.5	0.15	0.0

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Code No: R05310104 **R05** **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) Discuss briefly the problems that arise and the methods which are adopted while designing the sections for irrigation canals in India.
   (b) An area of 40,000hectares has to be irrigated by a canal for growing wheat, water requirement for which is 10cm per month. Design and draw a suitable canal section with the data given below.
   Mean slope of the ground = 1 in 3400
   Manning?s roughness coefficient = N=0.0225
   Side slopes = $\frac{1}{2}$:1
   Use Kennady's formula. Try a depth equal to 2m. [8+8]

2. (a) Discuss briefly the design principles involved in the design of a strainer type of tube well.
   (b) A well 3 m in diameter has a normal water level of 3 m below ground level (b.g.l) By pumping, the water level in the well depressed to 9 m below ground level. In a time interval of 4 hours the water level rises by 4.5m. Determine the specific yield of the well. What is the safe yield of the well if the working depression head is 3.5 m. [8+8]

3. (a) Distinguish between
      i. Maximum probable flood and Design flood
      ii. Annual series and partial series
      iii. Return period and exceedence probability
   (b) For a river reach K is 28 h and X is 0.25. Route the following inflow hydrograph. Take $O_1 = I_1$ for the beginning step. Determine the values of attenuation and translation of the peak. [8+8]

Time (h)	0	0	6	12	18	24	30	36	42	48	54
Inflow (m^3/sec)	30	62	242	170	114	78	56	44	38	34	30

4. (a) Explain how the evapotranspiration can be estimated using the Blaney-Criddle and Thornthwaite equations.
   (b) What are the factors which affect infiltration. Explain any one method of determining the infiltration capacity of soil surface. [8+8]

5. (a) Define the following terms:
      i. Gross Command Area,
      ii. Kor period,

iii. Outlet factor,

(b) Find the capacity of a soil for the following data.
Root zone depth: 2m,
Existing water content: 5%,
Dry density of soil:1.5g/cm^3,
Water applied to the soil:500m^3,
Water loss due to evaporation: 10%,
Area of plot: 1000sq.meters [6+10]

6. (a) Discuss the analysis of rainfall data with respect to time, space, frequency and intensity.

(b) What is a raingauge and raingauge density. How does it affect the accuracy of rainfall measurements. Discuss ISI norms for the raingauge density. [8+8]

7. (a) What is a S-curve hydrograph. How is it constructed. What are its uses.

(b) The ordinates of a 1-h UH are given below. Compute S-hydrograph and derive a 3-h UH from the data. [8+8]

Time (h)	0	1.5	3	4.5	6	7.5	9	10.5	12
4 h UH ordinate (m^3/sec)	0.3	1.2	15	4	1.4	0.9	0.5	0.15	0.0

8. Explain the following

(a) Drip method of irrigation

(b) Sprinkler method of irrigation [8+8]

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Code No: R05310104 **R05** **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) Define the following terms:
   i. Gross Command Area,
   ii. Kor period,
   iii. Outlet factor,
   (b) Find the capacity of a soil for the following data.
   Root zone depth: 2m,
   Existing water content: 5%,
   Dry density of soil:1.5g/cm^3,
   Water applied to the soil:500m^3,
   Water loss due to evaporation: 10%,
   Area of plot: 1000sq.meters [6+10]

2. (a) Distinguish between
   i. Maximum probable flood and Design flood
   ii. Annual series and partial series
   iii. Return period and exceedence probability
   (b) For a river reach K is 28 h and X is 0.25. Route the following inflow hydrograph. Take $O_1 = I_1$ for the beginning step. Determine the values of attenuation and translation of the peak. [8+8]

Time (h)	0	0	6	12	18	24	30	36	42	48	54
Inflow (m^3/sec)	30	62	242	170	114	78	56	44	38	34	30

3. (a) Discuss the analysis of rainfall data with respect to time, space, frequency and intensity.
   (b) What is a raingauge and raingauge density. How does it affect the accuracy of rainfall measurements. Discuss ISI norms for the raingauge density. [8+8]

4. (a) Discuss briefly the problems that arise and the methods which are adopted while designing the sections for irrigation canals in India.
   (b) An area of 40,000hectares has to be irrigated by a canal for growing wheat, water requirement for which is 10cm per month. Design and draw a suitable canal section with the data given below.
   Mean slope of the ground = 1 in 3400
   Manning?s roughness coefficient = N=0.0225
   Side slopes = $\frac{1}{2}$:1
   Use Kennady's formula. Try a depth equal to 2m. [8+8]

Code No: R05310104 **R05** **Set No. 3**

5. (a) Explain how the evapotranspiration can be estimated using the Blaney-Criddle and Thornthwaite equations.

   (b) What are the factors which affect infiltration. Explain any one method of determining the infiltration capacity of soil surface. [8+8]

6. (a) What is a S-curve hydrograph. How is it constructed. What are its uses.

   (b) The ordinates of a 1-h UH are given below. Compute S-hydrograph and derive a 3-h UH from the data. [8+8]

Time (h)	0	1.5	3	4.5	6	7.5	9	10.5	12
4 h UH ordinate (m^3/sec)	0.3	1.2	15	4	1.4	0.9	0.5	0.15	0.0

7. (a) Discuss briefly the design principles involved in the design of a strainer type of tube well.

   (b) A well 3 m in diameter has a normal water level of 3 m below ground level (b.g.l) By pumping, the water level in the well depressed to 9 m below ground level. In a time interval of 4 hours the water level rises by 4.5m. Determine the specific yield of the well. What is the safe yield of the well if the working depression head is 3.5 m. [8+8]

8. Explain the following

   (a) Drip method of irrigation

   (b) Sprinkler method of irrigation [8+8]

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