Reg. No. :

Question Paper Code : 71597

23/05/2017

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2017.

Seventh Semester

Civil Engineering

CE 6703 — WATER RESOURCES AND IRRIGATION ENGINEERING

(Regulations 2013)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is meant by duty and Delta?
2. What is multipurpose reservoir?
3. Give the meaning of consumptive and non-consumptive use of water.
4. Define water budget.
5. What are the few factors influencing the evapotranspiration?
6. What are different methods of sub surface irrigation?
7. What are essential components of a drip irrigation?
8. What are the methods of estimating the consumptive use?
9. Why canal drops are necessary in canal irrigation?
10. What is aqueduct? Where is it placed in a cross drainage work?

PART B — (5 × 16 = 80 marks)

11. (a) (i) State the factors to be considered in deciding capacity of reservoirs and explain the salient point in each factor.

(ii) The monthly flows of a stream over the direct period on record are given in tabular form below.

Month	Monthly flows expressed as volume in M^3
January	5000
February	3250
March	6000
April	2250
May	1500
June	1750
July	1500
August	1750
September	2250
October	2250
November	6000
December	7250

Assuming each month of 30 days, estimate maximum possible uniform draw off from stream for water supply in a township. Find out the capacity of the reservoir required to achieve the uniform draw off using cumulative flow diagram.

Or

(b) What is multipurpose project? What are functional requirements in multipurpose projects? How to estimate requirement of water for irrigation and domestic purposes?

12. (a) (i) Describe briefly the necessity and importance of irrigation water in our country.

(ii) What are the quality criteria for irrigation purposes? Describe the chemical constituents, which affect the suitability of water for irrigation?

Or

(b) Briefly state the various steps needed for planning an irrigation project. List the various objectives of water resources development in the context of the lesser developed countries.

13. (a) What is the water requirement of crops? What are the factors affecting duty? What are different ways in which duty can be expressed? A reservoir with a live storage capacity of 300 million cubic meters is able to irrigate an ayacut of 40000 hectors with 2 fillings each year. The crop season is 120 days. What is the duty?

Or

(b) Name any two methods used for estimating consumptive use of water for a particular crop at a particular place. Explain in details the one which is most widely used in your region, and the reasons for preferring that particular method.

14. (a) Briefly describe and discuss the various methods of lining canals. Give a cross section of lined canals.

Or

(b) What are the purpose of cross drainage work? What are the various types of cross drainage works? Describe the use of siphon in cross drainage work.

15. (a) What are the different methods of surface irrigation? Describe the methods point out the prerequisites for adoption of this method.

Or

(b) What are the essential components of a drip irrigation systems? Draw a layout plan of the drip irrigation system.

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Reg. No. :

Question Paper Code : 40824

10/05/18

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2018
Seventh Semester
Civil Engineering
CE 6703 – WATER RESOURCES AND IRRIGATION ENGINEERING
(Regulations 2013)

Time : Three Hours | Maximum : 100 Marks

Answer ALL questions.

PART – A (10×2=20 Marks)

1. Define water resources survey.
2. Define maximum probable flood.
3. List out the various factor affecting consumptive use of water.
4. Write down the various stages in development of river basin.
5. Find the delta for a crop, if the duty for a base period of 110 days is 1400 hectares/cumec.
6. List out the various types of cropping seasons in India.
7. Write the advantages of gravity dam.
8. Write any two main functions of canal head regulators.
9. List out the different forms of sprinkler irrigation system.
10. Define irrigation scheduling.

PART – B (5×16=80 Marks)

11. a) Briefly discuss about the estimation of water requirement for drinking and irrigation purpose.

(OR)

b) Discuss in detail about various types of reservoir.

12. a) i) Write the salient features of national water policy. **(8)**

ii) Write short notes on :

1) Sodium hazard. **(4)**

2) Salinity hazard. **(4)**

(OR)

b) Define water budgets and explain its types and importances.

13. a) Discuss in detail about merits and demerits of irrigation.

(OR)

b) Define irrigation efficiency and explain their various types in detail.

14. a) Briefly discuss about the various component of diversion head works.

(OR)

b) Explain in detail about the various types of cross drainage works with neat sketch.

15. a) Briefly discuss about the various surface irrigation methods.

(OR)

b) Discusss about the various types of tube wells with neat sketch.

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Question Paper Code : 52783

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2019.

Seventh Semester

Civil Engineering

CE 6703 — WATER RESOURCES AND IRRIGATION ENGINEERING

(Regulation 2013)

(Common to PTCE 6703 – Water Resources and Irrigation Engineering – Civil Engineering – Sixth Semester – Regulation 2014)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define Surcharge storage.
2. What is Maximum Probable Flood?
3. What are the importance of water budgeting?
4. Write the equation for calculating SAR.
5. Define Duty of water.
6. Find the delta for a crop if the duty for a base period of 110 days is 1400 hec/cumecs.
7. What are the classifications of dams based on materials of construction?
8. Write the objectives of Diversion Headworks.
9. What is Isolated tank?
10. What are the advantages of water user association?

PART B — (5 × 13 = 65 marks)

11. (a) Explain the necessity of planning of water resources.

Or

(b) Illustrate the various types of Reservoir.

12. (a) Explain the factors affecting the consumptive use of water.

Or

(b) Explain the advantages of conjunctive use of surface water.

13. (a) Explain the merits and demerits of irrigation in present day.

Or

(b) A stream of 150 l/s was diverted from a canal and 120 l/s were delivered to the field. An area of 1.8 hectares was irrigated in 8 hrs. The effective depth of root zone was 1.7 m. The runoff loss in the field was 400 cm. The depth of water penetration varied linearly from 1.5 m at the head end of the field to 1.1 m at the tail end. Available moisture holding capacity of the soil is 22 cm/m depth of soil. It is required to determine the water conveyance efficiency, water application efficiency, water storage efficiency and water distribution efficiency. Irrigation was started at a moisture extraction level of 40% of the available moisture.

14. (a) Explain the failures of Gravity dams and write the precautions against failure.

Or

(b) Illustrate the various types of cross drainage works.

15. (a) Explain the various types of tube well with neat sketch.

Or

(b) Explain in detail the Participatory irrigation Management.

PART C — (1 × 15 = 15 marks)

16. (a) (i) Discuss the flood control and flood damage preventive methods. (9)

(ii) Make a note on micro irrigation systems, their merits and demerits. (6)

Or

(b) (i) Explain the multipurpose reservoirs. (10)

(ii) Make a note on canal lining. (5)

Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 50306

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2017

Seventh Semester

Civil Engineering

CE 6703 – WATER RESOURCES AND IRRIGATION ENGINEERING

(Regulations 2013)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions.

PART – A

(10×2=20 Marks)

1. What do you mean by storage and retarding reservoir ?
2. State the location where levees and flood walls can be used.
3. Enumerate the Water Allocation priorities of National Water Policy.
4. What do you meant by the term Water Budget ?
5. Define Field Capacity terminology.
6. Enumerate the factors affecting the duty of water canal system.
7. What do you mean by impounding structures ?
8. State the drawbacks of Kennedy's theory.
9. Under which favorable conditions the sub-surface irrigation is practiced ?
10. What are the objectives of participatory irrigation management ?

50306

PART – B (5×16=80 Marks)

11. a) Briefly explain the steps involved in water resources planning. (16)

(OR)

b) Define storage capacity of the reservoir. List out and explain the storage zones of reservior with neat sketch. (16)

12. a) Summarize the consumptive use of water and the factor affecting consumptive use of water. How will you measure it ? (16)

(OR)

b) List the impurities which make water unfit for irrigation and discuss the effects of impurities in detail. (16)

13. a) State and explain in detail about the benefits and ill-effects of irrigation. (16)

(OR)

b) 800 m^3 of water is applied to a farmer's rice field of 0.6 hectares. When the moisture content in the soil falls to 40% of the available water between the field capacity (36%) of soil and permanent wilting (15%) of the soil crop combination. Determine the field application efficiency. The root zone depth of rice is 60 cm. Assume porosity = 0.4. (16)

14. a) What are the different types of cross drainage works that are necessary on a canal alignment ? State briefly the conditions under which each one is used. (16)

(OR)

b) Enumerate the requirements of good lining and discuss the factors which are responsible for selecting a suitable material. (16)

15. a) Discuss briefly the various techniques used for distributing water in the farms. (16)

(OR)

b) Enumerate and discuss the factors affecting the irrigation scheduling. (16)

Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 20284

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2018.

Seventh Semester

Civil Engineering

CE 6703 — WATER RESOURCES AND IRRIGATION ENGINEERING

(Regulations 2013)

(Common to PTCE 6703 – Water Resources and Irrigation Engineering for B.E. (Part Time) Sixth Semester Civil Engineering - Regulation 2014)

Time : Three hours | Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Differentiate single and multipurpose reservoir.
2. What are Levees?
3. List the method of estimating consumptive water use.
4. Outline the aim of National Water Policy
5. What is meant by duty and delta?
6. What is crop rotation?
7. What are the forces acting on a gravity dam?
8. What is the purpose of canal lining?
9. What is micro-irrigation?
10. Why irrigation scheduling is significant?

PART B — (5 × 13 = 65 marks)

11. (a) Briefly state the various steps needed for planning an irrigation project. List the various objectives of water resources development in the context of the lesser developed countries.

Or

(b) What is a multipurpose project? What are the functional requirements in multipurpose projects? How to estimate requirement of water for irrigation purpose?

12. (a) What is Master Plan in water resources? Explain the scope and aims in detail.

Or

(b) What are the quality criteria for irrigation water? Show the relationship between the different parameters. Classify the irrigation water based on various parameters.

13. (a) An irrigation canal has gross commanded area of 80,000 ha out of which 85% is culturable irrigable. The intensity of irrigation for Kharif season is 30% and for Rabi season is 60%. Find the discharge required at the head of the canal if the duty at its head is 800 ha/cumecs for Kharif season and 1700 ha/cumecs for rabi season.

Or

(b) Suggest a method for estimating the consumptive use of crops over a large area. Classify the consumptive use of water by crop based on its estimation during specific periods.

14. (a) What are cross drainage works? Explain its types and its necessity along with neat diagrams.

Or

(b) Compare Kennedy's and Lacey's theory along with the defects in each type.

15. (a) Discuss in detail about the merits and demerits of different irrigation methods.

Or

(b) Define Irrigation Scheduling. Outline the methods to schedule the irrigation in detail.

PART C — (1 × 15 = 15 marks)

16. (a) Explain in detail the role, significance and usefulness of Participatory Irrigation Management under the present day context with a case study.

Or

(b) Discuss about the component parts of a Diversion headwork also give the reasons and remedial measures for its failure.

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Reg. No. :

Question Paper Code : 91318

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2019

Seventh Semester

Civil Engineering

CE 6703 : WATER RESOURCES AND IRRIGATION ENGINEERING

(Regulations 2013)

(Common to PTCE 6703 – Water Resources and Irrigation Engineering for B.E. (Part-Time) – Sixth Semester – Civil Engineering – (Regulations 2014))

Time : Three Hours | Maximum : 100 Marks

(Codes/Tables/Charts to be permitted, if any may be indicated)

Answer ALL questions.

PART – A **(10×2=20 Marks)**

1. Distinguish between storage reservoir and Flood Control Reservoir.
2. Define the term Probable Maximum Flood.
3. State the significance of Cost-Benefit Ratio (C/B) and also the limit of C/B ratio for irrigation projects and flood control projects.
4. What do you mean by conjunctive use of water ?
5. What is transpiration ratio ?
6. Why rotation of crop is necessary in agricultural field ?
7. State the reason why the bed level at dam site is higher than that of river basin.
8. What is Canal Outlet ? What are its types ?
9. Name some pumps which are used to lift water from confined aquifer.
10. Enumerate the purpose of irrigation scheduling.

PART – B (5×13=65 Marks)

11. a) i) State the sources of water potential in Tamil Nadu and also substantiate why planning of water resources is necessary. (8)

ii) How the storage capacity of a reservoir is fixed ? (5)

(OR)

b) A watershed has an area of 200 hectares with 50% occupied by Vacant land of 0.25 run-off coefficient, 20% is covered by lawns run off co-efficient 0.3, 20% by Roads of runoff coefficient 0.6 and by roof surfaces of 0.8 runoff coefficient. The slope of the water shed is 0.003 and the maximum length of travel from the remote point to mouth of culvert is 1.3 km. The following table shows the rainfall data for 50 year return period storm. Estimate the peak flow to be drained by a culvert for this 50 year storm.

Duration (Minutes)	15	30	45	60	80
Rainfall in mm	40	60	75	100	120

12. a) Discuss in detail the salient features and the principles of National Water Policy.

(OR)

b) What is mater plan ? Explain the aim and eight work plans of master plan.

13. a) i) What is duty of water ? Discuss the factors affecting the duty and methods to improve duty of water. (7)

ii) Explain the method used to estimate the consumptive use of water. (6)

(OR)

b) i) What do you mean by irrigation efficiency ? Discuss the different types of irrigation efficiency. (9)

ii) Write the merits and demerits of irrigation. (4)

14. a) Analyse the possible ways by which the gravity dam fails and also suggest some precautions to prevent these failures.

(OR)

b) i) Suggest some suitable type of cross drainage works to be provided when the bed level of canal lies below the bed level of channel. (5)

ii) Explain the different types of Impounding structures. (8)

15. a) i) Explain the merits and demerits of surface and subsurface irrigation. (5)

ii) Explain the different types of irrigation methods. (8)

(OR)

b) What is Participatory Irrigation Management ? Explain the objectives and benefits of participatory Irrigation Management with a case study.

PART – C (1×15=15 Marks)

16. a) A stream of 130 litres per second was diverted from a canal and 100 litres per second were delivered to the field. An area of 1.6 hectares was irrigated in 8 hours. The effective depth of root zone was 1.7m. The runoff loss in the field was 420 cm. The depth of water penetration varied linearly from 1.7 m at the head end of the field to 1.1m at the tail end. Available moisture holding capacity of the soil is 20cm/m depth of soil. It is required to determine the water conveyance efficiency, water application efficiency, water storage efficiency and water distribution efficiency. Irrigation was started at a moisture extraction level of 50% of the available moisture.

(OR)

b) i) Compare and contrast Kennedy's theory with Lacey's theory. (5)

ii) Explain the procedure for the design of levees and flood walls. (10)