A   Reg. No. : ☐☐☐☐☐☐☐☐☐☐☐☐

Question Paper Code: U5A01

B.E./B.Tech. DEGREE EXAMINATION, APRIL 2024

Fifth Semester

Agricultural Engineering

21UAG501 – IRRIGATION AND DRAINAGE ENGINEERING

(Regulations 2019)

Duration: Three hours   Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. The amount of irrigation water required to meet the evapotranspiration needs of the crop during its full growth is called   CO1-U

   (a) effective rainfall   (b) consumptive use

   (c) consumptive irrigation requirement   (d) net irrigation requirement

2. Δ is the depth of water in metres, B is the number of days of base period and D is the duty in hectare/cumec, the relationship which holds good, is   CO1-U

   (a) $D = \Delta (8.64\ D/B)$ (b) $B = \Delta (8.64\ B/D)$ (c) $D = (8.6\ \Delta/B)$ (d) $\Delta = (8.6\ B/D)$

3. As per Lacey's theory the silt factor is   CO1-U

   (a) directly proportional to average particle size

   (b) inversely proportional to average particle size

   (c) directly proportional to square root of average particle size

   (d) not related to average particle size

4. Which of the following method of applying water may be used on rolling land?   CO1-U

   (a) Boarder flooding   (b) check flooding   (c) furrow flooding   (d) free flooding

5. The only arch dam of our country is idduki dam across periyar river in Kerala state, whose height is   CO1-U

   (a) 81m   (b) 143m   (c)149m   (d) 169m

6. The main function of a divide wall is to   CO1-U

   (a) control the silt entry in the canal

   (b) prevent river floods from entering the canal

   (c) separate the under sluices from weir proper

   (d) provide smooth flow at sufficient low velocity

7. Canals taken off from ice-fed perennial rivers, are known   CO1-U

   (a) permanent canals   (b) Rigid canals   (c) perennial canals   (d) Inundation canals

8. When a canal and a drainage approach each other at the same level, the
   structure so provided,is   CO1-U

   (a) An aqueduct   (b) A syphon   (c) A level crossing   (d) Inlet and outlet

9. How can tile drainage help to increase crop yields?   CO1-U

   (a) Increases Free Gravity Water   (b) Increases Volume of Soil

   (c) Decrease Air Circulation   (d) Increases Water Table Level

10. Which length of cast iron pipes used for agricultural drainage system   CO1-U

    (a) 3.7 and 5.5m   (b) 2.8 and 3m   (c) 3.6 and 5 m   (d) 4 and 5.5m

<div align="center">PART – B (5 x 2= 10Marks)</div>

11. Find the delta for sugarcane when its duty is 730 hectares / cumec on the field   CO2 -App
    and the base period of crop being 110 days.

12. Write the assumptions made in Kennedy's theory.   CO1 -U

13. Different between weir and barrage   CO1 -U

14. Why canal lining provided?   CO1 -U

15. State Darcy's law   CO1 -U

<div align="center">PART – C (5 x 16= 80 Marks)</div>

16. (a) Give a detailed outline on the direct methods to measure the   CO1-U   (16)
         consumptive use of water.
<div align="center">Or</div>
    (b) Explain in detail about Irrigation Efficiency   CO1-U   (16)

17. (a) Explain   in detail about surface and sub-surface method of   CO1-U   (16)
         irrigation
<div align="center">Or</div>

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(b)	Explain in detail about erodible and non-erodible canal design theories	CO1-U	(16)

18. (a) What are the types of weirs and Explain various components of weir?   CO1-U   (16)

<div align="center">Or</div>

    (b) Explain in detail about various components of diversion headwork and draw layout.   CO1-U   (16)

19. (a) Explain in detail about the canal outlet.   CO1-U   (16)

<div align="center">Or</div>

    (b) How canals are generally classified? Describe them briefly.   CO1-U   (16)

20. (a) Briefly discuss about recycling of drainage water for irrigation   CO1-U   (16)

<div align="center">Or</div>

    (b) Explain in detail about surface and subsurface drainage systems   CO1-U   (16)

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