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BCE-061

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Diploma in Civil Engineering

Term-End Examination

June, 2011

BCE-061: IRRIGATION ENGINEERING

Time : 2 hours *Maximum Marks : 70*

Note : *Question No. **1** is **compulsory**. Attempt **any four** questions from the remaining questions.*

1. (a) South west monsoon contributes _____ rainfall in India. **1x14=14**

(i) 72% (ii) 74%

(iii) 76% (iv) 78%

(b) Formula for calculating discharge from a V-notch is :

(i) $\cdot 0138\ H^{5/2}$ (ii) $\cdot 0186\ LH^{3/2}$

(iii) $\cdot 0138\ H^{3/2}$ (iv) $\cdot 0184\ LH^{3/2}$

(c) Nagarjun Sagar dam is an example of _____ reservoir.

(i) Distribution (ii) Multipurpose

(iii) Flood control (iv) Power

(d) The net irrigation requirement of a field is 7 cm. The efficiency of the system is 70%. The gross irrigation requirement is :

(i) 7 cm (ii) 8 cm

(iii) 9 cm (iv) 10 cm

(e) Which of the following is not a grain formation stage ?

(i) Milk stage (ii) Dough stage

(iii) Waxy stage (iv) Earning stage

(f) The crop water use efficiency is the ratio of crop yield to _____ .

(i) net irrigation

(ii) gross irrigation

(iii) evaporation

(iv) evapotranspiration

(g) The unit of duty is :

(i) m^3/ha (ii) cumec/ha

(iii) ha/m^3 (iv) ha/cumec

(h) Which of the following is not a method of canal lining ?

(i) Concrete (ii) Shotconcrete

(iii) RCC (iv) Brick

(i) Which of the following is not considered for the design of a canal ?

(i) Hydraulic radius

(ii) Cross-sectional area

(iii) Wetted area

(iv) Manning's coefficient.

(j) Which of the following is not a hydraulic structure ?

(i) Drops and falls

(ii) Cross regulators

(iii) Grass water ways

(iv) Escapers.

(k) The proportionality constant in Darehy's law is basically :

(i) hydraulic gradient

(ii) pressure gradient

(iii) hydraulic area

(iv) coefficient of permeability.

(l) An aquifuge is :

(i) porous and permeable

(ii) porous but not permeable

(iii) not porous but permeable

(iv) neither porous nor permeable

(m) Water use efficiency of conventional methods of irrigation is :

(i) 10 - 30% (ii) 20 - 40%

(iii) 30 - 35% (iv) 40 - 60%

(n) Which one of the following is not a component of fertigation system ?

(i) Venturi pump

(ii) V - notch

(iii) Pressure by - pass tank

(iv) Injection pump

2. (a) Differentiate between functioning of recording and non-recording rain gauges. 7

(b) Describe any two stream gauging methods along with their relative utility and advantages. 7

3. (a) Explain the factors which affect the total water requirement of a crop. Also give two most important functions of irrigation water. 7

(b) What is delta concept of irrigation scheduling ? How is it different from plant water status concept ? 7

4. (a) Differentiate between water application and water storage efficiencies. 4

(b) In a field crop in Punjab the effective depth of root zone was 1.8 m. Available water holding capacity of the soil is 20 cm per meter depth of soil. Determine water storage efficiency if irrigation was started at a moisture extraction level of 50 percent of the available moisture. 10

5. (a) Design a triangular lined canal to carry a discharge of 50 cumec. Assume bed slope as 0.012%, n = 0.015, sideslope = 1 : 1 8

(b) With the help of a diagram explain the layout of a canal system. Explain the role of mains, submains and laterals. 6

6. (a) Explain the functions of distributery head regulator and cross regulator. 7

(b) Write the formula for spacing of tile drains. Also list advantages of tile drains. 7

7. Write short notes on the following : $4x3^1/_2=14$

(a) Silt vanes

(b) Perched water table

(c) Drops and falls

(d) Irrigation scheduling