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BCE-061

01451

Diploma in Civil Engineering DCLE(G)

Term-End Examination

December, 2013

BCE-061 : IRRIGATION ENGINEERING

Time : 2 hours *Maximum Marks : 70*

Note : *Answer **any five** questions. Question no **1** is compulsory. Draw labelled diagram wherever necessary.*

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1. (a) Select the correct choice. **1x7=7**

(i) The portion of total rainfall that is lost through evaporation, its nearly :

(A) 10.5% (B) 12.5%

(C) 15.5% (D) 17.5%

(ii) The flow measuring device that operates with small drop of head is :

(A) Parshall flume (B) Weir

(C) V-notch (D) nozzle

(iii) Who called the Bhakradam as new temple of resurgent India ?

(A) Pt J. L. Nehru

(B) C. Subrahmaniam

(C) K. L. Rao

(D) Indira Gandhi

(iv) To improve the productivity of un-irrigated areas, the Govt. of India has instituted.

(A) Dryland authority
(B) Rain fed authority
(C) Irrigation authority
(D) Drought authority

(v) The amount of water applied per irrigation does not depend on :

(A) irrigation efficiency
(B) root zone depth
(C) soil moisture content
(D) quality of water.

(vi) The Damodar valley corporation is an example of :

(A) direct irrigation scheme
(B) storage irrigation scheme
(C) multi purpose project
(D) all the above

(vii) French drain is an example of :

(A) shallow surface drain
(B) deep surface drain
(C) shallow sub surface drain
(D) deep sub surface drain

(b) State **true or false.** **1x7=7**

(i) The average cropping intensity in India is 1.55.

(ii) In Maharastra, there are five cropping season's as fixed by the irrigation department.

(iii) In Indian context, a major irrigation project is envisaged to cover 10,000 hectares area.

(iv) An artificial obstruction placed in a river or water course to increase depth of water is called barrage.

(v) The radius of influence is the distance from the centre of the pumped well to the point where the drawdown is low.

(vi) Venturi injector is a part of fertigation system.

(vii) Low salinity water with conductivity between 100 to 250 micro mhos/cm at 25°C can be safely used for irrigation.

2 (a) Explain importance and any one method of stream gauging. 7

(b) Enlist names of major irrigation projects in India. Explain a classification of irrigation projects. 7

3. (a) What is irrigation scheduling? Give irrigation scheduling for rice. 7

(b) What are the different irrigation efficiencies ? Explain importance and suitability of use of any one of them. 7

4. (a) The discharge of a canal stream was 0.135 cumec and delivery to the field was 0.100 cumec. It took 8 hours to irrigate 1.5 hectares. The effective depth of root zone was 1.80m. The depth of water penetration varied from 1.8m at the head to 1.2m at the tail end. The available water holding capacity of the soil was 20cm/m of depth. Determine water conveyance, water application, water storage and water distribution efficiencies. Make necessary assumptions. The initial moisture was 50% of the available moisture. **8**

(b) Establish the relationship between duty and delta. **6**

5. What are the different methods of irrigation? Compare the suitability of use of any two such methods. **14**

6. Name the structures that regulate the discharge and maintain the water level within a canal network. Explain any one with the help of a labelled diagram. **14**

7. Write short notes on **any four** of the following. **3½x4=14**

(a) Perched water table

(b) Slotted type tubewell

(c) Well development

(d) Flow net

(e) Fertigation

(f) Effects of water logging