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ET-533(A)

B.Tech. Civil (Water Resources Engineering)

Term-End Examination

December, 2015

ET-533(A) : IRRIGATION ENGINEERING

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any **five** questions. All questions carry equal marks.*

1. What are the factors that affect the functioning of a grader ? Why are excavator-loaders very popular equipment ? Under what conditions will you prefer a dragline over a backhoe ? *14*

2. (a) What are the different infiltration models ? Explain in detail any one of them. *7*

(b) Describe the sprinkler method of irrigation. Also, indicate the advantages of this method. *7*

3. (a) Explain the different aspects of designing surface drain system. *7*

(b) Derive the steady state drainage formula. Also, state the assumptions. *7*

4. (a) Differentiate between the operating characteristics of centrifugal and reciprocating pumps. *10*

(b) Distinguish between the functioning of a turbine pump and a centrifugal pump. *4*

5. (a) Justify the need of irrigation in India. Also describe the history of development of irrigation in India. *10*

(b) Explain net irrigation requirement and gross irrigation requirement. *4*

6. (a) The consumptive use requirements of a crop are 0·02 cm/day, for days 1 to 15, 0·3 cm/day, for days 16 to 40, 0·5 cm/day, for days 41 to 50 and 0·1 cm/day for days 51 to 55. Effective rainfall of 3·5 cm, distributed uniformly during the 36^{th} to 45^{th} days, is predicted. Compute the total quantity of water (in cu.m) to be delivered to a 50 hectare plot for the whole crop season with a pre-sowing requirement of 5 cm of water. *10*

(b) Explain Furrow irrigation. *4*

7. (a) Derive a general relationship between the water level in a lake and the inflow/outflow from the lake depending on time. *7*

(b) Explain the advantages and disadvantages of sprinkler irrigation, vis-a-vis, drip irrigation. *7*