No. of Printed Pages : 3 **ET-532(B)**

B.Tech. Civil (Water Resources Engineering)

Term-End Examination

December, 2017

00047

ET-532(B) : GROUND WATER DEVELOPMENT

Time : 3 hours *Maximum Marks : 70*

Note : *Answer any* ***five*** *questions. Neat and labelled sketches carry due weightage. Use of calculator is permitted.*

1. (a) Define porosity of rocks and sketch out various rock openings that store water. *6*

(b) Detail out the experimental set-up used to verify Darcy's law and derive the expression for the hydraulic conductivity K in terms of characteristics of medium and that of fluid. *8*

2. (a) Describe different types of aquifers. *7*

(b) Discuss storativity and transmissivity using explanatory sketches. *7*

3. (a) Compare and contrast the behaviour of consolidated and unconsolidated sedimentary rocks as aquifers. *9*

(b) Explain the generalised pattern of yield of the wells with the depth in crystalline rocks. *5*

4. Explain the following with suitable sketches in respect of well hydraulics : *14*

(a) Static water level

(b) Potentiometric surface

(c) Pumping water level

(d) Drawdown

5. In the context of exploration of groundwater, discuss the use of topo sheets and aerial photographs. *14*

6. Explain the use of exploratory borewells in assessing groundwater resources in a given basin. *14*

7. Discuss the bacteriological, physical and chemical qualities of groundwater. What is their importance ? *14*

8. Write short notes on any ***four*** of the following : $4 \times 3\frac{1}{2} = 14$

(a) Basin in a Hydrological District

(b) Evaporation and Transpiration

(c) Water Budget

(d) Pan Evaporation

(e) Water for Agriculture