

**B.Tech. Civil (Water Resources Engineering)**

**Term-End Examination**

**December, 2016**

00302

**ET-531(B) : SOIL SCIENCE**

*Time : 3 hours*

*Maximum Marks : 70*

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**Note :** Answer any *five* questions. All questions carry equal marks. Give neat, well-labelled sketches wherever necessary.

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1. (a) Explain the approximate composition of solid, liquid and gas in a typical top soil with the help of a diagram. 7
- (b) Describe the procedure adopted in the field for determining the soil texture. 7
2. (a) Write short notes on any *two* of the following : 7
  - (i) Voids ratio
  - (ii) Porosity
  - (iii) Bulk density
- (b) Explain the various components of water balance equation for soil root zone. 7

3. (a) Analysis of 25 gm soil sample indicated that total concentration of exchangeable cations was 1.5 meq and that of exchangeable sodium was 1.0 meq. Express the CEC in meq/100 gm soil and exchangeable sodium in percent and also in meq/100 gm soil. 7
- (b) Explain various factors responsible for acid soil formation. List at least three indirect effects of acid soils. 7
4. (a) Describe the areas falling under different physiographic divisions of India. 7
- (b) Explain various techniques of evaluation of soil fertility. 7
5. (a) Describe different methods practised in soil survey. 7
- (b) Explain the diagnostic features of horizon for taxonomic classification. 7
6. (a) Discuss the Indian criteria to assess the ability of a land to produce crops. 7
- (b) Explain classification of soil organisms with the help of a schematic diagram. 7
7. (a) Describe the classification principles of plant disease control. 7
- (b) Discuss the role of phosphorus and sulphur cycles in transformation of mineral nutrients. 7

8. Differentiate between the following :

$$4 \times 3 \frac{1}{2} = 14$$

- (a) Hydraulic Conductivity and Suction
  - (b) Red Soils and Laterite Soils
  - (c) Soil Fertility and Soil Productivity
  - (d) Soil Profile and Soil Horizons
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