17450

14115

2 Hours / 50 Marks Seat No. | | | | | | | | |

Instructions – (1) All Questions are *Compulsory*.

(2) Answer each next main Question on a new page.

(3) Illustrate your answers with neat sketches wherever necessary.

(4) Figures to the right indicate full marks.

(5) Assume suitable data, if necessary.

(6) Use of Non-programmable Electronic Pocket Calculator is permissible.

(7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any <u>SEVEN</u> of the following: **14**

a) Write field applications of soil mechanics.

b) Define:

(i) Bulk unit weight

(ii) Dry unit weight

c) What is meant by:

(i) wilting point and

(ii) wilting range

d) Name methods of determining moisture content of soil.

e) Why it is necessary to classify soils?

f) Classify soils on the basis of texture.

g) Write range of permeability values for sands and gravels.

Marks

h) Define permeability.

i) Enlist field applications of permeability.

j) Explain soil stabilization briefly.

2. Attempt any <u>FOUR</u> of the following: **12**

a) Enumerate the constituents of soil and write their importance.

b) Make a short note explaining formation of soil.

c) Derive the relation S.e = w.G

d) Describe relation of moisture, maximum retentive capacity and its importance.

e) Draw phase diagrams for:

(i) dry

(ii) partially saturated and

(iii) saturated soil.

f) A 20 cc fully saturated soil sample weighing 0.35 N was reduced to 0.25 N after drying in oven. Find water content and void ratio. Take specific gravity of soil solids as 2.7.

3. Attempt any <u>FOUR</u> of the following: **12**

a) How liquid limit is determined in laboratory? Write stepwise procedure.

b) Define plastic limit, shrinkage limit and plasticity index.

c) Write symbols and graphical representation of soils.

d) Describe:

(i) effective size

(ii) uniformity coefficient

(iii) curvature coefficient.

e) Explain soil tilth, its importance and factors that affect it.

f) Briefly explain the factors affecting permeability.

Marks

4. Attempt any <u>FOUR</u> of the following: **12**

a) In a permeability test, initial head of 90 cm drops to 70 cm in 20 seconds. The diameter of stand pipe is 2 cm and that of soil sample is 10 cm. Length of soil specimen is 12 cm. Find permeability of soil and comment on its type.

b) Sketch a flow-net for earth dam. Label the features.

c) Elaborate the characteristics of flow nets. State its applications (any two).

d) Sketch sheep's foot roller. Write its salient features and suitability.

e) Make comparison between standard and modified proctor tests.

f) Define CBR. Write its uses.