

22404

21222

3 Hours / 70 Marks

Seat No.

--	--	--	--	--	--	--	--

15 minutes extra for each hour

- 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 FIVE of the following:** **10**
- a) State the importance of geology for Civil Engineering.
 - b) Give the classification for rock based on its mode of origin.
 - c) Define :
 - (i) Void Ratio
 - (ii) Water Content
 - d) Draw a neat sketch of fully saturated soil.
 - e) Define zero air voids line.
 - f) Define liquid limit.
 - g) Give the meaning of CBR value.

P.T.O.

- 2. Attempt any THREE of the following:** **12**
- a) Explain Atterberg's limits of consistency.
 - b) Explain the experimental procedure of determination of specific gravity of soil by pycnometer.
 - c) A soil sample has a porosity of 42% and specific gravity of the soil is 2.70. Determine void ratio and Dry density.
 - d) Explain importance of soil as construction material.
- 3. Attempt any THREE of the following:** **12**
- a) State the factors affecting permeability.
 - b) State Rankine's theory assumptions made for non cohesive soil.
 - c) Explain active earth pressure and passive earth pressure for no surcharge condition.
 - d) Explain the plate load test for determination of bearing capacity of soil.
- 4. Attempt any THREE of the following:** **12**
- a) State the effect of water table on bearing capacity of soil.
 - b) Explain field situations where compaction is required.
 - c) Explain the procedure of CBR Test.
 - d) Draw strength envelope for purely cohesive and cohesion less soil.
 - e) In a constant head permeameter diameter of a soil sample was 4 cm and length was 14 cm under a constant head of 25 cm. The discharge was found to be 80 cc in 10 minutes. Calculate coefficient of permeability

5. Attempt any TWO of the following:**12**

- a) Explain the field applications of Geotechnical Engineering.
- b) Explain the procedure of determination of coefficient of permeability by constant head method.
- c) Explain the sieve analysis test for grading of soil with the help of particle size distribution curve.

6. Attempt any TWO of the following:**12**

- a) Explain the vane shear test to determine shear strength of soil.
 - b) Explain different methods of soil stabilization.
 - c) Differentiate between compaction and consolidation.
-

