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C16-C-504**6623****BOARD DIPLOMA EXAMINATION, (C-16)****OCTOBER/NOVEMBER—2023****DCE - FIFTH SEMESTER EXAMINATION****GEOTECHNICAL ENGINEERING***Time : 3 Hours]**[Total Marks : 80***PART—A****3×10=30**

- Instructions :** (1) Answer **all** questions.
(2) Each question carries **three** marks.
(3) Answers should be brief and straight to the point and shall not exceed five simple sentences.

1. Define the terms (a) water content and (b) degree of saturation. 1½+1½
2. Define the terms (a) disturbed soil sample and (b) undisturbed soil sample. 1½+1½
3. The liquid limit of a soil is 45% and plastic limit is 22%. Find its plasticity index. 3
4. Define the term permeability of soils. 3
5. What is the importance of factor of safety in foundation engineering? 3
6. List the causes of settlement of foundations. 3
7. What is an isobar? 3
8. Define the term consolidation of soil. 3
9. List the factors affecting compaction of soil. 3
10. Define the terms (a) OMC and (b) MDD of a soil. 3

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PART—B

10×5=50

- Instructions :** (1) Answer *any five* questions.
(2) Each question carries **ten** marks.
(3) Answers should be comprehensive and criterion for valuation is the content but not the length of the answer.

- 11.** Describe dry sieve analysis of soils. 10
- 12.** (a) Explain any two boring methods. $2\frac{1}{2}+2\frac{1}{2}$
(b) Explain permeability and compressibility of confined layers of soil. $2\frac{1}{2}+2\frac{1}{2}$
- 13.** Explain the test procedure for soil moisture content by oven drying method. 10
- 14.** Describe the procedure for determination of liquid limit by Casagrande method. 10
- 15.** Explain IS soil classification system. 10
- 16.** Explain the 'field plate load test' to determine the ultimate bearing capacity of soil. 10
- 17.** (a) Explain vertical pressure in soil beneath loaded areas. 5
(b) Explain Terzaghi's model analogy of compression springs showing the process of consolidation. 5
- 18.** Describe Proctor's compaction test with a neat sketch. 6+4

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