

320755(20)

**B. E. (Seventh Semester) Examination,
April-May 2020**

(Old Scheme)

(Civil Engg. Branch)

EXPANSIVE SOILS

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

Note : Attempt all questions. Part (a) from each question is compulsory. Attempt any two parts from parts (b), (c) and (d) of each question.

Unit-I

- 1. (a) What is X-ray diffraction? 2

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- (b) Why expansive soils are considered enemy for the foundations? 7
- (c) Write a detailed note on expansive soils in India. 7
- (d) Describe methods for identification of expansive solids in laboratory. 7

Unit-II

- 2. (a) Enumerate and explain in brief the clay minerology of expansive soil. 2
- (b) Write a detailed note on soil structure of expansive soil. 7
- (c) Describe electrolysis process in detail. 7
- (d) Explain atomic bond and molecular bonds in expansive soils. 7

Unit-III

- 3. (a) What is the chemical composition of black cotton soil? 2

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- (b) Explain modern method of construction in under reamed pile. 7
- (c) Write a detailed note on construction techniques in black cotton soil. 7
- (d) Describe briefly the swelling potential and mechanism of volume change. 7

Unit-IV

4. (a) What do you mean by Soil Stabilization? 2
- (b) Write a detailed note on soil stabilization through fly-ash. 7
- (c) How grouting and soil nailing is carried out in black cotton soil? 7
- (d) Describe reinforced earth technique in detail. 7

Unit-V

5. (a) Enumerate the instrumentation for monitoring in expansive soils. 2

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- (b) Describe method of assessment for liquefaction of soil. 7
- (c) Write a detailed note on Bingham fluid model for expansive soils. 7
- (d) Explain factors affecting the expansive soil in detail. 7