

Paper Id: **100751**Roll No:

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B. TECH
(SEM VII) THEORY EXAMINATION 2019-20
GEOLOGY AND SOIL MECHANICS

Time: 3 Hours**Total Marks: 70****Note: 1.** Attempt all Sections. If require any missing data; then choose suitably.**SECTION A****1. Attempt all questions in brief. 2 x 7 = 14**

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| a. | Enlist various rock forming minerals. |
| b. | Discuss plate tectonics in formation of earth's crust. |
| c. | Define the term tsunami. |
| d. | Write the difference between petrology and geology. |
| e. | Illustrate dip slope. |
| f. | Define metamorphism. |
| g. | Enlist the different earthquake zone of India |

SECTION B**2. Attempt any three of the following: 7 x 3 = 21**

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| a. | Discuss the scope and application of geology in civil engineering works. |
| b. | Describe folds and folding. Elaborate the classification of folds. |
| c. | Explain various causes of mass movement. Also define angle of repose. |
| d. | Give in the detail the geological investigation required in construction of the road in hilly area. |
| e. | Explain various index properties of soils. |

SECTION C**3. Attempt any one part of the following: 7 x 1 = 7**

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| (a) | Describe the internal structure of earth as revealed by seismological evidence. |
| (b) | Discuss the formation of rocks. Explain the uses & properties of rocks. |

4. Attempt any one part of the following: 7 x 1 = 7

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| (a) | Differentiate between stratification and lamination with a neat sketch. Also explain the phenomena involved in cross bedding. |
| (b) | Explain the causes and effects of faulting. Also describe various types of Faults. |

5. Attempt any one part of the following: 7 x 1 = 7

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| (a) | Define earthquake. Explain the various causes of an earthquake. Differentiate between intensity and magnitude of an earthquake. |
| (b) | Write the difference between mass wasting and erosion. Also elaborate various causes and types of a landslide. |

6. Attempt any one part of the following: 7 x 1 = 7

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| (a) | “Geological investigations are the key to success of a civil engineering works like dam, tunnel, bridges etc. Justify. |
| (b) | Explain the following- i). Seismic Refraction Test ii). Horizontal Block Test iii). Electrical Resistivity Method |

7. Attempt any one part of the following: 7 x 1 = 7

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| (a) | Explain earth pressure theories in detail. |
| (b) | A soil has a liquid limit of 25% and a flow index of 12.5%. If the plastic limit 15%, determine the plasticity index and toughness index. If the water content of the soil in its natural condition in the field is 20%, find the liquidity index and relative consistency. |