BCV303

USN

**Third Semester B.E/B.Tech. Degree Examination, June/July 2024**
## Engineering Geology

Time: 3 hrs.                                                                      Max. Marks:100

**Note:** *1. Answer any FIVE full questions, choosing ONE full question from each module.*
*2. M : Marks , L: Bloom's level , C: Course outcomes.*

| | | Module – 1 | M | L | C |
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| 1 | a. | With neat sketch, explain internal structure of earth based on different discontinuities and add a note on its composition. | 10 | L2 | CO2 |
| | b. | Discuss the following terms : i) Focus and Epicenter ii) P and S waves. | 4 | L1 | CO2 |
| | c. | Define plate tectonics. Describe plate boundaries with their land forms. | 6 | L2 | CO1 |
| | | **OR** | | | |
| 2 | a. | Define land slide. Discuss its impact and preventive measures. | 10 | L2 | CO1 |
| | b. | Explain seismic zones of India as per Indian standard code and give safety measures on seismic resistant structure. | 10 | L3 | CO2 |
| | | Module – 2 | | | |
| 3 | a. | Explain requirement of good building stones with suitable rock examples. | 4 | L2 | CO3 |
| | b. | Define mineral and rock. Explain 'light dependent' properties of minerals with an example. | 8 | L2 | CO3 |
| | c. | Differentiate between texture and structure in rocks and discuss textures in igneous rocks. | 8 | L3 | CO2 |
| | | **OR** | | | |
| 4 | a. | Briefly explain how igneous, sedimentary and metamorphic rocks are formed and enumerate their broad classification with suitable example. | 6 | L1 | CO2 |
| | b. | Discuss physical/geological and engineering properties along with their uses as building material for the following : i) Granite ii) Quartzite. | 6 | L3 | CO3 |
| | c. | Write the physical properties and industrial uses of two minerals each in the following group : i) Carbonate ii) Oxide. | 8 | L2 | CO3 |
| | | Module – 3 | | | |
| 5 | a. | Define soil and its formation. Explain soil profile. | 6 | L2 | CO2 |
| | b. | Discuss chemical weattering and add a note on effect of weattering on monumental rocks. | 8 | L2 | CO2 |
| | c. | Define insitu and drifted soil. Enumerate the types of residual soil. | 6 | L3 | CO3 |

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| | | **OR** | | | |
| 6 | a. | With neat trilinear diagram explain soil texture and describe engineering classification of soil based on grain size. | 10 | L3 | CO2 |
| | b. | Explain mechanical and biological weattering. | 10 | L2 | CO2 |
| | | **Module – 4** | | | |
| 7 | a. | Discuss the formation of folds and faults and a note on their engineering significance. | 6 | L2 | CO2 |
| | b. | Define dam and explain its types. Discuss selection of dam site in folded and faulted rocks. | 8 | L3 | CO3 |
| | c. | A bed of limestone has a maximum dip of 30° along N15°E. Find the amount of apparent dip along N30°W. State the strike. | 6 | L3 | CO3 |
| | | **OR** | | | |
| 8 | a. | Define dip, strike and outcrop with neat sketch explain recognition of any two geological structures in field. | 10 | L3 | CO2 |
| | b. | Three boreholes are sunk at three points of an equilateral triangle whose sides are 240 meters each. P is West of Q and R is North of midpoint between PQ, Boreholes P, Q and R reach the upper surface of a rich coal seam at 30 µt. 70µt and 90µt depths respectively.<br>i)   Determine the attitude (Dip and strike) of the coal seam<br>ii)  One more borehole is proposed at S exactly at the centre of the triangle. Determine at what depth the new borehole 'S' reaches the upper bedding plane of the coal seam. | 10 | L4 | CO3 |
| | | **Module – 5** | | | |
| 9 | a. | Define Aquifer and explain its types. | 6 | L2 | CO4 |
| | b. | Explain electric resistivity method and its applications in civil engineering and add a note on components, accessories of resistivity meter. | 10 | L3 | CO4 |
| | c. | Give a brief account on occurrence of ground water in igneous rocks. | 4 | L2 | CO4 |
| | | **OR** | | | |
| 10 | a. | Define permissibility and explain factors affecting permeability. | 6 | L2 | CO4 |
| | b. | Explain seismic method, its types and application in civil engineering projects. | 10 | L3 | CO4 |
| | c. | Explain any two sedimentary rocks suitable for ground water occurrence. | 4 | L2 | CO4 |

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