

SE(CIVIL) SEM II R20'C' Scheme

06/06/25

(3 hours)

(Total marks 80)



- NB:**
- (1) Question No 1 is compulsory
 - (2) Attempt any 3 questions from remaining five questions
 - (3) Figures to the right indicates full marks
 - (4) Draw neat sketches whenever necessary

1. (a) Write diagnostic properties and industrial use of following minerals 10
 - (i) Mineral Hematite
 - (ii) Mineral Amethyst
 - (iii) Mineral corundum
 - (iv) Mineral Calcite
 - (v) Mineral Muscovite
- (b) Explain following in brief with labeled diagram- 10
 - (i) Parched Water table
 - (ii) Mural joints
 - (iii) Conglomerate and breccia
 - (iv) Pedestal rock
 - (v) Batholith
2. (a) Describe erosional and depositional features created by wind and river (two of each). 10
- (b) Explain mineralogical/ Chemical classification of igneous rocks with suitable example. 10
3. (a) What are the internal factors that modifies surficial features on Earth? Explain various landforms associated with three types of plate boundary. 10
- (b) A coal bearing rock horizon is exposed on horizontal ground, it dips 45° eastward. Width of outcrop is 600 m. Calculate true thickness and vertical thickness of rock horizon. 06
- (c) What is stratigraphy? Explain laws of stratigraphy. 04
4. (a) Explain classification of fold on the basis on position of axial plane. What are the engineering consideration of folds on construction site. 10
- (b) Classify the rocks according to Geomechanics classification for a Rock having UCS of 260 Mpa and RQD of 75% with average spacing of discontinuity of 300 mm, which is slightly rough in nature and highly weathered. The Strike is perpendicular to the tunnel axis and drive with dips is 45° . Also 8 lit/min groundwater inflows the tunnel length per 10 m. State the condition of rocks for tunnel construction. (Note: Table containing RMR parameters should be provided to resolve the question) 10

Q.P Code:-
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5. (a) What are the water-bearing qualities of rocks? Explain condition of formation of an artisan aquifer. 10

- (b) 10

Sr. No	Length of sample(cm)	Nature of joint	Sr. No	Length of sample(cm)	Nature of joint
1	5	N	11	11	N
2	3	N	12	4	N
3	10	N	13	2	N
4	10	N	14	1	M
5	25	N	15	12	N
6	4	M	16	6	N
7	3	M	17	27	N
8	1	N	18	22	N
9	16	N	19	10	N
10	7	N	20	10	N

Describe direct subsurface geological investigations? Explain core logging? Calculate rock quality designation and core recovery with the above data. Total run is 2 meter.

6. Write short notes on (any four) 20

- Types of metamorphism
- Internal structure of earth as revealed by seismic waves
- Earthquake zones of India
- Chemical and physical weathering
- Thrust fault
- Unconformity