

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION MO/22)

CLASS: B.TECH
Branch: CIVIL

SEMESTER : VI
SESSION : 2022-23

SUBJECT: CE426 APPLICATION OF CE TO MINING
TIME: 03 Hours

FULL MARKS: 50

INSTRUCTIONS:

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
4. Tables/Data handbook/Graph paper etc., if applicable, will be supplied to the candidates

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|--|----|----|
| Q.1 Find the Disturbing force of an external dump of an opencast mine with following details:- [10] | | |
| i. Weight of slice 1(W) = 95 kN | | |
| ii. Weight of slice 2,3,4,5,6,9 (W) = 115 kN each. | | |
| iii. Weight of slice 7,8 (W) = 45 kN | 3 | 3 |
| iv. Weight of slice 10,11 (W) = 35 kN | | |
| v. Base angle (X) under slice 1,2,3,4,5,6,7,8,9, 10,11 = 25°, 28°, 30°, 33°, 34°, 29°, 35°, 38°, 39°, 75°, 65° respectively. | | |
| vi. Cohesion and angle of internal friction of dump material = 25 kN/m ² and 26° respectively. | | |
| vii. Cohesion and angle of internal friction of foundation material = 21kN/m ² and 20° respectively. | | |
| viii. Area of surface of AB and BC = 130 m ² and 185 m ² | | |

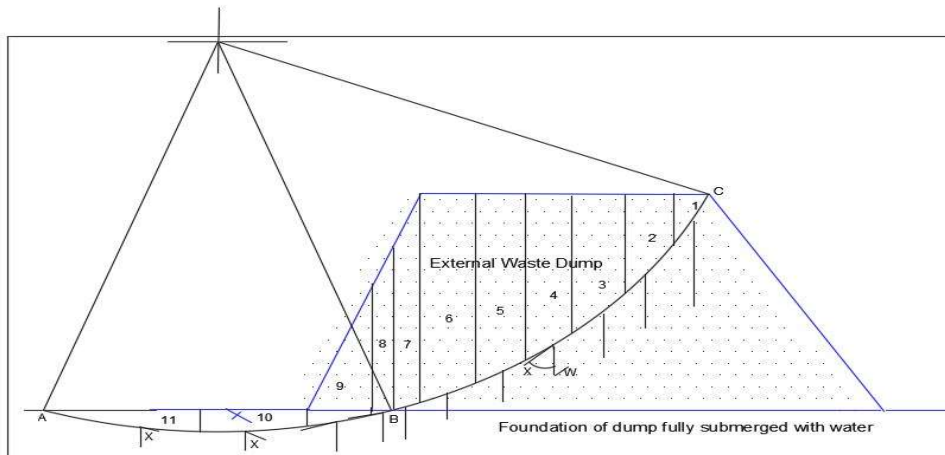


Fig 1 External Waste Dump

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|--|------|---|---|
| Q.2 Find the Frictional force of on the failure surface of this external dump. | [10] | 3 | 3 |
| Q.3(a) Find the Cohesive force on the failure surface of this external dump. | [5] | 3 | 3 |
| Q.3(b) Determine Frictional force on the failure surface. | [5] | 3 | 3 |
| Q.4(a) Discuss Land Management in mining sector. | [3] | 5 | 5 |
| Q4 (b) Define Rock Mechanics. | [2] | 1 | 1 |
| Q.4(c) Discuss different failure modes in rock slopes. | [5] | 1 | 1 |
| Q.5(a) Discuss Advantages and Disadvantages of underground mining. | [4] | 5 | 5 |
| Q5 (b) Discuss impact on environment due to mining. | [3] | 5 | 5 |
| Q5(c) Discuss Corporate Social responsibility in Engineering sector. | [3] | 5 | 5 |