| I completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. | evealing of identification, appeal to evaluator and /or equations written eg, $42+8=50$ , will be treated as malpractice |
|---|--|
| On complet  | Any revealir   |
| _:  | 2.1  |
| Note:   |  |
| Important No  |  |

Time: 3 hrs.

| Librarian Learning Resource Centre Acharya Institutor | CBCS SCHEME |
|---|-------------|
| USN   |             |

17MN72

Max. Marks: 100

## Seventh Semester B.E. Degree Examination, July/August 2022 Ground Control

|    | N        | ote: Answer any FIVE full questions, choosing ONE full question from each mo           | dule.         |
|----|----------|--|---------------|
|    |          | Madula 1   |               |
| l  | 0        | Explain type of underground excavations.  Module-1                                     | (10 Moules    |
| L. | a.<br>b. | Describe in detail about factors influencing excavation design and its constraints.    | (10 Marks     |
|    | υ.       | Describe in detail about factors influencing excavation design and its constraints.    | (10 Marks     |
|    |          | OR   |               |
| 2  | a.       | Discuss the Analytical methods of excavation.  | (10 Mark      |
|    | b.       | Describe the sources and estimate insitu stress for an underground excavation.         | (10 Mark      |
|    |          |  |               |
| 2  |          | Module-2   |               |
| 3  | a.       | Explain the modes of Mine Pillar failure as per Brady and Brown.                       | (10 Mark      |
|    | b.       | Explain factors influenced for strength of pillars in underground mines.               | (10 Mark      |
|    |          | OR   |               |
| 4  | a.       | Explain method to describe load acting on various shapes of pillar using Tributary     | method        |
|    |          |  | (10 Mark      |
|    | b.       | Determine the load acting on a pillar using Progressive failure approach.              | (10 Mark      |
|    |          |  |               |
| _  |          | Module-3   |               |
| 5  | a.       | Explain methods of measurements of Subsurface movements.                               | (10 Mark      |
|    | b.       | Describe the use of profile and influencing functions to determine surface subside     | nce. (10 Mark |
|    |          |  | (10 Mark      |
|    |          | OR   |               |
| 6  | a.       | Explain trough subsidence for an inclined seam dipping at an angle $\theta$ and locate |               |
|    |          | i) Angle of draw ii) Maximum subsidence iii) Inflection point.                         | (10 Mark      |
|    | b.       | Explain different techniques to predict the subsidence.                                | (10 Mark      |
|    |          | Module-4   |               |
| 7  | 2        | Explain Caving mechanism with stratified rocks.  | (10 Mark      |
| /  | b.       | Illustrate the phenomenon and causes of rock burst and coal bump.                      | (10 Mark      |
|    | 0.       | That the phonomenon and eaded of fook barst and cour bamp.                             | (10 1/14/11   |
|    |          | OR   |               |
| 8  | a.       | Explain mechanism of caving with the help of Beam and Plate theory.                    | (10 Mark      |
|    | b.       | Inter prediction of bump using Energy release rate.                                    | (10 Mark      |
|    |          |  |               |
| 0  |          | Module-5   | (10 3 4 1     |
| 9  | a.       | Explain in detail about the Terzaghi rock mass classification.                         | (10 Mark      |
|    | b.       | Explain Rock structure rating for supporting the underground structure.                | (10 Mark      |
|    |          | OR   |               |
| 10 | Ev       | nlain the following:   |               |

- 10 Explain the following:
  - a. Power support

    b. Steel supports

    c. Rock boulting

    d. Cable supports
  - c. Rock boulting d. Cable supports. (20 Marks)

\* \* \* \* \*