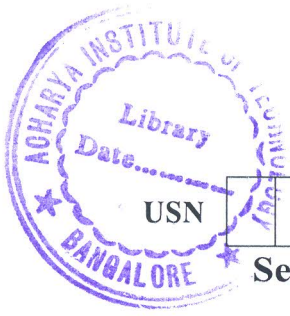


CBCS SCHEME



USN

15MN72

Seventh Semester B.E. Degree Examination, Dec.2019/Jan.2020

Ground Control

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. List the methods of stability analysis and how to estimate the stability of an excavation using classical principle. (08 Marks)
- b. Determine the stress, strain and displacement in finite element method of stability analysis for an underground excavation. (08 Marks)

OR

- 2 a. Determine the energy released by making an underground excavation. (08 Marks)
- b. Discuss the design of the stability of an opening for various strata conditions using a flow chart. (08 Marks)

Module-2

- 3 a. How to determine the load acting on various shapes of pillar using tributary method? (08 Marks)
- b. Explain the interaction of pillar, floor and roof with load – settlement curve. (08 Marks)

OR

- 4 a. Determine the load acting on a pillar using progressive failure approach. (08 Marks)
- b. Explain the stress distribution within the pillar due to contact planes with respect to different material properties. (08 Marks)

Module-3

- 5 a. Describe the trough subsidence over a longwall panel with a neat sketch and explain the factors affecting the same. (08 Marks)
- b. Illustrate the use of profile and influencing functions to determine surface subsidence. (08 Marks)

OR

- 6 a. Explain the continuum theory to predict the subsidence. (08 Marks)
- b. Explain the methods of measurement of sub – surface movements. (08 Marks)

Module-4

- 7 a. Explain mechanism of caving with help beam and plate theory. (08 Marks)
- b. Infer on the prediction of coal bump using strain energy release rate. (08 Marks)

OR

- 8 a. Explain caving mechanism with stratified rock formation. (08 Marks)
- b. Infer on the prediction of coal bump based on stiffness in a mine. (08 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

Module-5

- 9 a. Select the method of Rock mass classification to classify the slope. Explain the method with suitable tabular columns to estimate the support to stabilize the slope. (08 Marks)
- b. List the suggestions of Paul's committee report on support estimation and safety in underground mine. (08 Marks)

OR

- 10 a. Select the method of rock mass classification to adopt passive supports in an underground mine. Explain the method with suitable tabular columns to estimate the support the stabilize the roof. (08 Marks)
- b. Select the method of rock mass classification to adopt active supports in a underground mine. Explain the method with suitable tabular column to estimate the support to stabilize the roof (08 Marks)
