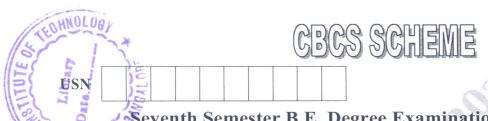
ALHOA



15MN71

Seventh Semester B.E. Degree Examination, Aug./Sept.2020 Underground Mine Planning and Design

Time: 3 hrs. Max. Marks: 80

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

Module-1

- 1 a. As a planning engineer, describe on what factors you would select the optimum plant site locations for construction. (08 Marks)
 - b. What do you mean by Stockholm conference 1972? Where it was organized? What are the main agenda and outcome of this conference? (08 Marks)

OR

- 2 a. Name the types of spillways and explain any one with neat sketch. (08 Marks)
 - b. Discuss briefly about "THE COAL BEARING AREAS (Acquisition and Development) ACT 1957" which as to be considered during land acquisition for coal mining. (08 Marks)

Module-2

- a. What is a Prefeasibility study? When and why do companies undertake that study? What information does it include? What action would you as a member of the study, initiate in case of positive or negative outcomes of prefeasibility study? (08 Marks)
 - b. Draw a neat sketch of pit top layout with back shunts for underground coal mines and indicate its salient features. (08 Marks)

OR

- 4 a. Mention the factors affecting the division of coal field into mining areas and areas into colliery unit. (06 Marks)
 - b. Draw a neat sketch of pit bottom layout for skip winding for underground coal mines and indicate its salient features. (10 Marks)

Module-3

5 a. Determine the inclined length of the level and number of levels that can be developed in a mining area for the given conditions.

Daily coal output of the mines = 1500 tons ; Annual rate of face advance = 400m

Life of the mine = 35 years ; Dip of the seam = 15°

Weight of 1m^3 of the coal seam = 1.3 t/m^3 ; Thickness of seam = 1.5 m.

Coefficient of Recovery of coal = 0.88. (10 Marks)

b. With a neat labeled sketch, explain the division of mining property into levels and panels.

(06 Marks)

OR

- 6 The following are the data of a new underground mine:
 - Thickness of seam A = 1.0m; Seam B = 1.2m and Seam C = 1.4m.

Weight of 1m^3 coal (insitu) seams/equal for all seams = 1.35 t/m^3 ;

Annual planned output of the mine = 11,00,000 t/year;

Daily planned output of mine = 4000 tons; Coefficient of recovery (equal for seams) = 0.95

Length of the productive face (equal for all seams) = 120m;

Width of the web; equal for all seams = 1.3m, Number of cycles in the face per day (equal for all seams) = 2; Cyclic coefficient (equal for all seams) = 0.8,

Coefficient accounting for percentage of coal output from productive faces (equal for all seams = 0.95 and gradient of the seam = 10^{0} .

Determine planned output from the faces, the number of productive faces in the mining property, make arrangements of the faces within the mining area. (16 Marks)

Module-4

- 7 Write a short note on:
 - a. Cut off grade.

(06 Marks)

c. Selection criteria for stoping methods.

(10 Marks)

OR

- 8 Write a short note on:
 - a. Time study for improvement in production.

(08 Marks)

b. Work study for improvement in production.

(08 Marks)

Module-5

a. Define Mine closure. Mention types of mine closure.

(06 Marks)

b. What are the economic impacts due to up planed mine closure? Justify your answer with a case study. (10 Marks)

OR

- 10 a. Describe the basic principle of hydraulic mining. Mention its merits and demerits. (08 Marks)
 - b. What is Coal Bed Methane? Explain the basic extraction method of coal bed methane with neat sketch. (08 Marks)