

CBCS SCHEME

15MN71

USN

--	--	--	--	--	--	--	--	--	--

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

- 3 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 = 1.5m.
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 :
- Cut – off grade. (06 Marks)
 - Selection criteria for stoping methods. (10 Marks)

OR

- 8 Write a short note on :
- Time study for improvement in production. (08 Marks)
 - Work study for improvement in production. (08 Marks)

Module-5

- 9 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)
