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S.E. (Mining) (Sem-III) (Revised Course 2016-2017)
EXAMINATION MAY/JUNE 2019
Elements of Mining Engineering

[Duration : 3 Hours]

[Total Marks : 100]

- N.B Please check whether you have got the right question paper.
- 1) Answer **any FIVE questions**, at least **TWO** from PART- A, **TWO** from PART – B and **ONE** from PART- C
 - 2) Make suitable assumptions whenever required
 - 3) Supplement your answer with neat sketches wherever required.
- GROUP-A
- Q.1 A. Sustainability of various industries depends upon sustainability of mining” explain the statement with examples. 10
- B. Explain classification of mines 04
- C. Explain the role of exploration and prospecting in defining the wealth of the nation. 06
- Q.2 A. Write a short note on following 12
- a. Unit operations of mining
 - b. Stages of life of mine
 - c. Stowing and subsidence
- B. Define the following terms 08
- a) Mining b) Mine c) Outcrop d) Stopping
 - e) Stope f) Country rock g) Grade of ore h) Level
- Q.3 A. Explain following drill machine with their application in mine: 12
- a. Jack hammer drill
 - b. Wagon drill
 - c. Down the hole drill
- B. Briefly explain with proper sketch drilling pattern in opencast mine 08
- GROUP-B
- Q.4 A. Briefly explain the theory of blasting. Explain blast design parameters. 10
- B. Define powder factor and detonator factor. If in an underground coal mine height of gallery is 2.5m and width is 3 m with a pull of 1.8 is blasted by 15 holes in a round. The no of cartridge in each hole is 3 and weight of each cartridge of explosive is 160 gm. Calculate powder factor and detonator factor (take coal density = 1.4) 10

- Q.5 A. Explain briefly following: 15
a. Deck charging
b. Deck charging direct and inverse
c. Initiation pulsed infusion shot firing
B. What are the different secondary blasting techniques? 05
- Q.6 A. What do you mean by roof bolting? Briefly explain its principle of action and functions. 10
What are the advantages of roof bolting?
B. Write a short note on yielding props. 05
C. Write a note on withdrawal of supports 05

GROUP-C

- Q.7 A. Write a note on prop setting and side lagging. 05
B. Briefly explain the pressure arc theory with neat sketch. 10
C. What are the statutory provisions under coal mine regulations on systematic supporting rules? 05
- Q.8 A. Compare ANFO explosive, emulsion explosive and slurry explosive and state their merits and demerits. 10
B. What is permitted explosive? Explain the construction of various types of permitted explosives. 10