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Total Number of Pages : 02

B.Tech.  
PCML4305

**6<sup>th</sup> Semester Back Examination 2017-18**  
**MINING METHODS & UNIT OPERATION**  
**BRANCH : MINERAL**  
**Time : 3 Hours**  
**Max Marks : 70**  
**Q.CODE : C340**

**Answer Question No.1 which is compulsory and any five from the rest.**  
**The figures in the right hand margin indicate marks.**

- Q1. Answer the following questions : (2 x 10)**
- a) Name the heavy mineral deposits with occurrence in Odisha.
  - b) Specify the causes of fly rocks produced during blasting in a surface mine.
  - c) Write the classification of Bord and Pillar Method.
  - d) What is Surface mining and Open-pit mining?
  - e) How does surface mining affect the environment?
  - f) What Break Even stripping ratio?
  - g) What is ultimate pit slope?
  - h) Differentiate between True Dip and Apparent dip.
  - i) Explain the various unit operations in mining.
  - j) Define 'Ultimate pit limit' and mention the factors to be considered for deciding it.
- Q2. a) Compare bord and pillar and longwall methods of mining coal. (5)**  
**b) What are the merits and demerits of panel system of developing and extracting a coal seam? (5)**
- Q3. a) Write a short note about 'Design of box cut' in a surface mine. (5)**  
**b) What are the factors that decide the location of shaft? (5)**
- Q4. Give the layout of a mechanisedbord and pillar development district in a seam 5.5 m in thickness and existing at an average depth of 250 m from surface. The gradient of the seam is 1 in 6. The answer should include machinery proposed along with reasons for the selection and their population, support system proposed and reasons for the same, ventilation and haulage layouts. Also state the output expected. Assume missing data, if any. (10)**
- Q5. a) Explain shrinkage method of stoping. Assume your own conditions (5)**  
**b) With a neat layout explain the operation of a bucket wheel excavator. (5)**
- Q6. a) Explain cut & fill method of stoping . Assume your own conditions. (5)**  
**b) Explain any four safety features to be provided while designing the haul roads for the above open cast coal mine. (5)**

- Q7.** a) Explain the term Sump, raise, Winze. (5)  
b) Discuss the different types of stripping ratios used in surface mines with their relative importance. Enlist the basic data to be complied for a surface mine planning. (5)

- Q8. Write short notes on any TWO :** (5 x 2)
- a) Underground gasification of coal.
  - b) Draglines
  - c) Front end loaders
  - d) Pipeline transport system