

**Total number of printed pages – 4**      **B. Tech**  
**CPMN 6308**

**Sixth Semester Examination – 2008**

**MINING METHODS**  
**(Coal and Metal)**

**Full Marks – 70**

**Time : 3 Hours**



*Answer Question No. 1 which is compulsory  
and any **five** from the rest.*

*The figures in the right-hand margin  
indicate marks.*



1. (a) Answer the following in brief : 2 × 5
- (i) Why bord and pillar method of working is generally practiced in our country ?
  - (ii) Calculate the percentage of extraction of coal pillar of 36 m width and 30 m

length center to center with galleries  
4 m wide.

- (iii) List the factors that influence the choice of pillar extraction technique in bord and pillar method of mining.
  - (iv) What is vertical crater retreat principle ? Where does it find its application ?
  - (v) State the applicability conditions for shrinkage stoping method.
- (b) Differentiate between : 2 × 5
- (i) In-the-seam mining and horizon mining
  - (ii) Longwall advancing and longwall retreating mining
  - (iii) Level and level interval
  - (iv) Raise and winze
  - (v) Continuous and cyclic mining.

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2. (a) Name the parameters, which influence the size of pillar in bord & pillar workings. 4
- (b) A coal seam lying at a depth of 200 m is to be worked by bord & pillar method of mining. The square pillar width between centre of bords is 30 m and the width of gallery is 4.8 m. The height of development is 2.8 m. Find out the strength of coal pillars and the factor of safety if the density of overlying rock is  $2.3 \text{ t/m}^3$ . Assume any other data necessary. 6
3. A coal seam 25 m thick, dipping at an angle of  $40^\circ$  from the horizontal and located at a depth of 300 m from the surface is to be worked out by a conventional mining system with stowing. Give a suitable layout of the system and explain. Assume any other relevant data. 10
4. (a) On what basis is the optimum length of a longwall face is decided? 5
- (b) What are the circumstances when longwall method of mining can be advantageously adopted? 5
5. (a) Give a layout of longwall face with a DERD shearer and show the different operations at any instant. 5
- (b) With the help of a neat sketch explain the drop raising method. 5
6. (a) Give the classification of stoping methods on the basis of USBM system. 4
- (b) Outline the different geo-mining factors that affect the choice of stoping methods. 6
7. A zinc ore body 7 m thick is dipping at  $60^\circ$ . The orebody is firm with irregular boundaries. The hanging wall and footwalls are comparatively stable. Explain an appropriate method of stoping and extraction procedure with neat sketches, stating its merits. 10
8. Under what conditions will you adopt sub-level caving method? Explain the method with the help of a neat sketch. What are the demerits of the method? 10

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