B.E.(with Credits)-Regular-Semester 2012-Mining Engineering Sem VII

MI - Mine Planning

P. Pages : 2 **GUG/W/16/6629**

Time : Three Hours * 4 7 0 1 * Max. Marks : 80

Notes : 1. Due credit will be given to neatness and adequate dimensions.
2. Assume suitable data wherever necessary.
3. Illustrate your answers wherever necessary with the help of neat sketches.
4. Weightage to the question indicated on its right.

1. What is planning ? How mine planning is done ? What are the components of mine planning ? **4**

Briefly explain procedure for economic evaluation of mining enterprises in respect of following parameters : **12**

- Estimation of capital requirement
- Estimation of revenue expenditure
- Estimation of operating cost
- Selling price and profitability
- Cash flow & IRR
- Sensitivity Analysis

OR

2. What is feasibility study ? Discuss at length as to its contents and brief about significance. Also state importance and contents of Geological report included in DPR. **10**

Explain in brief 'short term' and 'long term' mine plans. State their role and significance in respect of execution of mine plan. **6**

3. Explain in brief role of bench geometry and mine layouts in surface mine planning. **6**

Discuss in brief planning and scheduling of production in case of an open cast mine. **6**

Estimate the production and productivity of a 20/90 dragline deployed to handle coal measure rocks (over burden) containing 90% category III rocks and 10% category IV rocks. Assume rest of the conditions. **4**

OR

4. Discuss in brief mining schedule and equipment phasing as it relates to surface mine planning. **4**

Explain various planning stages involved for an open-pit metal mine having an annual production capacity of one million tonnes with a stripping ratio of 1:5. Assume your own equipment system and their combinations. **12**

5. What are limited reserves ? Discuss the relationship between life of mine, capacity and reserves. **3**

Explain in brief method / procedure to estimate optimum geometrical size of the mine. **3**

A coal seam having gradient of 1 in 5 to 7 occurs at a depth varying from 360-450 m. A longwall retreat operation is planned with a DERD having cutting height ranging from 2.8-3.6 m and web depth of 0.85 m. The panel length is 2300 m and that of face length is 250 m. Assuming rest of the conditions, estimate daily production, equipment required, manpower and life of the panel. **10**

OR

6. State methods of reserve estimation and explain in brief any one. **4**

Define and explain : Geological reserves, workable reserves and commercial reserves. **3**

Explain how size of panel is determined for an underground bord and pillar operation using SDL equipment. **5**

State various factors limiting / affecting boundary of an underground mine. **4**

7. Design a coal handling plant (CHP) for following parameters of a open cast coal project production capacity of mine - 2.5 million tonnes per annum no of working days / annum - 330 Assume rest of the conditions. **12**

State and explain how power demand is determined for an underground coal mine. **4**

OR

8. Discuss at length various planning and design considerations for selection of transport systems in case of a high capacity iron ore open pit operation. **9**

As a part of underground mine planning, discuss in brief what communication facilities will you envisage for effective management of different production and service units whilst ensuring safety. **7**

9. Classify types of sumps stating their purpose in brief in case of an under ground mine. **3**

Estimate the total amount of water inflow into the main mine sump in case of a stowing mine producing 450 TPOD of coal. Assume rest of the conditions. **8**

Briefly explain various procedural steps involved in estimation of manpower required for a open cast coal mine producing 2.5 MTPA at a an avg. strip rate of 2.57 m^3/t. Assume rest of the conditions. **5**

OR

10. As a part of surface mine planning, give complete details of the major constructional activities involved during project implementation schedule in case of a open cast coal project producing 2.75 MTPA having a life of 25 yrs and a gestation period of 18 months. **10**

Discuss various aspects as they pertain to planning for mine closure and post mining land use pattern. **6**

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