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

MN603 - Underground Coal Mining

P. Pages : 2 **GUG/W/16/5403**

Time : Three Hours * 3 5 6 9 * Max. Marks : 80

Notes : 1. Due credit will be given to neatness and adequate dimensions.
2. Assume suitable data wherever necessary.
3. Retain the construction lines.
4. Illustrate your answers wherever necessary with the help of neat sketches.
5. Marks have been given against each question.

1. a) Explain factors affecting size of coal pillar. **6**

b) Describe method of Development with proper layout to produce 600 TPD of coal using LHD as loading m/c under following geo mining conditions. **10**

Depth of cover - 125m.
Seam thickness -4.5m.
Gradient - 1 m8.
Gassiness - deg I.
Roof - good.
Floor - good.

30 cm of shale is at ht of 3m from floor of the seam.
Also give manpower required and expected OMS. Assume other suitable conditions if required.

OR

2. a) Compare Board and pillar with Room and pillar system of mining. **4**

b) Describe method of development use SDL with Haulage, to produce 650 TPD of coal under following conditions. **12**

Depth of cover - 140 m.
Seam thickness - 12 m.
Gradient of seam - 1 m 4.
Gassiness - deg - I.
Roof - good.
Floor - good.

Also give proper layout, manpower required and expected OMS.
Also explain whether seam shall be developed in one section or multi section. Assume suitable conditions if required.

3. a) Explain Stooking method of depillaring. **4**

b) Frame a systematic support rule when SDL is to used in depillaring panel. **8**

c) What U/G arrangements are to be made before depillaring. **4**

OR

4. a) With proper sketch, explain method of depillaring with continuous miner. **8**

b) Explain the following. **8**
i) Partial extraction.
ii) Air blast.
iii) Line of extraction.
iv) Why whole panel of depillaring is not supported.

5. Explain the following wrt L/W Mining system. **16**

a) Half face method and full face method.

b) Mechanics of coal cutting by shearer.

c) Classify L/W system.

OR

6. a) Assuming your own conditions, calculate production from a L/W face. **5**

b) Explain method of supporting of a conventional L/W face. **5**

c) Explain factors affecting face length of a L/W face. **6**

7. a) Explain hydraulic mining system and classify it. **8**

b) Explain Integrated sub level caving with a Indian case study. **8**

OR

8. a) Explain Jankowice method of extraction with suitable Indian case study. **10**

b) Explain cutting mechanism, when high pressure water jet is directed towards solid coal. **6**

9. Explain.

a) Method of extraction below surface structure with Professor Peller. **8**

b) Compensated strain method for extracting below surface structure. **8**

OR

10. Explain.

a) Wide stall mining. **8**

b) Precautious to be observed in case of contiguous working. **8**

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