

IV Semester Examination 2013

Mining Engineering

MN 401: Drilling and Blasting

Full Marks 70

Time 3 hours

First half

Answer question no. 1 and any two from the rest

1. Write short notes on i) Diamond Bit ii) DTH iii) BOP iv) Surface Casing v) Gravity base (3X5)
2. Explain the following terminologies:
 - i) LNG ii) CNG iii) NGL iv) Acid gas v) Dry gas (2X5)
3. i) Explain the compositions of crude oil, natural gas and condensates.
 - ii) Explain the different geological structures in which oil and gas may be trapped. (4+6)
4. What do you mean by directional drilling? What advantages are derived from it? Explain two methods of drilling completions. (2+2+6)
5. Explain the various components and their functions of an oil and gas drilling rig. (10)

2nd half

Answer question 6 and two from the rest

6. Write short notes on the followings

- a) Liquid Oxygen (LOX) Explosives
- b) Detonating cord
- c) Non-electric detonator (NONEL)
- d) Mains Firing System

(3+3+4+3)

7. a) Describe the hazards and control measures in firing by an electronic detonator.

b) What is sequential firing?

c) Describe the advantages of Low Energy Detonation Cord Delay (LEDC) System.

(5+2+4)

8. a) Describe the theory of rock breakage in blasting practice.

b) Explain basic objectives of the blasting in surface mines. What are different factors taken into account during blast design in opencast mines?

(4+3+4)

9. a) Diameter of the shothole is 125mm, height of the bench is 12m and weight, value of K factor is 0.11. Calculate optimum burden and spacing to ensure proper fragmentation.

b) What are the materials used for stemming in the shot holes during blasting? How the lengths of the stemming in the shot holes are decided?

(5+6)

10. a) What precautions are to be taken during blasting in hot holes?

b) Describe the procedures for establishing a magazine for a mine.

c) What the precautions are to be taken to transport explosives in mechanically propelled vehicle?

(3+3+5)