

B.E. Mining Engineering Sem-V  
**MN503 - Drilling and Blasting Engineering**

P. Pages : 2

Time : Three Hours



**GUG/S/19/1653**

Max. Marks : 80

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- Notes :
1. Due credit will be given to neatness and adequate dimensions.
  2. Assume suitable data wherever necessary.
  3. Diagrams and Chemical equation should be given wherever necessary.
  4. Retain the construction lines.
  5. Illustrate your answers wherever necessary with the help of neat sketches.
  6. Use of slide rule, Logarithmic Tables, Steam Tables, Mollier's Chart, Drawing Instruments, Thermodynamic tables for moist air, Psychometric Charts and Refrigeration charts is permitted.
  7. Discuss the reaction, Mechanism wherever necessary.
  8. Marks have been given for each question in right margin.

1. a) Enlist various p-operating parameter of a drilling systems. Explain its effect on performance of drilling. **8**
- b) Explain Thermal drilling system. **8**

**OR**

2. a) Explain mechanism of percussive drilling. **6**
- b) Derive the equation for Torque and normal force in case of Rotary drilling. Assume your own conditions. **10**
3. a) Classify various types of explosive. **7**
- b) Explain **3x3=9**
- i) Plasma Blasting technique.
  - ii) Fully field programmed detonation
  - iii) Blaster's ohmmeter.

**OR**

4. a) Explain construction and working of electrical delay detonator. **6**
- b) Explain the following (wrt to Explosive) **5x2=10**
- i) Sensitiveness
  - ii) Sensitivity
  - iii) Coupling value
  - iv) Water Resistance
  - v) Fume characteristics

5. a) Explain 4x2=8  
i) Plaster shooting.  
ii) Bench blasting in shaft.
- b) Explain the effect of following on result of blasting. 4x2=8  
i) Bench Stiffness  
ii) Burden & Spacing.

**OR**

6. a) Explain 4x2=8  
i) Need of delay & concept of inhale and row to row delay.  
ii) Pop shooting
- b) Explain- 4x2=8  
i) Wedge cut pattern of blasting  
ii) Blasting off the solid.
7. a) Explain transportation of explosive in Bulk from magazine to site of blasting. 8
- b) DECK BLASTING. 8

**OR**

8. a) Explain precautions to be observed during charging & loading of an explosive in hole when electrical STORM approaches. 8
- b) Explain measures to control ground vibrations due to blasting. 8
9. Explain 8x2=16  
a) IN BLAST monitoring  
b) Misfire and its causes

**OR**

10. Explain:- 5+6+5=16  
i) Monitoring While Drilling (MWD) for strata characterization.  
ii) Blown out shot and Blown through shot.  
iii) Line drilling

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