B.E. Mining Engineering Fifth Semester
MN503 - Drilling and Blasting Engineering

P. Pages : 2

Time : Three Hours

Max. Marks : 80

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Notes :   1.   Assume suitable data wherever necessary.
          2.   Diagrams and Chemical equation should be given wherever necessary.
          3.   Illustrate your answers wherever necessary with the help of neat sketches.
          4.   Use of slide rule, Logarithmic tables, Steam tables, Mollier's chart, Drawing
               instruments, Thermodynamic tables for moist air, Psychrometric charts and
               Refrigeration charts is permitted.
          5.   Discuss the reaction, mechanism wherever necessary.
          6.   Marks have been assigned in right margin.

1.   a)   Classify various types of drilling system.   **6**

     b)   Derive an expression of normal thrust and no of blow required in case of percussive   **10**
          drilling.

                                          OR

2.   a)   Explain the mechanism of Rotary percussive drilling.   **6**

     b)   What is drill ability of the rock ? How is it interpreted ? Classify the rock wrt drill ability /   **10**
          drilling index and recommend suitable drilling system with respect to drill ability / drilling
          index.

3.   a)   Explain the desirable characteristics of an explosive.   **10**

     b)   Explain the construction and working of an electronic detonator.   **6**

                                          OR

4.   a)   Enumerate various types of tests carried out on Explosive.   **6**

     b)   Explain the construction and working of -   **10**
          i)   Electric delay detonator
          ii)   Shock tube

5.   a)   Explain theory of blasting.   **8**

     b)   Explain the following with respect to o/c Bench blasting   **8**
          i)   Straight line pattern
          ii)   Diagonal pattern

                                          OR

6.   a)   Enlist various blast design parameter wrt o/c - bench blasting. Give its empirical formulae.   **8**

     b)   Compare solid blasting with pre cut blasting.   **8**

7. a) Enlist environmental effect of blasting and explain control measures for ground vibration due to blasting. **10**

  b) Explain Ring blasting in case of Blasting Gallery method. **6**

OR

8. Explain precautions to be observed where conducting blasting in case of - **8x2**
  i) fiery seam
  ii) Last O/B bench just above developed coal seam.

9. Explain : **8x2**
  i) Preblast monitoring
  ii) Cast Blasting

OR

10. a) Enlist various techniques of controlled blasting and explain pre-splitting. **8**

  b) What is misfire ? Explain its causes. **8**

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