



# CBCS SCHEME

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17MN46

## Fourth Semester B.E. Degree Examination, Jan./Feb. 2021 Drilling and Blasting Engineering

Time: 3 hrs.

Max. Marks: 100

**Note:** Answer any FIVE full questions, choosing ONE full question from each module.

### Module-1

- 1 a. Explain principle of rock drilling, drillability and drillability index. (07 Marks)  
b. Identify and explain the factors that affect the drillability. (05 Marks)  
c. Identify and explain the factors that affect the selection of drills. (08 Marks)

OR

- 2 a. Derive a mathematical expression to determine total hammer power of a rotary percussive drilling. (08 Marks)  
b. Explain mechanism of both rotary and percussive drilling. (07 Marks)  
c. Identify and explain the factors that affect the bit life. (05 Marks)

### Module-2

- 3 a. Explain various properties of explosives and their significance in relation to blasting. (10 Marks)  
b. Distinguish between high and low explosives. (05 Marks)  
c. Discuss various types of permitted explosives. (05 Marks)

OR

- 4 Describe chemical composition, properties and applications of the following explosives :  
a. ANFO. (06 Marks)  
b. Slurry explosives. (07 Marks)  
c. Emulsion explosives. (07 Marks)

### Module-3

- 5 a. Describe safety fuse, detonating cord and NONEL. (07 Marks)  
b. Describe various types of electrical detonators with neat sketches. (08 Marks)  
c. Write a note on Electronic detonator. (05 Marks)

OR

- 6 Discuss causes, prevention and remedies for the following :  
a. Misfires. (08 Marks)  
b. Blown out shots. (06 Marks)  
c. Incomplete detonation. (06 Marks)

### Module-4

- 7 a. Discuss storage and handling of explosives. (12 Marks)  
b. What are the safety measures that are to be taken during transportation of explosives? (08 Marks)

OR

- 8 a. Describe in detail the hydrox , cardox and airdox. (15 Marks)  
b. What are the common causes of accidents during blasting? (05 Marks)

**Module-5**

- 9 a. State and explain strain energy equation given by Livingston , in relation to breakage of rock using explosives. (10 Marks)  
b. Describe coupling and shock wave impedance in relation to blasting. (10 Marks)

**OR**

- 10 a. What are the causes and preventive measures for air overpressure? (07 Marks)  
b. What are the effects of blast induced ground vibration on structures and guidelines given to that effect by DGMS, in terms of peak particle velocity? (06 Marks)  
c. Describe the procedure to design a blasting round in openpit mine when blast induced ground vibration has been observed as a problem. (07 Marks)

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