



CBCS SCHEME

18MN35

Third Semester B.E. Degree Examination, Dec.2019/Jan.2020 Drilling and Blasting

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. Describe auger and cable-tool drills with their applications. (12 Marks)
b. How do you store drill cores and why? (08 Marks)

OR

- 2 a. Describe Odex and core drills with their applications. (12 Marks)
b. Describe various types of core barrel with specific applications. (08 Marks)

Module-2

- 3 a. Explain fundamentals of working of rotary percussive drilling. (04 Marks)
b. Derive an equation to calculate the total power of rotary percussive drilling equipment. (06 Marks)
c. What are the advance systems available for exerting thrust load on the drill bit of rotary percussive drills? Explain. (10 Marks)

OR

- 4 a. Derive an equation to determine total energy consumed by rotary drilling equipment and also explain how penetration rate is sensitive to thrust and rotary speed, for a given rock. (10 Marks)
b. Elaborate working of jet piercing and water jet drilling with their applications. (10 Marks)

Module-3

- 5 a. Identify and explain the factors that must be analyzed for proper selection of explosive for blasting in mines. (12 Marks)
b. Describe various types of electrical detonators with their applications. (08 Marks)

OR

- 6 a. Describe various properties of explosives with their significance in relation to blasting. (10 Marks)
b. Explain constructional features of detonating fuse, NONEL and electronic detonators with their applications. (10 Marks)

Module-4

- 7 a. Explain mechanics of both rotary and percussive drilling. (10 Marks)
b. Explain basic mechanics of blasting. (05 Marks)
c. Identify and explain the factors that affect the blasting in surface mines. (05 Marks)

OR

- 8 a. Explain Livingston Theory of crater formation in relation to blasting in surface mines. (07 Marks)
- b. How do you control blast induced ground vibration using USBM predictor equation. (07 Marks)
- c. Calculate charge per m^3 of rock required for blasting 10m high bench using ANFO (sp. Gravity : 0.8). Rock is massive and hard. (06 Marks)

Module-5

- 9 a. Explain blasting-off-the-solid in a development gallery of underground coal mines. (08 Marks)
- b. Describe cone cut, wedge cut, drag cut and burn cut with their applications. (12 Marks)

OR

- 10 a. Describe long hole blasting in underground metal mines with its applicability conditions. (10 Marks)
- b. What is vertical crater retreat blasting in underground metal mines? Explain. (10 Marks)

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