

MN : MINING ENGINEERING ONLINE Examination

Duration: Three Hours

Maximum Marks: 100

Read the following instructions carefully.

1. Questions must be answered using computers provided by the GATE at the examination centers. Each computer shall run specialized examination software that permits a maximum of one answer to be selected for questions of multiple choice type.
2. Your answers shall be updated and saved on the server periodically and at the end of the examination. The examination will automatically stop once the duration of the examination is over.
3. There are a total of **65** questions carrying 100 marks. All questions are of multiple choice type. Each of these questions carries four choices for the answer labeled A, B, C and D. Only one of the four choices is the correct answer.
4. Questions Q.1 – Q.25 carry 1-mark each, and questions Q.26 – Q.55 carry 2-marks each.
5. Questions Q.48 – Q.51 (2 pairs) are common data questions and question pairs (Q.52, Q.53) and (Q.54, Q.55) are linked answer questions. The answer to the second question of the linked answer questions depends on the answer to the first question of the pair. If the first question in the linked pair is wrongly answered or is unattempted, then the answer to the second question in the pair will not be evaluated.
6. Questions Q.56 – Q.65 belong to General Aptitude (GA). Questions Q.56 – Q.60 carry 1-mark each, and questions Q.61 – Q.65 carry 2-marks each.
7. Unattempted questions will result in zero mark. Wrong answers will result in **NEGATIVE** marks. For Q.1 – Q.25 and Q.56 – Q.60, $\frac{1}{3}$ mark will be deducted for each wrong answer. For Q.26 – Q.51 and Q.61 – Q.65, $\frac{2}{3}$ mark will be deducted for each wrong answer. The question pairs (Q.52, Q.53), and (Q.54, Q.55) are questions with linked answers. There will be negative marks only for wrong answer to the first question of the linked answer question pair, i.e. for Q.52 and Q.54, $\frac{2}{3}$ mark will be deducted for each wrong answer. There is no negative marking for Q.53 and Q.55.
8. Calculator is allowed whereas charts, graph sheets or tables are **NOT** allowed in the examination hall.
9. Rough work can be done in the specified area only.
10. Candidates may use the back side of this page to record their answers for their own convenience.
11. To login, type your Registration Number and password as per instructions provided in the envelope.
12. In order to answer a question, you may select the question using the left side selection panel on the screen and choose the correct answer by clicking on the radio button next to the answer. The answered questions shall be indicated by a solid black ball on the selection panel. In order to change the answer, you may just click on another option. If you wish to leave a previously answered question unanswered, you may click on DESELECT ANSWER button.
13. You may also select questions using NEXT and PREVIOUS buttons.
14. You may also mark questions for reviewing later using MARK button. All marked questions are indicated by a rectangle in the selection panel. Questions which are answered but are marked for the review are indicated by a solid black rectangle and questions which are not answered but are marked for the review are indicated by an outlined rectangle in the selection panel.
15. You must sign this sheet and leave it with the invigilators at the end of the examination.

DECLARATION

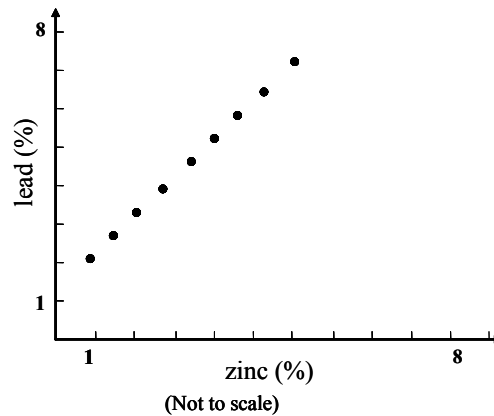
I hereby declare that I have read and followed all the instructions given in this sheet.

Paper Code: MN Registration No: _____ Name: _____

Signature

Q. 1 – Q. 25 carry one mark each.

- Q.1 A scatter plot prepared using a set of values of lead and zinc from a lead-zinc deposit is shown in figure below. The value of correlation coefficient is



- (A) 1.0 (B) 0.7 (C) 0.5 (D) 0
- Q.2 The two vectors are orthonormal, if
 (A) vector product is zero and norm of each vector is also zero
 (B) vector product is one and norm of each vector is also one
 (C) cross product is zero and norm of each vector is one
 (D) cross product is one and norm of each vector is zero
- Q.3 The value of $\lim_{x \rightarrow 0} \frac{1}{x} \{ \sqrt{1+x} - \sqrt{1-x} \}$ is
 (A) 0 (B) 1 (C) 2 (D) 3
- Q.4 The infinite series $1 + \frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \dots$, is
 (A) convergent (B) divergent (C) oscillatory (D) semi-convergent
- Q.5 The largest area of a rectangular shaft for a given constant perimeter is obtained when length is
 (A) 2.5 times of breadth (B) 1.5 times of breadth
 (C) 2 times of breadth (D) equal to breadth
- Q.6 A drive shaft of an engine develops torque of 500 N-m. It rotates at a constant speed of 50 rpm. The power transmitted by the shaft in kW is
 (A) 1.46 (B) 2.05 (C) 2.62 (D) 4.32

