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**S.E. (Mining) Semester- IV (Revised Course 2007-08) EXAMINATION MAY/JUNE 2019
Mine Development**

[Duration : Three Hours]**[Total Marks : 100]**

Please check whether you have got the right question paper.

N.B

- 1) Answer **any five** questions with **at least one** from **each** Module.
- 2) **All** questions carry **equal** marks.
- 3) **Draw** neat sketches in pencil, **wherever** required and necessary.
- 4) Figures to the **right** indicate **full** marks assigned to that question.

MODULE 1

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|-----|---|-----------|
| Q.1 | a) What is dilution? Explain planned and unplanned dilution. | 06 |
| | b) Discuss the various techniques of sampling used in mineral exploration. | 07 |
| | c) What is reserve estimation? Explain proved, probable and possible reserve. | 07 |
| Q.2 | a) Explain in detail the stages of mineral exploration. Write a note on core sampling. | 10 |
| | b) What is whirlwind drilling? What are its advantages over conventional method of core drilling? | 10 |

MODULE 2

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|-----|---|-----------|
| Q.3 | a) Write a note on box cut and with a neat sketch to show different types of orientation of box cut for a moderately dipping coal seam. | 10 |
| | b) Explain with a neat sketch the various parameters of open pit design. | 10 |
| Q.4 | a) Explain briefly about haul road design parameters. State the DGMS guidelines for haul road. | 10 |
| | b) Write short notes on any two of the following: (5*2) | |
| | i) Differentiate between coal mining and metal mining. | |
| | ii) Development of seam deposit in opencast mining. | |
| | iii) Stripping ratio and break even stripping ratio. | |

MODULE 3

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|-----|---|-----------|
| Q.5 | a) Describe the pilling and freezing methods of shaft sinking. | 10 |
| | b) Describe in detail the procedure for shaft deepening. | 10 |
| Q.6 | a) What is the purpose and procedure of shaft centering? Which are the shapes and sizes of shaft commonly used in metal and coal mines? | 10 |
| | b) Write a note on surface plant and equipment required for shaft with the help of a neat sketch. | 10 |

MODULE 4

- Q.7 a) Write short notes on shapes of the tunnels, different applications of tunnels and ‘heading and 10
benching’ method of tunnel excavation.
- b) What is Tunnel Boring Machine (TBM)? Using a line diagram, show the basic components 10
of TBM. Discuss the function of each component.
- Q.8 What is raise borer? Describe any two methods of raise boring. Also discuss the advantages 20
and disadvantages of raise boring.