



12256

21314

3 Hours/100 Marks

Seat No.

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- Instructions :** (1) **All** questions are **compulsory**.
(2) Answer **each** next **main** question on a **new** page.
(3) Illustrate your answers with neat sketches **wherever necessary**.
(4) **Figures** to the **right** indicate **full** marks.
(5) Assume **suitable data**, if necessary.
(6) **Use** of non-programmable Electronic Pocket Calculator is **permissible**.

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| 1. a) Solve any three of the following : | 12 |
| i) State general specifications of a typical earth moving machine. | |
| ii) Give applications of hoe and cranes. | |
| iii) Explain blasting versus ripping applications of tractor dozer. | |
| iv) State difference between loaders and excavators. | |
| b) Solve any one of the following : | 6 |
| i) Compare between general automobile and earth moving machine on following parameters : – Power output and power variations – Working conditions – Steering – RTO registration – Fuel and fuel consumption – Brakes. | |
| ii) Explain the construction of scraper with the help of block diagram. | |
| 2. Solve any four of the following : | 16 |
| i) Draw a typical layout of tractor dozer and state its applications. | |
| ii) Explain the role of earth moving machines in road laying and disaster management. | |
| iii) What is a clamshell ? Explain construction with simple sketch. | |
| iv) Explain the importance of counter weight in forklift truck. | |
| v) Describe safety arrangements in loaders and excavators. | |
| 3. Solve any four of following : | 16 |
| i) Explain the use of dragline in terms of excavating channels, shallow grading, loading and slopping. | |
| ii) Describe the various types of buckets and their applications for hydraulic excavators. | |

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- iii) Explain under carriage maintenance for dozers.
- iv) State the importance of earth moving machinery in terms of infrastructure development.
- v) Draw the general layout of tractors.
- vi) What is a tipper ? Explain the tipping mechanism.
4. a) Solve **any three** of the following : 12
- i) Give the comparison of tractor with an automobile.
 - ii) Explain track shoe construction and working.
 - iii) Compare the tyred and crawler type earth moving machines.
 - iv) Draw a typical layout of a forklift truck and state its types.
- b) Solve **any one** of the following : 6
- i) Explain the construction of tractor tyres and their selection.
 - ii) Draw the transmission layout of a tractor and explain the power transmission.
5. Solve **any four** of the following : 16
- i) Explain how the earth moving machines are classified ? Any four criteria.
 - ii) Describe the construction of motor grader with neat sketch.
 - iii) What are different types of dozer blades ? Explain with neat sketch.
 - iv) State any four differences between power tillers and tractors.
 - v) Draw a typical layout of a road roller and state its applications.
 - vi) Enlist various safety precautions in terms of forklift operations.
6. Solve **any four** of the following : 16
- i) Compare the hinge and parallelogram type of rippers.
 - ii) Describe various types of wheeled loaders.
 - iii) Explain the use of various types of implements in a tractor.
 - iv) State two applications of each in construction industry – forklift truck, tipper and road roller.
 - v) Draw simple sketches of following drag line operations :
 - Excavating underwater soil
 - Excavating trenches.
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