

(Following Paper ID and Roll No. to be filled in your Answer Book)

**PAPER ID : 0403**

Roll No.

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## B.Tech.

(SEM. VII) ODD SEMESTER THEORY EXAMINATION

2010-11

## ENGINEERING MATERIALS

Time : 3 Hours

Total Marks : 100

Note : Attempt **all** five questions.

1. Attempt any **four** parts of the following :

- What do you understand by Carbon Steels ? What are their important properties which makes them very useful ?
- Discuss the effects of alloying Tungsten and Nickel with steel.
- Explain how steels are specified giving suitable examples.
- Explain the difference in microstructure and properties of White and Gray Cast iron.
- What do you understand by Malleable Cast Iron ? How is it made ? What are its applications ?
- Write a note on temperature resisting Steels. State their applications.

2. Attempt any **four** parts of the following :
  - (a) What do you understand by Time Temperature Transformation Curve ? Explain in detail.
  - (b) Explain the terms : Annealing, Normalizing, Hardening. Where such treatment is required ? Give examples.
  - (c) Explain the terms : Austempering and Martempering in detail.
  - (d) Explain the term Hardenability. What is Jominy End Quench Test ? Explain.
  - (e) What do you understand by Case Hardening ? List various processes. Explain any procedure in detail.
  - (f) Write a note on Induction Hardening.
3. Attempt any **two** parts of the following :
  - (a) What is Brass ? List various types of Brasses giving their composition and applications.
  - (b) What is the difference in Heat Treatment of Ferrous and Non Ferrous Alloys ?
  - (c) Write a note on Bronzes and their applications.
4. Attempt any **two** parts of the following :
  - (a) What do you understand by Composite Material ? What are the general requirements of Composite materials and how are they classified ?
  - (b) Distinguish between alloy and composite. Compare the

and reinforced plastics.

- (c) Describe the functions of the matrix and the reinforcing fibers in a composite.

5. Attempt any **two** parts of the following :

- (a) Write a note on Smart Materials giving their applications.
- (b) Write a note on Rubber, its types, properties and applications. What do you understand by Vulcanization ?
- (c) What do you understand by Ceramic material ? Discuss its properties and applications in detail.