

Total Pages—3 **III—Sem/MECH/ELE & MECH/**  
**2014(W)(New)**

( 2 )

**ENGINEERING MATERIAL**

(Code – MET-302/MET-322/EMT-302)

Full Marks : 70

Time : 3 hours

Answer any five questions

*Figures in the right-hand margin indicate marks*

- 1. (a) What is an alloy? 2
- (b) Is Cast-Iron an alloy? Mention its physical properties and application. 5
- (c) Briefly describe various mechanical properties of materials. 7
- 2. (a) What is the composition of stainless steel? 2
- (b) What are the alloying elements in formation of tool steel? Explain their properties in brief. 5

(c) Draw Iron-carbon diagram per steel showing various points of importance. (temp, % of carbon, structure etc.) 7

3. (a) What do you mean by ideal crystal? 2

(b) Describe about various point defects (in brief). http://www.sctevtonline.com 5

(c) What are the effects of imperfection on material properties? 7

4. (a) Name various heat treatment processes. 2

(b) Why hardening is followed by tempering? Briefly describe various tempering processes. 5

(c) Explain in details about various surface (case) hardening processes. 7

5. (a) Name two copper alloys with their constituents and percentage. 2

(b) Describe composition, properties and application of 'duralumin'. 5

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- (c) What do you mean by galvanizing ? Which materials are used for high temperature services ? Explain in brief. 7
6. (a) What is the basic characteristics of a bearing material ? 2
- (b) Mention properties of Iron-base spring material. 5
- (c) Describe composition, properties and uses of Tin base bearing metal. 7
7. (a) What is thermosetting polymer ? 2
- (b) Mention present day uses of ceramics. 5
- (c) What is the purpose of industrial painting ? What methods are normally adopted to carry out such work ? 7

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(ME-1-302/MEF-322/EMF-302)

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