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BIME-024

02423

DIPLOMA - VI EP MECHANICAL ENGINEERING (DMEVI)

Term-End Examination

December, 2012

BIME-024 : ENGINEERING METALLURGY

Time : 2 Hours *Maximum Marks : 70*

Note : (i) *Attempt **total five** questions. Question NO. 1 is compulsory.*

(ii) *Attempt **any four** questions from 2 to 8.*

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1. Write correct answer of the following. **7x2=14**

(a) Carbon in the steels is in :

(i) Graphite form

(ii) Coke form

(iii) Combined form

(iv) All the above forms

(b) Hot working is the process performed on iron and steel materials :

(i) Above recrystallisation temperature.

(ii) Below recrystallisation temperature.

(iii) In the liquid state.

(iv) Sub zero temperature.

(c) Annealing process makes the material :

(i) soft (ii) hard

(iii) brittle (iv) none of the above

(d) Bronzes are the alloys made of :

(i) Copper and Aluminium

(ii) Aluminium and Tin

(iii) Tin and Iron

(iv) Copper and Tin

(e) Wrought iron is :

(i) Heat treated easily.

(ii) Not heat treated at all.

(iii) Heat treated at sub zero temperature.

(iv) All of the above.

(f) Martensite is produced due to :

(i) Normalising

(ii) Hardening

(iii) Annealing

(iv) Tempering

(g) Nitriding :

(i) Hardens complete material

(ii) Softens the material

(iii) Hardens surface

(iv) Increases malleability of the material

2. (a) With suitable sketch explain the dislocations in a crystal. 7

(b) Explain the method of indexing crystal planes and their directions. 7

3. (a) Explain the iron-iron carbide diagram with a suitable sketch. 7

(b) Write the classification of plain carbon and mention applications of each. 7

4. (a) Explain about special purpose steel and their application. 7

(b) Write the composition and application of gray cast iron and white cast iron. 7

5. (a) Write a short note on the application and composition of bearing materials. 7

(b) Write the advantages of heat treatment. 7

6. (a) Explain the advantages and applications of powder metallurgy. 7

(b) Explain different methods of powder conditioning. 7

7 (a) Write a brief note on production of sintered structural components. 7

(b) Explain the mechanical testing method for crank shafts. 7

8. Write short notes on *any two* of the following : 2x7=14

(a) Advantages of **non-destructive** testing

(b) Importance of CCT diagram

(c) Effect of the lattice structure on properties of metals

(d) Transformation of austenite on slow cooling below critical temperature.
