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BIME-024

DIPLOMA – VIEP – MECHANICAL ENGINEERING (DMEVI)

Term-End Examination

00332

December, 2017

BIME-024 : ENGINEERING METALLURGY

Time : 2 hours *Maximum Marks : 70*

Note : *Answer any* ***five*** *questions. All questions carry equal marks.*

1. (a) What are Crystallographic planes and Crystallographic directions ? Describe their significance. 7

(b) Write a brief note on imperfections in crystals. 7

2. (a) How are aluminium alloys classified ? Explain and mention their properties and applications. 7

(b) How does the presence of dislocation affect the plastic deformation and strength of metals ? Describe. 7

3. (a) What are the requirements of an alloy to be used as a bearing metal ? Explain. 7

(b) Write a detailed note on alloy cast iron emphasising the properties, composition and applications. 7

4. (a) Explain the utility of iron – iron carbide equilibrium diagram with a suitable sketch. 7

(b) Write the composition, properties and applications of brasses. 7

5. (a) Explain the flame hardening method and its industrial applications. 7

(b) Describe the following processes of heat treatment of steels : 7

(i) Normalizing

(ii) Hardening and tempering

6. (a) Explain how powder metallurgy can be used for manufacturing products of hard metals. 7

(b) State the advantages and limitations of powder metallurgy. 7

7. (a) Explain the magnetic particle testing process in detail. Give its applications. 7

(b) Enlist the advantages and limitations of Non-Destructive Testing methods. 7

8. Write short notes on any ***four*** of the following : $4 \times 3\frac{1}{2} = 14$

(a) Work Hardening

(b) Effect of Alloying Elements

(c) Annealing

(d) Nitriding

(e) Friction Materials

(f) Inspection of Welded Joints