

**DIPLOMA - VIEP - MECHANICAL
ENGINEERING (DMEVI)**

**00302 Term-End Examination
December, 2016**

BIME-024 : ENGINEERING METALLURGY

Time : 2 hours

Maximum Marks : 70

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

1. (a) Describe the arrangement of atoms in FCC and HCP unit cells. 7
- (b) How does the presence of dislocations affect the plastic deformation and strength of metals ? Describe. 7
2. (a) Classify steel according to the percentage of carbon content. Discuss in terms of properties and application. 7
- (b) Explain the utility of Iron – Iron carbide equilibrium diagram with suitable sketch. 7
3. (a) Explain TTT diagram and its utility in industry. 7
- (b) Distinguish between Hot working and Cold working. Mention the practical applications of both the processes. 7

4. (a) Explain the induction hardening method and its industrial application. 7
- (b) What are the different quenching media? What is the effect of quenching media on the mechanical properties of hardened steel? 7
5. (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
6. (a) Which NDT method is suitable for testing of welded joints? Explain. 7
- (b) Explain the magnetic particle testing process in detail. Give its applications. 7
7. Write short notes on any *four* of the following: $4 \times 3 \frac{1}{2} = 14$
- (a) Radiography
- (b) Visual Inspection
- (c) Carburizing
- (d) Bearing Materials
- (e) Dislocations
- (f) Microstructural Analysis
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