

**DIPLOMA IN MECHANICAL ENGINEERING
(DME) DMEVI**

Term-End Examination

June, 2013

00135

BME-050 : ENGINEERING MATERIALS

Time : 2 Hours

Maximum Marks : 70

-
- Note :** (i) *Question No. 1 is compulsory.*
(ii) *Answer any four questions from remaining 5.*
(iii) *Use of scientific calculator is allowed.*
(iv) *Assume missing data suitably, if any.*
-

1. Answer the following questions by making correct choice. **14x1=14**

Choose the Correct Statement :

- (a) Which one of the following is not a Copper Alloy ?
(i) Muntz metal (ii) Bronze
(iii) Gun metal (iv) Bainite
- (b) Percentage elongation is taken as index to describe :
(i) Malleability (ii) Brittleness
(iii) Ductility (iv) Plasticity
- (c) Mild steel is used for making :
(i) Axles
(ii) Machine structures
(iii) Stampings
(iv) Dies

- (d) Which one of the following processes is not a heat treatment of steel ?
- (i) Normalizing
 - (ii) Galvanizing
 - (iii) Hardening
 - (iv) Annealing
- (e) Jominy Test is conducted for :
- (i) Compression
 - (ii) Malleability
 - (iii) Impact
 - (iv) Hardenability
- (f) The advantage of an alloy steel is :
- (i) High resistance against corrosion and oxidation
 - (ii) Low resistance against corrosion and oxidation
 - (iii) High Brittleness
 - (iv) Lower Hardness
- (g) Cast Iron :
- (i) has high melting point compared to steel
 - (ii) can be easily machined
 - (iii) is costly material than steel
 - (iv) has poor abrasion resistance
- (h) Principle ore of aluminium is :
- (i) Ferrite
 - (ii) Hematite
 - (iii) Bauxite
 - (iv) Graphite

- (i) Gun metal is an alloy of :
- (i) Aluminium
 - (ii) Magnesium
 - (iii) Copper
 - (iv) Titanium
- (j) Hypoeutectoid is a steel with :
- (i) 0.8% carbon
 - (ii) 2% carbon
 - (iii) Less than 0.8% carbon
 - (iv) 0.8% to 2% carbon
- (k) Ceramics have :
- (i) Low melting point
 - (ii) High melting point
 - (iii) High ductility
 - (iv) High toughness
- (l) Hardest abrasive material of the following :
- (i) Tungsten Carbide
 - (ii) Diamond
 - (iii) Silicon Carbide
 - (iv) Aluminium oxide
- (m) Following is a "Thermoplastic" :
- (i) Polypropylene
 - (ii) Melamine
 - (iii) Polyester
 - (iv) Epoxy

- (n) Graphite is one type of :
- (i) Ceramic
 - (ii) Abrasive
 - (iii) Lubricant
 - (iv) Coating
2. (a) Explain "stress-strain" diagram for ductile materials. 5
- (b) Draw the schematic of 'Universal Testing - machine' with its parts and explain the process of testing. 9
3. (a) Describe Vickers Hardness Test. 5
- (b) Briefly explain the following materials. 9
- (i) Babbitts
 - (ii) Bronzes
 - (iii) Structural steels
4. (a) Describe how to find Larsen-Miller parameter by performing creep rupture tests. 8
- (b) Write briefly about the following. 6
- (i) Creep
 - (ii) Creep strength
 - (iii) Rupture strength

5. (a) Explain "induction type" electric furnace with diagram. 9
- (b) Write important properties of lubricants. 5
6. (a) Explain different methods of 'Heat treatments' on stainless steel. 8
- (b) Explain the following Alloys. 6
- (i) Stellite (ii) Ceramic tools
- (iii) Cemented Carbide
-