

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

00984

Term-End Examination**June, 2017****BME-050 : ENGINEERING MATERIALS***Time : 2 hours**Maximum Marks : 70*

*Note : Question number 1 is **compulsory**. Attempt any **four** more questions from questions no. 2 to 6. Use of calculator is permitted.*

1. Select the correct answer from the given alternatives for each part given below : $14 \times 1 = 14$

(a) Modulus of Elasticity is given by

(i) $E = \frac{\epsilon}{\sigma}$

(ii) $E = \frac{\sigma}{\epsilon}$

(iii) $E = \epsilon \cdot \sigma$

(iv) $E = \frac{1}{\epsilon \cdot \sigma}$

- (b) The angle of Brale indenter (Diamond cone) is
- (i) 130°
 - (ii) 110°
 - (iii) 120°
 - (iv) 160°
- (c) The deformation that is non-permanent is
- (i) Ductile
 - (ii) Plastic
 - (iii) Elastic
 - (iv) Malleable
- (d) The tensile strength of Pure Iron (0% Carbon) is around
- (i) 150 N/mm^2
 - (ii) 250 N/mm^2
 - (iii) 350 N/mm^2
 - (iv) 450 N/mm^2
- (e) The colour appearance of 'Press Tools' after tempering temperature is
- (i) Brown
 - (ii) Purple
 - (iii) Blue
 - (iv) Red

- (f) Fatigue strength is increased by adding the following alloying element :
- (i) Boron
 - (ii) Lead
 - (iii) Cobalt
 - (iv) Vanadium
- (g) Silica present in Cast Iron is about
- (i) 0.5 to 3%
 - (ii) 3 to 4%
 - (iii) 5%
 - (iv) 6.5%
- (h) 70/30 Brass (i.e., 70% Copper and 30% Zinc) is known as
- (i) Red Brass
 - (ii) Yellow Brass
 - (iii) Muntz Metal
 - (iv) Cartridge Brass
- (i) The melting point of Tungsten Carbide (WC) in °C is
- (i) 3120
 - (ii) 2900
 - (iii) 2850
 - (iv) 2700

- (j) The soft grades of grinding wheels are used for
- (i) Soft materials
 - (ii) Hard materials
 - (iii) Medium materials
 - (iv) Tough materials
- (k) Natural rubber is known as
- (i) Crop rubber
 - (ii) Polycarbonate
 - (iii) Polyisoprene
 - (iv) Polypropylene
- (l) Shear strength (MPa) of Epoxy is
- (i) 26
 - (ii) 19.4
 - (iii) 15.4
 - (iv) 16
- (m) A salt or an ester of acetic acid is
- (i) Acetal
 - (ii) Acetaldehyde
 - (iii) Acetate
 - (iv) None of the above
- (n) A chemical reaction by which various types of lubricants are decomposed is called
- (i) Hydrolysis
 - (ii) Pyrolysis
 - (iii) Oxidation
 - (iv) Emulsification

2. (a) What are the mechanical properties of materials? Explain.
- (b) Describe the "Charpy Impact Testing Machine" with a neat diagram. $2 \times 7 = 14$
3. (a) Explain Continuous Casting.
- (b) Explain 'Tempering' process with suitable example. $2 \times 7 = 14$
4. (a) Write the properties of Brass and Bronze with their applications.
- (b) Explain Ceramic materials with their applications. $2 \times 7 = 14$
5. (a) Explain the 'Terminology' used to specify a Grinding wheel with an example.
- (b) Explain the manufacturing process for Reinforced plastic parts. $2 \times 7 = 14$
6. (a) Explain the process of metal spraying with diagram.
- (b) Describe the classification of lubricants. $2 \times 7 = 14$
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