



SF-6523

B. E. II (Sem. IV) (IC) Examination

May / June - 2011

Properties of Engineering Material

Time : 3 Hours]

[Total Marks : 100

Instructions :

(1)

નીચે દર્શાવેલ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી. Fillup strictly the details of signs on your answer book.	Seat No. :
Name of the Examination :	<input type="text"/>
<input type="text" value="B. E. 2 (Sem. 4) (IC)"/>	<input type="text"/>
Name of the Subject :	<input type="text"/>
<input type="text" value="Properties of Engineering Material"/>	<input type="text"/>
Subject Code No. : <input type="text" value="6"/> <input type="text" value="5"/> <input type="text" value="2"/> <input type="text" value="3"/>	Section No. (1, 2,.....) : <input type="text" value="1&2"/>
Student's Signature	

- (2) Attempt all questions.
(3) Figure to the right indicate marks.
(4) Answer of two sections must be written in separate answer books.

SECTION - I

- 1 (a) Give the answers in brief. 10
- (i) The potential energy of the electron at a distance r from the proton is given by _____. 1
- (ii) Explain covalent and ionic bond. 2
- (iii) Stefan Boltzman constant is given by the equation _____. 1
- (iv) Heat capacity at constant volume is defined as : 2
- (a) $C_v = 3Rf (T/\theta)$
- (b) $C_v = 9 Rf (T/\theta)$
- (c) $C_v = 9 Rf (T/\theta)$
- (d) $C_v = 3Rf (T^3/\theta^3)$
- (v) Define electron affinity. 2
- (vi) Explain slip with diagram. 2
- (b) Explain any one method of corrosion control. 8
- 2 (a) Mention the basic mechanism of corrosion and explain concentration cell corrosion. 8
- (b) Express your views on wear. 8

OR

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[Contd...

- 2 (a) Explain the following terms : 8
 (i) Ionization potential
 (ii) Bond strength
 (iii) Bond energy
 (iv) Ionic radii.
 (b) (i) State the laws of friction 3
 (ii) Explain rolling friction. 5
- 3 Attempt any two : 8×2=16
 (i) Stress and strain
 (ii) Viscosity
 (iii) Mechanism of lubrication.

SECTION - II

- 4 (a) Give the answers in brief :
 (i) Define permeability. 1
 (ii) Thermal coefficient of expansion is related to : 1
 (a) specific heat and melting point of solid
 (b) temperature of solid
 (c) heat capacity of solid
 (d) all of the above.
 (iii) Define erosion corrosion. 2
 (iv) Explain the following terms : 6
 (a) hysteresis
 (b) fretting corrosion
 (b) Classify magnetic materials and explain in detail. 8
- 5 (a) Explain thermal expansion. 4
 (b) Explain thermal anisotropy. 4
 (c) Explain sliding friction. 8

OR

- 5 (a) Give the relation between the parameters specified below : 4
 (i) magnetization, magnetic field and magnetic induction
 (ii) Susceptibility, applied magnetic field and magnetization
 (b) Define the following : 4
 (i) asperity
 (ii) magnetic field strength.
 (c) Explain heat capacity. 8
- 6 Attempt any two : 8×2=16
 (i) Anode metallic coating
 (ii) Thermoelastic effect
 (iii) Fluid and boundry lubrication.