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SF-8167

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

May / June - 2011

Physical & Inorganic Chemistry

(New Course)

Time : 3 Hours]

[Total Marks : 100

Instructions :

(1)

नीचे दृष्टावेक निशानीवाणी विगतो उत्तरवडी पर अवश्य दभवी.
Fillup strictly the details of signs on your answer book.

Name of the Examination :

B. E. 2 (Sem. 4) (Chemical)

Name of the Subject :

Physical & Inorganic Chemistry (New)

Subject Code No. : **8 1 6 7** Section No. (1, 2,.....) : **1&2**

Seat No. :

Student's Signature

- (2) Give reactions and neat diagrams whenever necessary.
(3) Question 1 and 4 are compulsory and carries 20 marks each.
(4) Question 2,3 and 5,6 are of 15 marks each.

SECTION - I

- 1 (a) Fill in the blanks : 10
- (i) $F = C - \text{_____} = +2$
(ii) $SR + \text{heat energy} \leftrightarrow = \text{_____}$.
(iii) For one component system at the triple point is _____.
(iv) The bomb calorimeter apparatus was derived by _____ to measure the heat of combustion of _____ compounds.
(v) The greater the heat of fusion of a substance _____ the magnitude of inter molecular forces.
(vi) The enthalpy change when one mole of solid is directly converted to the gaseous state at a temperature below it's melting point is _____.
(vii) $1 \text{_____} = 4.185 \text{ Kilo Joule}$.
(viii) The temperature coefficient is _____ the $nFE > - \Delta H$.
(ix) As inductive effect increases the dipole moment _____.

- (b) Short answer questions : 10
- (a) What is eutectic point ?
 - (b) Discuss triple point.
 - (c) Explain Degree of freedom.
 - (d) Define free energy.
 - (e) Explain Heat of solution.
- 2** Attempt any **three** : 15
- (i) Discuss one component system with suitable examples.
 - (ii) Explain fuel cell with suitable examples.
 - (iii) What is inductive effect ? Explain with suitable examples.
 - (iv) Define industrial application of thermodynamics.
- 3** Attempt any **three** : 15
- (a) What is two component system ? Explain it with suitable example.
 - (b) Explain electro chemical series and it's application.
 - (c) What is bomb calorimeter ? Explain it's method of operation in detail.
 - (d) What is Resonance effect ? Explain hyper conjugation effect in detail.

SECTION - II

- 4** (a) Fill in the blanks : 10
- (i) _____ explosives are highly sensitive explosives.
 - (ii) The wave length in the ultraviolet region is _____ nm.
 - (iii) _____ are f-block elements.
 - (iv) Lambert's and Beer's law give relation between _____ and _____.
 - (v) _____ and _____ phrases are consists in chromatography.
 - (vi) _____ and _____ theories are explain the nature of covalent bond.
 - (vii) _____ stationary phase is used in Gas-Solid chromatography.
- (b) Short answer questions : 10
- (i) What is Cast Iron ?
 - (ii) Advantages of GC.
 - (iii) Partition Chromatography.
 - (iv) Rocket Propellant
 - (v) Explain Low Explosives.

- 5** Attempt any **three** : **15**
- (a) What do you mean by HPLC ? Explain with application of HPLC.
 - (b) Write the characteristics and uses of explosives. Discuss about primary explosive.
 - (c) Define and explain co-valent, co-ordinate and ionic bonds and their properties.
 - (d) What do you mean by Metallurgy ? Write the physical properties of chromium and vanadium.
- 6** Attempt any **three** : **15**
- (a) Discuss the Molecular Orbital theory of bonding.
 - (b) Classification of Rocket propellants. Why Bipropellant is more widely used in a rocket ?
 - (c) Write the chemistry and application of Transition metal.
 - (d) Define and explain GLC and GSC.
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