SW - 76

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B.Sc. (Part - III) (Semester - VI) Examination, October - 2019

CHEMISTRY

Physical Chemistry (Paper - XIII)

Sub. Code : 65830

Day and Date : Wednesday, 16 - 10 - 2019 **Total Marks : 40**

Time : 12.00 noon to 2.00 p.m.

Instructions :
1) **All questions are compulsory.**
2) **Figures to the right indicate full marks.**
3) **Neat and labelled diagrams must be drawn wherever necessary.**
4) **Use of log table and calculator is allowed.**

Q1) Choose the correct alternative for each of the following and rewrite the sentences. **[8]**

a) In equation, F = C – P + 2, C represents _____.

i) Degrees of freedom ii) No. of components

iii) No. of phases iv) any constant

b) Decrease in the value of _____ function gives the maximum reversible work (both mechanical and nonmechanical) done by the system.

i) $-(\Delta G)_{P,T}$ ii) $-(\Delta A)_{T}$

iii) $-(\Delta S)$ iv) $-(\Delta E)$

c) The variation of melting point of reaction with pressure is given by _____ equation.

i) Arrhenius ii) Kirchhoff's

iii) Hess's iv) Clapeyron-Clausius

d) The crystal structure of Potassium chloride belongs to system.

i) Body centered cubic ii) Simple cubic

iii) Face centered cubic iv) Triclinic lattice

P.T.O.

e) Miller indices are also called as _____ values of the plane.

i) (123) ii) (abc)

iii) (xyz) iv) (hkl)

f) In Geiger Muller(G.M.) counter method _____ particles are counted.

i) α ii) β

iii) α and β iv) γ

g) α – D glucose $\leftrightarrow$ β – D glucose is the example of _____ order.

i) Reversible first

ii) Irreversible first

iii) Forward first and backward second

iv) Both (forward and backward) second

h) In physical (van der Wall's) adsorption isotherm _____ types of isotherms are observed.

i) 3 ii) 4

iii) 5 iv) 6

Q2) Attempt any Two of the following. **[20]**

a) Derive Clapeyron-Clausius equation and explain any four applications of it.

b) What is diffraction of X-rays? Derive Bragg's equation.

c) Mention types of adsorption isotherms and Derive Langmuir's adsorption isotherm with limiting cases.

Q3) Attempt any three of the following. **[12]**

a) From simple eutectic system. Explain Lead Silver system along with Pattinson 's process of desiliverisation of lead.

b) Give reduced phase rule to three component system at constant pressure and temperature and explain graphical representation of three component system.

c) K_p for a certain reaction is 20.2 at 1218 K and heat of reaction is -88.492 KJ per mole. Calculate K_p at 1338 K. ($R = 8.314\ JK^{-1}\ mol^{-1}$)

d) How decay constant (λ) and half life period ($t_{½}$)is determined experimentally.

e) Mention Simultaneous reactions and explain Successive reactions with two examples.

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