UG (CBCS) EVEN SEMESTER EXAMINATION, 2024

EDUCATION
(B.Sc. B.Ed.)

6th Semester

Course No. : BSCP – 603
(General Chemistry)

Full Marks : 50
Pass Marks : 20

Time : 2 hours

The figures in the margin indicate full marks for the questions

(*Answer five questions*)

1. (a) Define radioactivity and write down its unit in SI system. 2+1=3

   (b) Write down the '4n+2' radioactive disintegration series. 5

   (c) State two applications of radioisotopes. 2

Or

2. (a) Sketch the planes having Miller indices (010) and (111). 4

   (b) Write down the law of rational indices. 2

   (c) Starting with gaseous NH_3 and HCl, construct a Born-Haben cycle leading to the formation of solid NH_4Cl. 4

3. (a) Write a detailed note on the manufacturing process of paper. 4

(b) Write down the average composition of portland cement. 2

(c) Write down the uses of $K_2Cr_2O_7$ and $KMnO_4$. 4

Or

4. (a) Write a detailed account on global warming. 5

(b) Write down the consequences of ozone layer depletion. 3

(c) What is radioactive fallout. 2

5. (a) Write down the Fischer projection formulae of Mannose and Talose. 2+2=4

(b) What is mutarotation? 2

(c) How does phenolpthalein changes its colour with the change of pH in the solution. 4

Or

6. (a) Write down the structure of α-D-glucopyranose. Convert the same to Howarth projection formula. 2+2=4

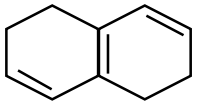
(b) Discuss the peparatory technique of synthetic petrol. 6

7. (a) What do you mean by R_f? 2

(b) Point out four prominent differences between column and paper chromatography. 4

(c) Applying the Woodward-Fieser rule calculate the

λ_{max} for: 4



Or

8. (a) What is the spectrol range of IR spectroscopy? 1

(b) State Hook's law. 2

(c) Comment on the IR activity of CO_2 during its symmetric stretching. 2

(d) What is chemical shift in NMR spectroscopy? 2

(e) Explain 1_H NMR spectra for ethanol. 3

9. (a) Define cyclic process and reversible process. 2+2=4

(b) Write down the limitations of 1st law of thermodynamics. 2

(c) For ideal gas deduce the equation : 4

$9 = n\overline{C}_v dT + pdv$

where the terms are having their usual meaning. 4

Or

10. (a) Write a short note on Heisenberg's uncertainity principle. 3

(b) What is a black body? 2

(c) What is the physical significance of ψ? 2

(d) Write down the physical significance of Gibbs free energy. 3

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