UG (CBCS) Even Semester Examination, May 2025

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) Write down the distinctive features of alpha, beta and gamma rays. 6

   (b) Write down the '4n' or '4n+3' radioactive disintegration series. 4

Or

2. (a) Write down the medicinal uses of radioactive isotopes. 3

   (b) What are the seven crystal systems? Name the Bravais lattices of each class. 2+3=5

   (c) Calculate the number of particles per unit cell in body-centred cubic lattice. 2

3. (a) Write a detailed note on portland cement. 5

   (b) What is urea? How it can be prepared? 2+3=5

(Turn Over)

Or

4. (a) In pulp and paper production, how the environmental issues are taken care of? 5

(b) Write a detailed note on greenhouse effect. 5

5. (a) What are carbohydrates? How they can be classified? 2+3=5

(b) Write down the products of the following reactions:

(i) D-glucose + 3 Ph - NH - $NH_2 \rightarrow$? 3

(c) What happens when D-glucose is treated with Bromine water? 2

Or

6. (a) What is octane number? 2

(b) Write down the synthetic route of methyl orange. 8

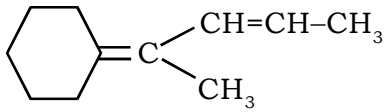
7. (a) Write down the basic principles of paper chromatography. 5

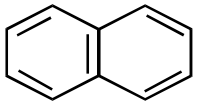
(b) What is NMR spectroscopy? 2

(c) What is shielding and deshielding of protons (include example)? 3

Or

8. (a) Calculate the absorption maximum in the UV spectrum of 3+3=6

(i) 

(ii) 

(b) Write down the factors which can influence chemical shift in NMR spectroscopy. 4

9. (a) Write down the Clausius and Planck-Kelvin statements of second law of thermodynamics. 2+2=4

(b) Derive the relation PV^{γ} = constant for an ideal gas undergoing adiabatic reversible change. 4

(c) Write down the physical significance of entropy. 2

Or

10. (a) Write a note on Rayleigh-Jeans law. 3

(b) A bird is flying with a velocity of 5 m/s. Given mass of the bird is 200g. Calculate the wavelength of the flying bird. 4

(c) What is the physical significance of ψ^2 ? 3

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