Bangalore University, Bengaluru -560001

B.Sc. I Semester, chemistry – I (General chemistry)

Blue print of model question paper – III

Name of the topic	No. of hours	No. of short Answer questions(2 Marks)			No. of long Answer questions (4 Marks)	Total marks
		Part-A	Part -B	Total		
Mathematical concepts	4	1	1	**2**	**1**	**08**
Gaseous state	9	2	2	**4**	**2**	**16**
Photochemistry	4	1	1	**2**	**1**	**08**
Liquids and solutions	9	1	2	**3**	**3**	**18**
Periodic table and periodic properties	9	3	2	**5**	**2**	**18**
Analytical chemistry	4	1	1	**2**	**1**	**08**
Basic concepts of organic chemistry	4	1	1	**2**	**1**	**08**
Aliphatic hydrocarbons	9	2	3	**5**	**2**	**18**
Total	52	12	13	**25**	**13**	**102**

PART – A   (12 x 2 =24)

1. Mathematical concepts
2. Gaseous state
3. Gaseous state
4. Photochemistry
5. Liquids and solutions
6. Periodic table and periodic properties
7. Periodic table and periodic properties
8. Periodic table and periodic properties
9. Analytical chemistry
10. Basic concepts of organic chemistry
11. Aliphatic hydrocarbons
12. Aliphatic hydrocarbons

PART – B   (13 x 6 = 78)

13 a) Mathematical concepts
    b) Mathematical concepts
14. a) Gaseous state
    b) Gaseous state

15. a) Gaseous state
    b) Gaseous state
16. a) Photochemistry
    b) Photochemistry
17. a) Liquids and solutions
    b) Liquids and solutions
18. a) Liquids and solutions
    b) Liquids and solutions
19. a) Liquids and solutions
    b) Aliphatic hydrocarbons
20. a) Periodic table and periodic properties
    b) Periodic table and periodic properties
21. a) Periodic table and periodic properties
    b) Periodic table and periodic properties
22. a) Analytical chemistry
    b) Analytical chemistry
23. a) Basic concepts of organic chemistry
    b) Basic concepts of organic chemistry
24. a) Aliphatic hydrocarbons
    b) Aliphatic hydrocarbons
25. a) Aliphatic hydrocarbons
    b) Aliphatic hydrocarbons

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Model question paper – III

Time: 3 Hours   Max. Marks: 70

PART – A

Answer **any eight** of the following questions. Each question carries **two** marks. (8 x 2 = 16)

1. Mention the properties of logarithm
2. Define liquefaction of gases.
3. Write the equation which shows the relationship between average, root mean square and most probable velocities.
4. Define bioluminescence. Give example
5. Mention two applications of solvent extraction
6. Define reducing power of elements. How it is used to predict the behavior of elements?
7. State modern periodic law. Mention the number of periods and groups present in modern periodic table.

8. Explain hydrides of halogens.
9. Define error. Mention its types
10. Define chiral centre. Give example
11. State Markovnikov's rule for alkenes
12. Give the structure of banana bond in cyclopropane

PART – B

Answer **any nine** of the following questions. Each question carries **six** marks. (9 x 6 = 54)

13. a) i) Mention the applications of partial differentiation ii) Define atomic orbital using probability concept
    b) What are linear and non- linear curves?   (4 + 2)
14. a) Reduce the equation of law corresponding states of gases.
    b) At what temperature will the average velocity of methane molecules be the same as that of ethane molecules at 350K?   (4 + 2)
15. a) Explain experimental determination of critical constant of P_C and T_C by Cagniard de La Tour method
    b) Define root mean square velocity. Mention its SI unit.   (4 + 2)
16. a) Explain the determination of quantum yield of dimerisation of antracene
    b) Define singlet and triplet states   (4 + 2)
17. a) Explain the determination of molecular mass of solute by Landsberger's method
    b) Explain the effect of temperature on surface tension   (4 + 2)
18. a) Explain fractional distillation of binary liquid mixture with three types T –C curves
    b) State Raoult's law of dilute solution   (4 + 2)
19. a) In an experiment with Ostwald viscometer, pure water took 1.52 minutes to flow through the capillary at 20^0C. For the same volume of another liquid of density 0.80g/cm3 the flow time was 2.25 minutes. Find the relative viscosity of the liquid and its absolute viscosity in centipoises. Density of water at 20^0C is 0.9982 and absolute viscosity of water is 1.005 centipoise.
    b) Calculate angle of strain on cyclopropane   (4 + 2)
20. a) Explain the factors affecting on electronegativity
    b) Explain the size of cation is smaller than anion   (4 + 2)
21. a) Explain the variation of periodic properties of halogens with respective of ionic radii, electron affinity and electronegativity
    b) How hydrides of halogens are formed   (4 + 2)
22. a) Explain the rules for computing the significant figures
    b) Calculate equivalent mass of potassium dichromate   (4 + 2)
23. a) Explain the stability of carbocations based on inductive effect
    b) What are electrophiles? Give examples   (4 + 2)
24. a) Explain the Baeyer's strain theory of cycloalkanes
    b) Give Sawhorse formula for n-butane   (4 + 2)
25. a) Explain the conformation of n-butane using energy profile diagram and write their stability
    b) Give epoxydation reaction of alkenes   (4 + 2)