Total No. of Questions: 22

Enrollment No : _____

MEDICAPS UNIVERSITY

Faculty of Science

End Semester Examination May 2025

FS3EG06 Chemistry

Programme	:	B. Sc. (Hons.)	**Branch/Specialisation**	:	FS
Duration	:	3 hours	**Maximum Marks**	:	60

Note: *All questions are compulsory. Internal choices, if any, are indicated. Assume suitable data if necessary. Notations and symbols have their usual meaning.*

Section 1 (Answer all question(s))

Q1. A suitable method for the extraction of essential oil from the flower is- **Marks 1 CO 1 BL 1**

Rubric	Marks
Answer- d) Steam Distillation	1

- ○ Distillation
- ○ Crystalization
- ○ Distillation under reduced pressure
- ◉ Steam distillation

Q2. Molecular mass of H_2SO_4 is- **1 1 1**

Rubric	Marks
Answer: a) 98	1

- ◉ 98
- ○ 94
- ○ 90
- ○ 88

Q3. A chemical bond formation that involves the complete transfer of electrons between atoms is _____. **1 1 1**

Rubric	Marks
a) ionic bond	1

- ◉ Ionic bond
- ○ Covalent bond
- ○ Metallic bond
- ○ Partial covalent bond

Q4. The oxygen molecule is paramagnetic. It can be explained by- **1 1 1**

Rubric	Marks
Answer: d) Molecular orbital theory	1

- ○ Resonance
- ○ Hybridisation
- ○ Valence bond theory
- ◉ Molecular orbital theory

Q5. Which has the maximum electropositive character? **1 1 1**

Rubric	Marks
Answer: b) Cs	1

- ○ Cu
- ◉ Cs
- ○ Ba
- ○ Cr

Q6. Zinc and mercury do not show variable valency like d-block elements because **1 1 1**

Rubric	Marks
Answer: b) their d-shells are complete	1

- ○ They are soft
- ◉ Their d-shells are complete
- ○ They have only two electrons in the outermost subshell.
- ○ Their d-shells are incomplete

Q7. Which of the following is a strong acid? **1 1 1**

Rubric	Marks
b) HCl	1

- ○ CH_3COOH
- ◉ HCl
- ○ NH_4OH
- ○ H_2O

Q8. In the titration of a strong acid and a weak base, which of the following is used as an indicator? **1 1 1**

Rubric	Marks
Answer : a) Methyl orange	1

- ◉ Methyl orange
- ○ Phenolphthalein
- ○ Thymol blue
- ○ Fluorescein

Q9. Which among the following is not an example of Aliphatic compound? **1 1 1**

Rubric	Marks
Answer: c) Anthracene	1

- ○ Acetaldehyde
- ○ Ethane
- ◉ Anthracene
- ○ Ethyl alcohol

Q10. The shape of carbocation is _____. **1 1 1**

Rubric	Marks
Answer: d) Trigonal planar	1

- ○ Pyramidal
- ○ Bent
- ○ Linear
- ◉ Trigonal planar

Section 2 (Answer all question(s))

Marks CO BL

Q11. Define normality with formula. **2 2 2**

Rubric	Marks
Normality definition- 1 Mark Formula- 1 Mark	2

Q12. If a solution contains 1.56 grams of diluted HCl acid in water and the volume is 26.8 ml. Calculate the molarity of the solution. (Molecular weight of HCl is 36.5 g) **3 3 3**

Rubric	Marks
The answer is 1.59 M.	3

Q13. (a) Write a detail note on the methods of purification. **5 4 3**

Rubric	Marks
Detail description on methods of purification (Atleast five methods)	5

(OR)

(b) A compound has a percent composition of 75.95% C, 17.72% N, and 6.33% H by mass with a molar mass of about 240 g/mol. Determine the molecular formula of the compound.

Rubric	Marks
Answer: $C_{15}H_{15}N_3$	5

Section 3 (Answer all question(s))

Marks CO BL

Q14. Define bond order with example. **4 2 2**

Rubric	Marks
Bond order- 2 marks Example- 2 Marks	4

Q15. (a) Write difference between VBT and MOT theory. **6 4 4**

Rubric	Marks
At least three Difference between VBT and MOT theory- 6 Marks	6

(OR)

(b) Write postulates of VSEPR theory. Explain it with a suitable example.

Rubric	Marks
postulates of VSEPR theory. - 3 marks Explain it with a suitable example- 3 marks	6

Section 4 (Answer all question(s))

Marks CO BL

Q16. Write about the biological importance of alkali metals. **4 3 3**

Rubric	Marks
biological importance of alkali metals- 4 marks	4

Q17. (a) What are the alkaline earth metals? Write their general characteristics. **6 4 4**

Rubric	Marks
alkaline earth metals?- 2 marks Write their general characteristics.- 4 marks	6

(OR)

(b) What are the d block elements? Write about the important properties of these elements.

Rubric	Marks
What are the d block elements 2 marks Write about the important properties of these elements. 4 marks	6

Section 5 (Answer all question(s))

Marks CO BL

Q18. What is buffer solution? Classify it with examples. **4 3 3**

Rubric	Marks
Buffer solution?- 2 marks Classify it with examples.- 2 marks	4

Q19. (a) Write a detail note on the concept of acids and bases with examples. **6 4 4**

Rubric	Marks
concept of acids with examples.- 3 marks concept of bases with examples - 3 marks	6

(OR)

(b) Define pH and Ionic product of water. How are they calculated?

Rubric	Marks
Define pH and Ionic product of water. - 3 marks How are they calculated?- 3 marks	6

Section 6 (Answer any 2 question(s))

Marks CO BL

Q20. Define hybridization. Explain SP^2 hybridization with suitable example. **5 4 4**

Rubric	Marks
Define hybridization.- 2 marks Explain SP^2 hybridization with suitable example.- 3 marks	5

Q21. Define organic compounds. How are they classified? **5 4 4**

Rubric	Marks
Define organic compounds- 2 marks How are they classified?- 3 marks	5

Q22. Write about the properties and reactions of Alkanes. **5 4 4**

Rubric	Marks
Write about the properties - 2 marks reactions of Alkanes- 3 marks	5

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