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GIET UNIVERSITY, GUNUPUR - 765022
M. Sc. (First Semester) Regular Examinations, February - 2024
22BTPC107 - Basics of Chemistry and Physics
(Biotechnology)

Time: 3 hrs

Maximum: 70 Marks

(The figures in the right hand margin indicate marks.)

PART – A**(2 x 10 = 20 Marks)**

Q.1. Answer <i>ALL</i> questions	CO #	Blooms Level
a. What is VSEPR theory?	CO1	K2
b. Draw the structure of NH ₃ and H ₂ O	CO2	K1
c. Explain covalent bond and draw the lewis dot structure of C ₂ H ₂ .	CO1	K2
d. What is absorption and emission spectra?	CO2	K2
e. What is molarity?	CO2	K1
f. Write the unit of capacitance.	CO1	K2
g. Write the formula for capacitance of a spherical capacitor?	CO1	K2
h. What is mechanical wave?	CO2	K1
i. Write the relation between moon and earth gravity.	CO2	K2
j. What is periodic motion?	CO1	K2

PART – B**(10 x 5=50 Marks)**Answer ANY FIVE questions

	Marks	CO	Blooms
2. a. Find mass of CaO produced when 5.6 lit of NO ₂ is produced $\text{Ca(NO}_3)_2 \xrightarrow{\Delta} \text{CaO} + \text{NO}_2 + \text{O}_2$	6	CO1	K2
b. Define fluorescence and discuss types of fluorescence.	4	CO1	K1
3.a. Compare the hybridization, shape and structure of CH ₄ , NH ₃ , H ₂ O	6	CO2	K1
b. Explain light matter interaction?	4	CO2	K2
4. a. Derive Maxwell Boltzman distribution law.	10	CO1	K2
5.a. Brief basics and principle of Photo Electron Spectroscopy.	6	CO2	K1
b. Draw the structure and Geometry of SF ₄ .	4	CO2	K2
6. Explain elaborately conductor, semiconductor and insulator with diagram?	10	CO2	K1
7. Derive Coulombs law of electrostatics. If two charged particles of charge 1C and 5C are separated by a distance 5m then find the electrostatic force between them.	10	CO1	K2
8. Define Newton's law of Gravitation. Derive relation between acceleration due to gravity and weight?	10	CO2	K2