BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION MO/2023)

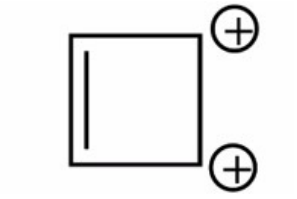
CLASS: **IMSC** **SEMESTER : III**
BRANCH: **PHYSICS** **SESSION : MO/2023**

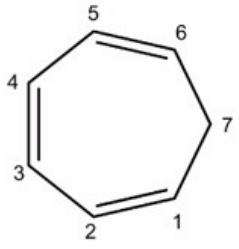
SUBJECT: CH213 GENERAL CHEMISTRY II

TIME: **02 HOURS** **FULL MARKS: 25**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 5 marks and total 25 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4*. Tables/Data handbook/Graph paper etc., if applicable, will be supplied to the candidates**

			CO	BL
Q.1(a)	Discuss the vanderwall's equation when pressure is not too high.How does it explain the dip in the isotherms of most of gases like CO, CH_4 and NH_3.	[2]	1	understand
Q.1(b)	What are the postulates of kinetic molecular theory? Discuss. Explain elastic collision. Thermal motion completely ceases at T=0. Prove it from this theory.	[3]	1	understand
Q.2(a)	Write a note on law of corresponding state. Write final conclusions based on it.	[2]	1	understand
Q.2(b)	Explain Z vs P plot for H_2, He, CH_4 and NH_3.	[3]	1	understand
Q.3(a)	Derive 'Ostwald's law of dilution' from 'Arrhenius theory' of dissociation of electrolyte.	[2]	2	apply
Q.3(b)	The ionic product of water at 100°C is 55 times that at 25°C. Calculate the value of pH of pure water at 100°C. A given solution at 100°C has a pH of 7.0. Indicate whether the solution is acidic, alkaline or neutral.	[3]	2	apply
Q.4(a)	Elaborate the application of the concept of 'solubility product' in preparation of table salt from sea salt.	[2]	2	understand
Q.4(b)	What will be the equilibrium concentration of constituent ions (in mg/l or ppm) of $CaCO_3$ (K_{sp}= $5X10^{-9}$) in pure water at 25°C?	[3]	2	apply
Q.5(a)	Discuss the conditions of aromaticity with suitable examples.	[2]	3	understand
Q.5(b)	Comment on the aromaticity of the following compounds:	[3]	3	apply





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