

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

CLASS: IMSC
BRANCH: MATHS & COMP.

SEMESTER: IV
SESSION : SP/2020

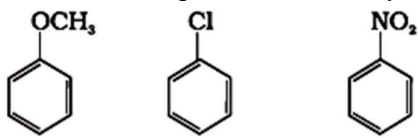
SUBJECT: CH213 GENERAL CHEMISTRY-II

TIME: 2 HOURS

FULL MARKS: 25

INSTRUCTIONS:

1. The total marks of the questions are 25.
2. Candidates may attempt for all 25 marks.
3. Before attempting the question paper, be sure that you have got the correct question paper.
4. The missing data, if any, may be assumed suitably.

			CO	BL
Q1	(a)	Discuss the effect of temperature on distribution of molecular velocities of a gas.	[2] CO1	3
Q1	(b)	Derive the mathematical expression of <i>dalton's law of partial pressure</i> from kinetic theory of gases.	[3] CO1	3
Q2	(a)	What is <i>activation energy of viscous flow</i> ? How can it be evaluated for any given liquid?	[2] CO2	3
Q2	(b)	Discuss how the surface tension of a liquid can be measured by <i>capillary rise method</i> . Elaborate relevant mathematical expressions.	[3] CO2	3
Q3	(a)	What is the pH at 25°C, of a solution which is twice as alkaline (i.e., which contains twice as many hydroxide ions) as pure water?	[2] CO3	5
Q3	(b)	Elaborate the concept of <i>common ion effect</i> , on the basis of Arrhenius theory of dissociation.	[3] CO3	2
Q4	(a)	Why do arenes prefer electrophilic substitution reactions over electrophilic addition reaction while? Explain with proper example and energy diagram.	[2] CO1	1
Q4	(b)	'The cyclopentadienyl cation is unstable but cyclopentadienyl anion is stable'- explain the statement. Arrange the following set of compounds in the order of their decreasing relative reactivity with an electrophile. Give reason.	[3] CO2	3
				
Q5	(a)	Explain the fact that halogens are o- and p-directing but deactivating towards electrophilic substitution in haloarenes.	[2] CO1	4
Q5	(b)	Pyrrole ring is activated but pyridine ring is deactivated for attack of electrophile-explain. Why is the alpha position reactive for the attack of electrophile to naphthalene?	[3] CO3	5