



CS/B.TECH(N)/EVEN/SEM-2/2002/2024-2025/1018



## MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY, WEST BENGAL

Paper Code: BSCH201 Chemistry I (Gr A) UPID: 002002

Time Allotted: 3 Hours

Full Marks :70

The Figures in the margin Indicate full marks.

Candidate are required to give their answers in their own words as far as practicable

1. Answer only ten of the following:    Write the reagents of nitration of benzene.   Write the value of quantum numbers n, I and m for 2s orbital.   Write the value of quantum numbers n, I and m for 2s orbital.   Write the value of quantum numbers n, I and m for 2s orbital.   Write the value of quantum numbers n, I and m for 2s orbital.   Write the value of duspersion forces operates between		Group-A (Very Short Answer Type Question)	[1/10 - 10]
Write the reagents of nitration of benzene.  Write the value of quantum numbers n, I and m for 2s orbital.  MRI is the application of which spectroscopic method?  London forces or dispersion forces operates between  What is Hard-soft acid base principle?  What is Hard-soft acid base principle?  What is the conditions of Cannizzaro reaction?  What are the conditions of Cannizzaro reaction?  What are the conditions of Cannizzaro reaction?  What is the value of critical coefficient?  What is the role of Lewis acid in halogenation of benzene? Write the substrate which on ozonolysis will provide acetone as the only product.  Write the significance of van-der Waal's constants.  What are conformational isomers? Explain by taking ethane as an example. Draw the potential energy diagram of ethane.  Prove that for a constant pressure process, where work in only mechanical, the heat absorbed by the system (Qp) is equal to the increase in enthalpy (AH). https://www.makaut.com  Group-C (Long Answer Type Question)  Answer any three of the following:  [5]  Answer any three of the following:  [5]  [6]  [7]  [8]  Define "Standard cell" with example.  [6]  [7]  [8]  Define "Standard cell" with example.  [8]  [9]  [10]  Define "Standard cell" with example.  [9]  [11]  [12]  [13]  [14]  [15]  Define "Standard cell" with example.  [15]  [16]  Discuss any one statement of First law of thermodynamics and explain it mathematically.  [17]  [18]  Define "Standard cell" with example.  [18]  Diplication between ΔH and ΔU for an ideal gas undergoing a P-V type mechanical work as follows:  ΔH=ΔU+ΔnRT  [18]  Define "Standard cell" with example.  [19]  Discuss any one statement of First law of thermodynamics and explain it mathematically.  [18]  Diplication between ΔH and ΔU for an ideal gas undergoing a P-V type mechanical work as follows:  ΔH=ΔU+ΔnRT  [18]  Diplication between ΔH and ΔU for an ideal gas undergo	1. An	swer any ten of the following:	,
MRI is the application of which spectroscopic method?   199    London forces or dispersion forces operates between		Write the reagents of nitration of benzene.	
		Write the value of quantum numbers n, I and m for 2s orbital.	
How the entropy of the system changes when water is frozen?   What is Hard-soft acid base principle?   What is the conditions of Cannizzaro reaction?   Write the equation of rotational constant B of a molecule.   Write the equation of rotational constant B of a molecule.   Write the equation of rotational constant B of a molecule.   What is the value of critical coefficient?   What is the value of critical coefficient?   Write the half-cell representation of saturated calomel electrode.   Group-B (Short Answer Type Question)   Answer any three of the following:   [5 / 3 = 15]   What is the role of Lewis acid in halogenation of benzene? Write the structure of the substrate which on ozonolysis will provide acetone as the only product.   Short Answer any three of the substrate which on ozonolysis will provide acetone as the only product.   Short Answer any three of the substrate which on ozonolysis will provide acetone as the only product.   Short Answer any three of the substrate which on ozonolysis will provide acetone as the only product.   Short Answer any three of the substrate which on ozonolysis will provide acetone as the only product.   Short Answer any three of the substrate which on ozonolysis will provide acetone as the only product.   Short Answer any three of the provided acetone as the only product.   Short Answer any three of the following is   Short Answer any three of the fol		MRI is the application of which spectroscopic method?	
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What is Hard-soft acid base principle?  What is Hard-soft acid base principle?  What are the conditions of Cannizzaro reaction?  State whether naphthalene is aromatic, antiaromatic or nonaromatic and give reason.  Write the equation of rotational constant B of a molecule.  What is the value of critical coefficient?  What is the value of critical coefficient?  What is the role of Lewis acid in halogenation of saturated calomel electrode.  Group-B (Short Answer Type Question)  Answer any three of the following:  What is the role of Lewis acid in halogenation of benzene? Write the structure of the substrate which on ozonolysis will provide acetone as the only product.  Write the significance of van-der Waal's constants.  What are conformational isomers? Explain by taking ethane as an example. Draw the potential energy diagram of ethane.  Prove that for a constant pressure process, where work in only mechanical, the heat absorbed by the system (Q <sub>e</sub> ) is equal to the increase in enthalpy (ΔH). https://www.makaut.com  No is paramagnetic while NO+ is diamagnetic. Justify using MO diagram. Write electronic configuration of NO.  Group-C (Long Answer Type Question)  Answer any three of the following: [15 × 3 = 45]  1. (a) Define 'Standard cell' with example.  (b) Find the relation between ΔH and ΔU for an ideal gas undergoing a P-V type mechanical work as follows: ΔH=ΔU+ΔnRT  (c) Discuss any one statement of First law of thermodynamics and explain it mathematically.  (d) Explain 'Galvanic cell corrosion'.  Answer any three of the following to more a statement of First law of thermodynamics and explain it mathematically.  (d) Explain 'Galvanic cell corrosion'.  (e) Discuss any one statement of First law of thermodynamics and explain it mathematically.  (d) Explain 'Galvanic cell corrosion'.  (e) Dipole moment of BF <sub>3</sub> is zero while that of NF <sub>3</sub> is 0.24D. Justify.  (e) Dipole moment of BF <sub>3</sub> is zero while that of NF <sub>3</sub> is 0.24D. Justify.		How the entropy of the system changes when water is frozen?	
1   If two stereoisomers of tartaric acid have 25, 3R and 25, 35 configurations, then they are provided by the state whether naphthalene is aromatic, antiaromatic or nonaromatic and give reason.    Yes   What is the value of critical coefficient?   Write the equation of rotational constant B of a molecule.   Yes   What is the value of critical coefficient?   Yes   Write the half-cell representation of saturated calomel electrode.   Group-B (Short Answer Type Question)   Answer any three of the following:   [5 / 3 = 15 ]   Yes		Def and a little of soft acid has a principle?	
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<i>,</i> ,	9		[5]
7	/	·	[5]
(c) Write short note on extrinsic semiconductor and its types. [5]			
19. (a) What will be the product/ products if CH <sub>3</sub> CH=CH <sub>2</sub> is reacted with HBr? Show the steps of reaction. [5]	1,9%		



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(What change will be observed in the above reaction if peroxide is added along with HBr?	[2]
(e) Choose the more suitable substrate of E1 reaction between tertiary-butyl chloride and methyl chloride. Give reason.	[3]
(a) Explain the stereo chemical aspects of SN <sup>1</sup> and SN <sup>2</sup> reactions with suitable examples.	[5]
11. (a) Calculate the CFSE and Magnetic moment of K <sub>3</sub> [FeF <sub>6</sub> ].	[5]
(b) Calculate the CFSE of both high spin and low spin complexes of d <sup>7</sup> and d <sup>4</sup> complexes.	[5]
(c) Give the molecular energy level diagram of CO. Comment on magnetic behaviour and bond order.	[5]

\*\*\* END OF PAPER \*\*\*



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