



BRAINWARE UNIVERSITY

Term End Examination 2022
 Programme – B.Tech.(CSE)-DS-2022
 Course Name – Engineering Chemistry
 Course Code - BSCD101
 (Semester I)

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 Brainware University
 Barasat, Kolkata - 700125

Full Marks : 60

Time : 2:30 Hours

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question)

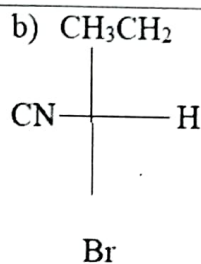
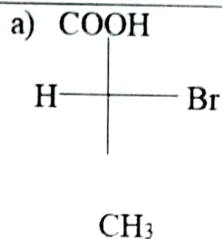
1 x 15=15

1. Choose the correct alternative from the following :

- (i) The energy is absorbed by the body in the form of
 a) Photons
 b) quanta
 c) Wave
 d) None of these
- (ii) Acetone reacts with $\text{Ba}(\text{OH})_2$ to produce
 a) Aldol
 b) Mesityl oxide
 c) Diacetone alcohol
 d) Mesitylene
- (iii) The wave associated with the particle in 1-D box can be formed in the region
 a) $x > 0$
 b) $x < 0$
 c) $0 < x < L$
 d) $x > L$
- (iv) Let there be four groups COOH , D , H and CONH_2 attached to the chiral carbon . Evaluate which one will have highest priority sequence
 a) D
 b) CONH_2
 c) H
 d) COOH
- (v) The sum of internal energy and pressure volume product is called
 a) entropy
 b) enthalpy
 c) heat supplied
 d) work done
- (vi) For an ideal gas , (dU/dV) is
 a) negative
 b) positive
 c) zero
 d) none of these
- (vii) Electrons should be filled in energy sub shells in order of increasing energy values. is the principle of
 a) Aufbau
 b) Pauling's
 c) Pauli's exclusion principle
 d) Hund's rule
- (viii) All the naturally occurring processes proceed spontaneously in a direction which leads to
 a) decrease of entropy
 b) increase in enthalpy
 c) increase of free energy
 d) decrease of free energy
- (ix) Which one is better used in Friedel craft reaction.
 a) Acetyl chloride
 b) Nitrobenzene
 c) Methyl chloride
 d) Aniline
- (x) What describes energy bands in solids?
 a) It is the single allowed energy level.
 b) It is a set of closely spaced allowed energy levels
 c) It is a set of widely spaced allowed energy levels
 d) It is collection of energy of all allowed energy levels
- (xi) Standard hydrogen electrode has been assigned to a potential of
 a) 1.5 Volt
 b) 1.0 Volt
 c) 0.5 Volt
 d) 0.0 volt
- (xii) In which of the following coordination entities the magnitude of Δ_0 (CFSE in octahedral field) will be maximum?

6. Assign R-S nomenclature.

(3)

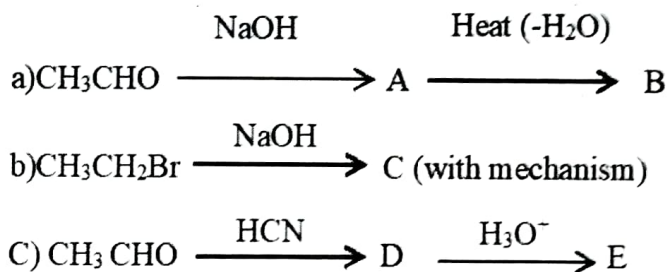


[1.5+1.5]

OR

Predict the following products

(3)



Group-C

(Long Answer Type Questions)

5 x 6=30

- What happens when Formaldehyde and Acetaldehyde react with NH_3 separately? (5)
- What happens when tertiary butyl bromide is treated with OEt^- ? Predict the product with mechanism. (5)
- Write down the vanderWaal's equation for n mole of a real gas. Write units of vanderWaal's constant a and b. (5)
- $\text{Zn} + \text{Cu}^{2+} = \text{Cu} + \text{Zn}^{2+}$ [2+3] (5)
Construct a galvanic cell using this reaction.
Calculate pH of quinhydrone electrode.
- Derive an expression for work of expansion against constant pressure. (5)

ST007 - PHYSICS - SEM-III

OR

Comment on the magnetism of oxygen from the M.O diagram of oxygen molecule.

(5)

12. Using Carnot Cycle, prove that efficiency of a heat engine is always less than one. (5)

(5)

OR

Comment on the existence of Be_2 molecule from M.O theory.

(5)

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