

Sub: Chemistry 2nd paper (Creative)

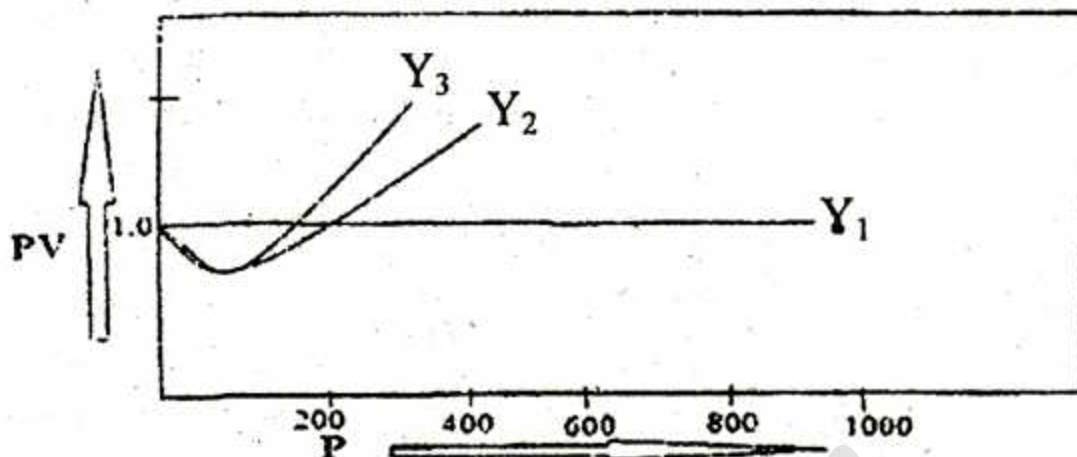
Sub Code : **177**

Time: 2 Hrs 10 min

Full marks: 40

[Answer any four questions]

1. ►



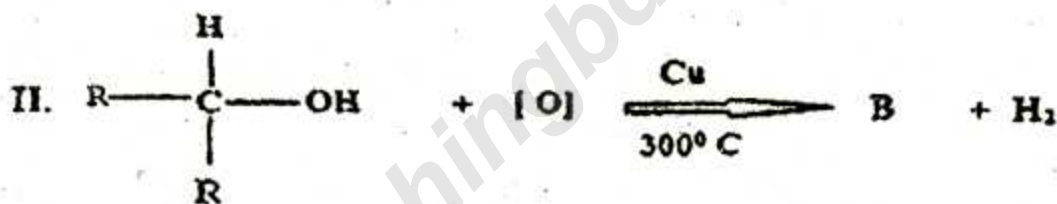
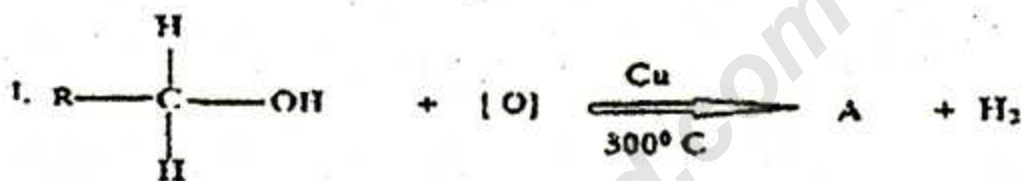
At 0°C the graph is drawn PV. vs. P of different of gases

- a. What is diffusion? 1
 - b. Why HNO_3 is not used in redox reaction? 2
 - c. Explain the concept of Boyle's constant from the PV vs. P graph of the stem. 3
 - d. Is it possible Y_2 and Y_3 to be have as Y_1 of the stem? Analyze with your logic. 4
2. ► (i) $\text{CH}_3\text{CH}_2\text{OH}$ (ii) $\text{CH}_3\text{CH}(\text{OH})\text{CH}_3$ (iii) $\text{CH}_3\text{C}(\text{CH}_3)_2\text{OH}$
- a. What is carbocation? 1
 - b. Write down the principle of preparation of primary amine in laboratory. 2
 - c. How can you differentiate compound i, ii and iii of the stem? Explain with related reactions. 3
 - d. Though both the compound i and ii can be prepared from the alkyl halide mechanism of their preparation process is different analyze. 4
3. ► 15 g oxalic acid dissolved in 300 ml water and then 20 ml of that solution taken to titrate with standard Na_2CO_3 solution, For the complete neutralization of the taken solution 22.5 ml standard solution is required.
- a. What is mole? 1
 - b. Ethyne gas is slightly acidic-explain. 2
 - c. Determine the concentration of the standard solution of the stem. 3
 - d. Which indicator is suitable for the titration of the stem? Explain with related graph. 4

4. ► In a container 'A', Ca metal is kept in 0.05M CaCO₃ solution and $E_{Ca^{2+}/Ca} = -2.87V$. In another container 'B', D metal is kept in 0.05M DSO₄ solution and $E_{D/D^{2+}} = -0.28 V$. KCl solution is used as salt bridge in between the containers.

- What is oxidation number? 1
- Find out the value of R in SI unit. 2
- How many atoms will deposit on the cathode if 200mA current is passed for 5 min through the container 'A'? 3
- Is it possible keep the metal of solution of container 'A' in solution of container 'B' and the metal of solution of container 'B' in solution of container 'A'? Analyze with required mathematical calculation. 4

5. ►



- What is ppm? 1
- Explain the structure and reaction of hydrogen fuel cell. 2
- How can you differentiate compound A and B? with related reactions. 3
- What will happen if hydrogen cyanide is added with Compound A? Explain with mechanism. 4

6. ► Raw materials of A: Bamboo, Wood etc.

Raw materials of B: Natural gas, N and CO₂. B plays important role our agriculture.

- What is enantiomer? 1
- Proof the presence of three alternate double bonds in benzene 2
- Explain the role of digester and blow pit in the manufacturing of 'A' of the stem. 3
- Explain the manufacturing process of 'B' of the stem. 4

Model Question of HSC Examination 2017 (All Board)

Sub – Chemistry (MCQ)

Sub Code : 177

Time : 35 Minutes

Full Marks : 35

[N.B. Fill the circle of the correct answer with a black ball point pen. Each question bears 1 mark.]

1. Which one is not polymer of methanal?

- (a) Formica (b) Melador
(c) Paraldehyde (d) Bakellite

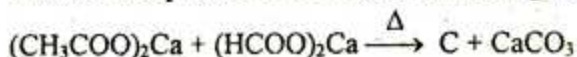
2. Alkane can be prepared by—

- i. decarboxylation
ii. Hoffmann degradation
iii. Wurtz's reaction

Which one of the following is correct?

- (a) i & ii (b) i & iii
(c) ii & iii (d) i, ii & iii

Answer the question 3 & 4 based on stem given.



3. Here 'C' is -

- (a) CH_3CHO (b) CH_3COCH_3
(c) $\text{CH}_3\text{CH}_2\text{CHO}$ (d) HCHO

4. The product 'C'—

- i. gives Tollen's reaction test.
ii. is ingredient of formalin.
iii. has reducing property.


Which one of the following is correct?

- (a) i & ii (b) i & iii
(c) ii & iii (d) i, ii & iii

5. Example of hetero aromatic compounds—

i. ethylene oxide $\text{H}_2\text{C}-\text{CH}_2$

ii. furan 

iii. pyridine 

Which one of the following is correct?

- (a) i & ii (b) i & iii
(c) ii & iii (d) i, ii & iii

6. The formula of vinyl group -

- (a) $\text{CH}_3-\text{CH}=\text{CH}-$ (b) $\text{CH}_2=\text{CH}-$
(c) C_6H_5- (d) $\text{C}_6\text{H}_4-\text{CH}_2-$

7. Molarity of molar solution is -

- (a) 0.1M (b) 0.5M
(c) 1M (d) 22.4M

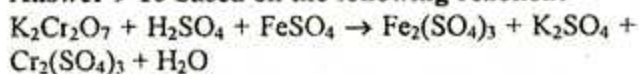
8. Three solutions are:

- i. 100mL HCl solution
ii. Decimolar KOH solution
iii. 0.25M H_2SO_4 solution

Which one is standard solution?

- (a) i & ii (b) i & iii
(c) ii & iii (d) i, ii & iii

Answer 9-10 based on the following reaction:



9. Which one is the stoichiometric coefficient of

the reactions in the above reaction?

- (a) 1, 7, 6 (b) 2, 8, 6
(c) 2, 8, 10 (d) 2, 14, 12

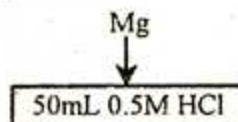
10. Number of electrons transferred in the above reaction—

- (a) 2 (b) 3
(c) 5 (d) 6

11. Unit of molar absorptivity.....

- (a) L/mol/cm (b) cm.mol/L
(c) mol/cm/L (d) L.mol/cm

Answer the questions 12 & 13 based on following stem.



12. How many gram of Mg will react with given acid?

- (a) 0.03 (b) 0.06
(c) 0.3 (d) 0.6

13. To neutralization above acid how many mole of NaOH is required?

- (a) 0.5 (b) 0.25
(c) 0.025 (d) 0.05

14. 1ppm =

- (a) 1 mg/L (b) 1 mg/mL
(c) 1 $\mu\text{g}/\text{L}$ (d) 100 $\mu\text{g}/\text{L}$

15. Oxidation number of 'S' in $\text{S}_4\text{O}_6^{2-}$ is

- (a) -2 (b) -2.5
(c) +2 (d) +2.5

Answer the question no. 16 according to following stem.

A Zn plate is dipped in 0.1M ZnCl_2 solution at 25°C . the salt dissociates by 90%.

16. The oxidation potential of the given electrode— volt. [Given $E^\circ_{\text{Zn}/\text{Zn}^{2+}} = +0.76\text{V}$]

- (a) -0.79 (b) -0.729
(c) +0.729 (d) +0.79

17. In case of $\text{Pt}, \frac{1}{2}\text{H}_2(\text{g})/\text{H}^+$ electrode -

- i. it is gas electrode
ii. potential is zero
iii. acts as anode when connected with Au

Which one of the following is correct?

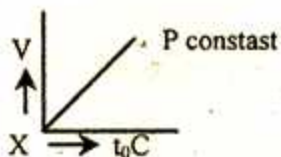
- (a) i & ii (b) i & iii
(c) ii & iii (d) i, ii & iii

18. In Which o the following sector most of the natural gas is used?

- (a) fertilizer production
(b) electricity production
(c) cooking purose
(d) vehicle's fuel

19. What is the percentage (by volume) of CO_2 in atmosphere?
- (a) 0.01% (b) 0.03%
(c) 0.1% (d) 0.3%

Work at the curve below is answer the question no 20 & 21.

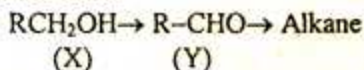


20. What is the temperature at the point X?
- (a) -300°C (b) -273°C
(c) -100°C (d) 0°C
21. Which of the following relations is found by combining the Boyle's law with the law associated with above curve?
- (a) $PV = KT$ (b) $PV = K$
(c) $P/T = K$ (d) $V/T = K$
22. According to Bronsted-Lowry concept example of acid is -
- i. H_3O^+
ii. NH_4^+
iii. H_2O

Which one of the following is correct?

- (a) i & ii (b) i & iii
(c) ii & iii (d) i, ii & iii

Answer the question no 23-24 based on the reaction below-



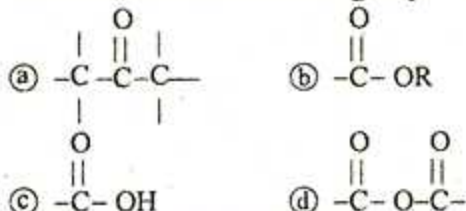
23. Which one of the following should be added to 'Y' to prepare alkane?
- (a) $\text{Na-Hg} + \text{H}_2\text{O}$
(b) $\text{Zn-Hg} + \text{Conc. HCl}$
(c) $\text{Pb} + \text{BaSO}_4$
(d) $\text{Anhydrous ZnCl}_2 + \text{Conc. HCl}$
24. Which one is used to detect 'X'?
- (a) Tollen's reagent
(b) Fehling solution
(c) 5% sodium carbonate solution
(d) Phosphorus pentachloride
25. The organic compound $\text{C}_n\text{H}_{2n}\text{O}_2$ may be -
- i. carboxylic acid
ii. ester
iii. hydroxy ketone
- Which one of the following is correct?
- (a) i & ii (b) i & iii
(c) ii & iii (d) i, ii & iii
26. Aldehyde and ketone can be distinguished by-
- i. 2,4-DNPH
ii. Tollen's reagent

iii. Fehling's solution

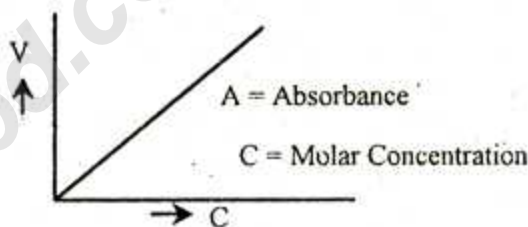
Which one of the following is correct?

- (a) i (b) i & ii
(c) ii & iii (d) i, ii & iii

27. Which one is the functional group of ester?



28. What is the structural formula of 1-hydroxy-4-methyl-3-pentanone?
- (a) $\text{CH}_3-\text{CH}_2-\text{CO}-\text{CH}(\text{CH}_3)-\text{CH}_2-\text{OH}$
(b) $\text{CH}_3-\text{CH}(\text{CH}_3)-\text{CO}-\text{CH}_2-\text{CH}_2-\text{OH}$
(c) $\text{CH}_3-\text{C}(\text{CH}_3)_2-\text{COCH}_2\text{CH}_3$
(d) $(\text{CH}_3)_2-\text{CH}-\text{CH}_2-\text{CO}-\text{CH}_2-\text{OH}$
29. How many molecules are present in 1mL H_2 gas at 27°C and 0.987 atm pressure?
- (a) 2.416×10^{19} (b) 2.416×10^{20}
(c) 2.416×10^{21} (d) 2.416×10^{22}
30. Which law is followed by the curve given below?



- (a) Boyle's law (b) Charle's law
(c) Beer-Lambert law (d) Faraday's law

31. How many mL of molar solution can be prepared from 100mL 0.5 M Na_2CO_3 solution?
- (a) 50mL (b) 100mL
(c) 250mL (d) 500mL
32. How long a current of 2.5A strength should be passed through a dilute H_2SO_4 solution to produce 600mL H_2 gas at STP?
- (a) 16.34min (b) 17.67min
(c) 16.86min (d) 34.46min
33. Based on reactivity which one is correct?
- (a) $\text{H} > \text{Hg}$ (b) $\text{Zn} > \text{Mg}$
(c) $\text{Fe} > \text{Na}$ (d) $\text{Cu} > \text{Sn}$
34. Which of the following gas field was discovered in Bangladesh?
- (a) Bibiyana (b) Haripur
(c) Chatak (d) Titas
35. Which one is the main constituent of cement?
- (a) Silica (b) Lime
(c) Alumina (d) Magnesia