

JP INTERNATIONAL SCHOOL, GREATER NOIDA

HALF YEARLY EXAMINATION, 2017

SUBJECT - CHEMISTRY

CLASS - XII (2017-18)

NAME: _____

M.M. : 70

DATE: 18 SEP. 2017

TIME : 3 HOURS

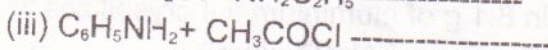
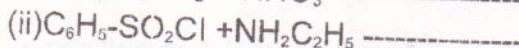
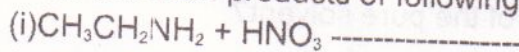
General Instructions:

1. All questions are compulsory.
2. Read the questions carefully before answering.
3. Question numbers 1 to 5 are very short-answer questions and carry 1 mark each, Question numbers 6 to 10 are short-answer questions and carry 2 marks each, Question numbers 11 to 22 are short-answer questions and carry 3 marks each, Question number 23 is Value Based Question and carries 4 marks, Question numbers 24 to 26 are long-answers questions and carry 5 marks each.
4. Use Log Table, if necessary. Use of calculators is not allowed.

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1. Give the IUPAC name of the following compound:
(a) $\text{CH}_3\text{C}(\text{CH}_3)=\text{C}(\text{Br})\text{CH}_2\text{OH}$
 2. What type of defect is produced when solid is heated? Which physical property is affected by it?
 3. Arrange the following compounds in the increasing order of their acidic strength:
p-cresol, p-nitrophenol, phenol
 4. Why does the solution of a non volatile solute and a volatile solvent boil at a temp. higher than the boiling point of the pure solvent?
 5. Define Enantiomers.
 6. Calculate the number of unit cells in 8.1 g of aluminium if it crystallizes in a face centred cubic structure. (Atomic mass of Al=27 g/mol)
 7. Write the name of the cell which is generally used in inverters. Write the reactions taking place at the anode and the cathode of this cell?
 8. Explain the following phenomena with the help of Henry's law
(a) Painful condition known as bends

- (b) Why does soda water bottle kept at room temperature fizz out on opening?
9. Write the reaction involved in the following:
 (i) Etard's reaction (ii) Wolff Kishner reduction
10. Write the name of monomers and their structures of the following:
 (i) Buna -S (ii) Terylene
11. Calculate the mass of a non volatile solute (molar mass = 40g/mol) which should be dissolved in 114g. octane (C_8H_{18}) to reduce its vapour pressure to 80%.
12. A 5% solution of cane sugar (by mass) in water has freezing point of 271K. Calculate the freezing point of a 5% glucose in water if freezing point of pure water is 273.15K.
13. The following compounds are given to you:
 2-Bromopentane, 2-Bromo-2-methylbutane, 1-Bromopentane
 (i) Write the compound which is more reactive towards SN_1 reaction.
 (ii) Write the compound which is optically active.
 (iii) Write the compound which is more reactive towards β - elimination reaction.
14. What happens when:
 (i) Alkyl chloride is reacted with sodium iodide in the presence of dry ether.
 (ii) Chlorobenzene is subjected to hydrolysis.
 (iii) Propyl alcohol/propanol is reacted with thionyl chloride?
15. (i) Predict the major product of acid catalyzed dehydration of 1-Methylcyclohexanol.
 (ii) You are given benzene, conc. H_2SO_4 , NaOH, and dilute HCl. Write the preparation of phenol using these reagents.
16. Write the structures of A, B, C, and D in the following reaction:
- $$CH_3COOH \xrightarrow{PCl_5} A \xrightarrow{H_2/Pd-BaSO_4} B \xrightarrow{CH_3MgBr/H_2O} C \xrightarrow{LiAlH_4} D$$

17. Write the main products of following reactions:



18. Account for the following:

(i) Soaps donot work in hard water.

(ii) Aspirin drugs helps in the prevention of heart attack.

(iii) Diabetic patients are advised to take artificial sweeteners instead of natural sweeteners.

19. Non ideal solutions exhibit either positive or negative deviation from Raoult's law. What are these deviations and why are they caused? Explain with one example of each type.
20. (i) Write the advantages of H_2-O_2 fuel cell over ordinary cell.
(ii) Explain how rusting of iron is envisaged as setting up of an electrochemical cell
21. (i) A reaction is second order with respect to a reactant. How is rate of reaction affected if the concentration of the reactant is
(i) doubled (ii) reduced to half.
(ii) Calculate the overall order of a reaction which has following rate expression. (a) rate = $k[A]^{1/2} [B]^{3/2}$ (b) rate = $k[A]^{3/2} [B]^{-1}$
22. Explain the following with suitable examples
(i) ferromagnetism (ii) paramagnetism (iii) ferrimagnetism.
23. In a school lot of emphasis is given to the 3R principle of Reduce, Reuse and Recycle. The students observe their teachers following it and they have made to follow it in school. Reeta also tries to follow the 3R principle at home and always tries to save paper.
(i) Mention the values shown by Reeta.
(ii) How do you think Reeta follows 3R principle at home.
(iii) Name the chemical substance present in cotton, jute and Rayon fibre.
(iv) Write the names of monomers of the polymers.
 $-[NH-(CH_2)_6-NH-CO-(CH_2)_4-CO]_n$
24. (i) Give reasons:
(a) Zinc is better than tin in protecting iron from corrosion.
(b) Electrolysis of aqueous solution of NaCl gives H_2 at cathode and Cl_2 at the anode.
(ii) Calculate the emf and change in Gibbs free energy at 298K :
 $Mg(s) / Mg^{2+} (10^{-3} M) // Cu^{2+} (10^{-4} M) / Cu(s)$
25. (i) Define the following terms:
(a) Activation Energy (b) Rate Constant
(ii) A first order reaction takes 10 minutes for 25% decomposition. Calculate $t_{1/2}$ for the reaction.
(Given $\log 2 = 0.3010$, $\log 3 = 0.4771$, $\log 4 = 0.6021$)
26. Describe the following:
(i) Decarboxylation
(ii) Acetylation
(iii) Cross Aldol Condensation
(iv) Cannizzaro's Reaction
(v) Rosenmund Reduction