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BITSAT CHEMISTRY SAMPLE PAPER 1

BITSAT Sample Papers

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1. Which is the decreasing order of stability?

(i) $CH_3—CH—CH_3$

(ii) $CH_3—CH—O—CH_3$

(iii) $CH_3CH\text{-}CO\text{-}CH_3$

(a) (i) < (ii) < (iii) (b) (i) > (ii) > (iii) (c) (iii) > (i) > (ii) (d) (ii) > (iii) > (i)

2. Number of *n* electrons present in naphthalene is :

(a) 4 (b) 6 (c) 10 (d) 14

3. The order of increasing energies of the orbitals follows:

(a) 5p < 4f < 6s < 5d (b) 5p<6s<4f<5d (c) 4f <5p<5d<6s (d) 5p<5d<4f<6s

4. Which of the following is neutral refractory material?

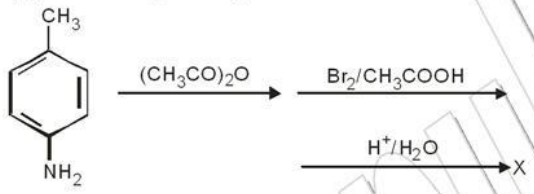
(a) SiO_2 (b) MgO (c) CaO (d) SiC

5. Which of the following is not correct for D_2O ?

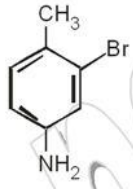
(a) BVP is higher than H_2O (b) D_2O reacts slowly than H_2O

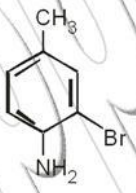
(c) Viscosity Js higher than H_2O at 25° (d) Solubility of NaCl in it is more than H_2O

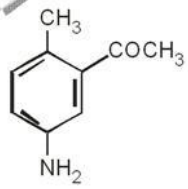
6.

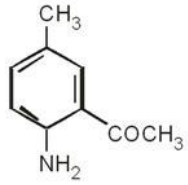


The product is:

(a) 

(b) 

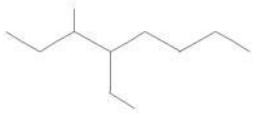
(c) 

(d) 

7. An ester (A) with molecular formula $C_9Hi_0O_2$ was treated with excess of CH_3MgBr and the compound so formed was treated with cone. H_2SO_4 to form olefin (B). Ozonolysis of B gave ketone with formula C_8H_8O. Which shows positive iodoform test the structure of A is:

(a) $CH_3CH_2COC_6CH_5$ (b) $C_6H_5COOC_2H_5$ (c) $C_6H_SCOOC_6H_5$ (d) $CH_3COC_6H_4COCH_3$

8. Name of the compound given below is :



(a) 3-methyl-4-ethyloctane (b) 2, 3-diethylheptane

(c) 5-ethyl-6-methyloctane (d) 4-ethyl-3-methyloctane

9. The low density of ice compared to water is due to:

(a) hydrogen bonding interactions (b) dibble-dipole interactions

(c) dipole induced dipole interactions (d) induced dipole induced dipole interactions

10. The density of H_2S (mol. wt. 34) at 27°C and 2 atm pressure (R = 0.0821 atm/mol K):

(a) 2.76 g/L (b) 27.6 g/L (c) 2.76 mg/L (d) none of these

11. A relation between vapour pressure and temperature is known as :

(a) gas equation (b) Clapeyron equation

(c) Claussius equation (d) Claussius-Clapeyron equation

12. The only liquid non-metal present in periodic table is :

(a) chlorine (b) mercury (c) bromine (d) fluorine

13. An organic compound containing C, H and O contains 52.5% C and 13.04% *Hr* Vapour density of the compound is 23. Its molecular formula will be :

(a) C_2H_6O (b) C_3H_8O (c) C_4H_8O (d) $C_5H_{10}O$

14. Which of the following will have the maximum dipole moment ?

(a) CH_3F (b) CH_3Cl (c) CH_3Br (d) CH_3I

15. Boiling point of the following compounds follow the order.

(a) $CH_3CH_3 < CH_3NH_2 < CH_3OH < HCOOH$ (b) $CH_3NH_2 < CH_3OH < CH_3CH_3 < HCOOH$

(c) $CH_3OH < CH_3CH_3 < CH_3NH_2 < HCOOH$ (d) $HCOOH < CH_3NH_2 < CH_3OH < CH_3CH_3$

16. In a hydrogen atom, if the energy of an electron in the ground state is 13.6 eV, then that in the second excited state is :

(a) 1.51 eV (b) 3.4 eV (c) 6.04 eV (d) 13.6 eV

17. Which of the following salts is colourless ?

(a) $CdCl_2$ (b) $CuSO_4$-$5H_2O$ (c) $MnSO_4$-$7H_2O$ (d) $NiSO_4$-$7H_2O$

18. What are the shapes of (i) $C1F_3$ and (ii) BrF_3 molecules ?

(a) Both are planar trigonal (b) Both have distorted T-shaped

(c) (i) is planar trigonal and (ii) is T-shaped (d) (i) is T-shaped and (ii) is planar trigonal

19. Dacron is copolymer of:

(a) hexamethylene diamine and adipic acid

(b) ethylene glycol and terepthalic acid

(c) ethylene and pthalic acid

(d) styrene and 1, 3-butadiene

20. Galvanic cell involves:

(a) conversion of thermal energy (heating) into electrical energy

(b) conversion of electrical energy into chemical energy

(c) conversion of chemical energy into thermal energy

(d) conversion of chemical energy into electrical energy

21. Which of the following defines enthalpy of solution?

(a) $H_2O(l) \rightarrow H^+(aq) + OH^-(aq)$ (b) $NH_4Cl(s) \rightarrow NH_4^+(aq) + Cl^-(aq)$

(c) $CuSO_4 \cdot 5H_2O(s) + H_2O \rightarrow CuSO_4(aq)$ (d) $CuSO_4(s) + 5H_2O \rightarrow CuSO_4 \cdot 5H_2O(s)$

22. Adsorption occurs not due to :

(a) unbalanced force at surface molecules (b) unutilized free valencies at surface

(c) increased entropy at surface (d) van der Waals' attraction at surface

23. Borax structure contains:

(a) two BO_4 groups and two BO_3 groups (b) four BO_4 groups only

(c) four BO_3 groups only (d) three BO_4 and one BO_3 groups

24. When D-glucose is oxidized by Ag_2O gives:

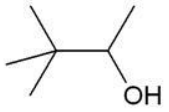
(a) L-glucaric acid (b) D-glucaric acid (c) D-gluconic acid (d) L-gluconic acid

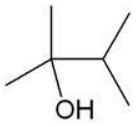
25. neo-pentylbromide on reaction with alc. KOH yields _____ as the major product.

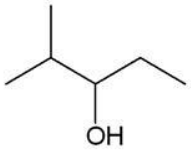
(a) 2-Methyl-1-Butene (b) 2-Methyl-2-Butene

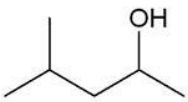
(c) 2-2-Dimethyl-1-propanol (d) 2-Methyl-2-Butanol

26. The product obtained via oxymercuration ($HgSO_4 + H_2SO_4$) of 3, 3dimethyl-1-butene would be

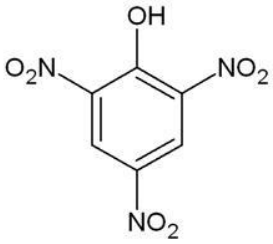
(a) 

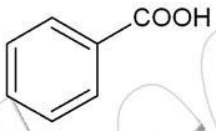
(b) 

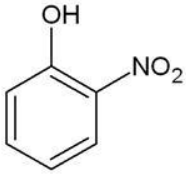
(c) 

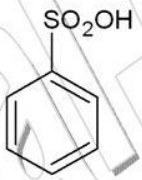
(d) 

27. Which of the following will not be soluble in sodium carbonate solution?

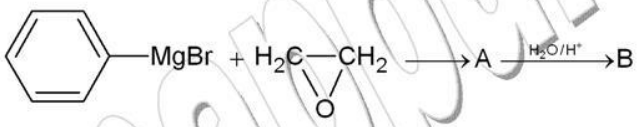
(a) 

(b) 

(c) 

(d) 

28. In the sequence of reactions,



The product B is

(a) Benzyl alcohol (b) 2-Phenyl ethanol

(c) 1-Phenyl ethanol (d) Quinol

29. Identify the correct statement

(a) Gypsum contains a lower percentage of calcium than plaster of paris.

(b) Gypsum is obtained by heating plaster of paris.

(c) Plaster of paris can be obtained by hydration of gypsum.

(d) Plaster of paris is obtained by partial oxidation of gypsum.

30. The crystal field splitting energy for octahedral (Δ_0) and tetrahedral (Δ_t) complexes is related to :

(a) $\Delta_t = \frac{4}{9}\Delta_0$ (b) $\Delta_t = \frac{1}{2}\Delta_0$ (c) $\Delta_0 = 2\Delta_t$ (d) $\Delta_0 = \frac{4}{9}\Delta_t$

31. The ion which exhibits green colour?

(a) Cu^{2+} (b) Mn^{2+} (c) Co^{2+} (d) Ni^{2+}

32. Which destroy antigens?

(a) Insulin (b) Antibodies (c) Chromoprotein (d) Phosphoprotein

33. 1 mole of $N_2O_4(g)$ at 300 K is kept in a closed container under one atmosphere. It is heated to 600 K when 20% by mass of $N_2O_4(g)$ decomposes to $NO_2(g)$. The resultant pressure is:

(a) 1.2 atm (b) 2.4 atm (c) 2.0 atm (d) 1.0 atm

34. The cathodic reaction of a dry cell is represented by

$2MnO_2(s) + Zn^{2+} + 2^{e-} \rightarrow ZnMn_2O4(s)$

If there are 8g of MnO_2 in the cathodic compartment then the time for which the dry cell will continue to give a current of 2 milliampere is :

(a) 25.675 day (b) 51.35 day (c) 12.8 day (d) 6.423 day

35. When Na reacts with liquid NH_3 the following substance is formed:

(a) $[Na(NH_3)_x]^-$ (b) $[e(NH_3)_y]^-$ (c) $NaNH_2$ (d) Na_xNH_{3y}

36. The purine base present in RNA is :

(a) guanine (b) thymine (c) cytosine (d) uracil

37. Glyptal polymer is obtained by the reaction of glycerol with :

(a) Malonic acid (b) acetic acid (c) phthalic acid (d) maleic acid

38. For the following reactions

(i) $CH_4(g) + 2O_2(g) \rightarrow CO_2(g) + 2H_2O(g)$ $\Delta H = -890.4$ kJ

(ii) $2HgO(s) \rightarrow 2Hg(l) + O_2(g) - 181.6$ kJ

Which one of the following statement is correct?

(a) Both of them are exothermic (b) Both of them are endothermic

(c) (i) exothermic and (ii) endothermic (d) (i) endothermic and (ii) exothermic

39. Pinacol is :

(a) 3-methylbutan-2-ol (b) 2,3-dimethyl-2,3-butanediol

(c) 2,3-dimethyl-2-propanone (d) none of the above

40. If the H^+ concentration is decreased from 1M to 10^{-4} M at 25° C for the couple MnO_4^-/Mn^{2+}, then the oxidizing power of the MnO_4^-/Mn^{2+} couple decrease by :

(a) –0.18 V (b) 0.18 V (c) 0.38 V (d) –0.38 V

BITSAT CHEMISTRY SAMPLE PAPER 1 ANSWERS

1.	(b)	2.	(c)	3.	(b)	4.	(d)	5.	(d)
6.	(b)	7.	(b)	8.	(d)	9.	(a)	10.	(a)
11.	(d)	12.	(c)	13.	(a)	14.	(b)	15.	(a)
16.	(a)	17.	(a)	18.	(b)	19.	(b)	20.	(d)
21.	(c)	22.	(c)	23.	(a)	24.	(c)	25.	(b)
26.	(a)	27.	(c)	28.	(b)	29.	(a)	30.	(a)
31.	(d)	32.	(b)	33.	(b)	34.	(b)	35.	(b)
36.	(d)	37.	(c)	38.	(d)	39.	(b)	40.	(c)