

NEET CHEMISTRY 2018-19 - Chennai

Periodic Test : 02

Number of questions: 150

Name: _____

ID No: _____

Test ID : 014

Test date: 21.03.2019

Time: 3HRS

Negative Marks : 4 marks for correct attempt & 1 mark deducted for every wrong attempt.

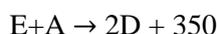
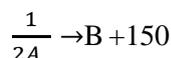
1. The heat of combustion of carbon to CO₂ is -393.5 kJ/mol. The heat released upon formation of 35.2 g of CO₂ from carbon and oxygen gas is

- +315 kJ
- 630 kJ
- 3.15 kJ
- 315 kJ

2. In which of the following reactions, standard reaction entropy change (ΔS°) is positive and standard Gibb's energy change (ΔG°) decreases sharply with increasing temperature?

- $C_{(\text{graphite})} + \frac{1}{2}O_{2(g)} \rightarrow CO_{(g)}$
- $CO_{(g)} + \frac{1}{2}O_{2(g)} \rightarrow CO_{2(g)}$
- $Mg_{(s)} + \frac{1}{2}O_{2(g)} \rightarrow MgO_{(s)}$
- $\frac{1}{2}C_{(\text{graphite})} + \frac{1}{2}O_{2(g)} \rightarrow \frac{1}{2}CO_{2(g)}$

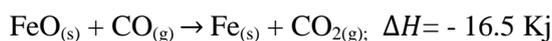
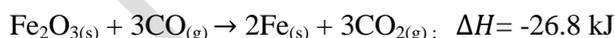
3. Consider the following processes: ΔH (kJ/mol)



For $B + D \rightarrow E + 2C$, ΔH will be

- 525 kJ/mol
- 175 kJ/mol
- 325 kJ/mol
- 325 kJ/mol

4. The following two reactions are known



The value of ΔH for the following reaction $Fe_2O_{3(s)} + CO_{(g)} \rightarrow 2FeO_{(s)} + CO_{2(g)}$ is

- +10.3 kJ
- 43.3 kJ
- 10.3 kJ
- +6.2 kJ

5. Consider the following reactions:

- $H^+_{(aq)} + OH^-_{(aq)} = H_2O_{(l)}, \Delta H = -X_1 \text{ kJ mol}^{-1}$
- $H_{2(g)} + \frac{1}{2}O_{2(g)} = H_2O_{(l)}, \Delta H = -X_2 \text{ kJ mol}^{-1}$
- $CO_{2(g)} + H_{2(g)} = CO_{(g)} + H_2O_{(l)}, \Delta H = -X_3 \text{ kJ mol}^{-1}$
- $C_2H_{2(g)} + \frac{5}{2}O_{2(g)} = 2CO_{2(g)} + H_2O_{(l)}, \Delta H = X_4 \text{ kJ mol}^{-1}$

Enthalpy of formation of $H_2O_{(l)}$ is

- + $X_3 \text{ kJ mol}^{-1}$
- $X_4 \text{ kJ mol}^{-1}$
- + $X_1 \text{ kJ mol}^{-1}$
- $X_2 \text{ kJ mol}^{-1}$

6. Which of the following pairs of a chemical reaction is certain to result in a spontaneous reaction?

- Exothermic and increasing disorder
- Exothermic and decreasing disorder
- Endothermic and increasing disorder
- Endothermic and decreasing disorder

7. The work done during the expansion of a gas from a volume of 4 dm³ to 6 dm³ against a constant external pressure of 3 atm is (1 L atm = 101.32 J)

- 6 J
- 608 J
- +304 J
- 304 J

8. The molar heat capacity of water at constant pressure, C_p , is $75 \text{ JK}^{-1} \text{ mol}^{-1}$. When 1.0 kJ of heat is supplied to 100g of water which is free to expand, the increase in temperature of water is

- 1.2 K
- 2.4 K
- 4.8 K
- 6.6 K

9. Change in enthalpy for reaction,



if heat of formation of $\text{H}_2\text{O}_{2(l)}$ and $\text{H}_2\text{O}_{(l)}$ are -188 and -286 kJ/mol respectively, is

- 196 kJ/mol
- +196 kJ/mol
- +948 kJ/mol
- 948 kJ/mol

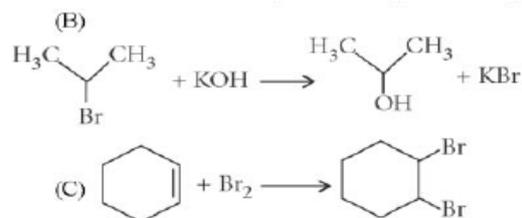
10. At 27°C latent heat of fusion of a compound is 2930 J/mol. Entropy change is

- 9.77 J/mol-K
- 10.77 J/mol-K
- 9.07 J/mol-K
- 0.977 J/mol-K

11. The correct statement regarding electrophile is

- electrophile is a negatively charged species and can form a bond by accepting a pair of electrons from another electrophile.
- electrophiles are generally neutral species and can form a bond by accepting a pair of electrons from a nucleophile.
- electrophile can be either neutral or positively charged species and can form a bond by accepting a pair of electrons from a nucleophile.
- electrophile is a negatively charged species and can form a bond by accepting a pair of electrons from a nucleophile.

12. For the following reactions:



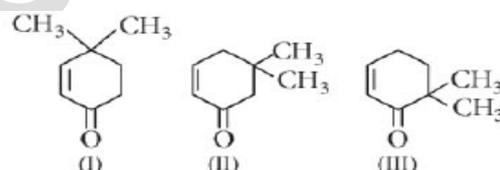
Which of the following statements is correct?

- (A) is elimination, (B) and (C) are substitution reactions.
- (A) is substitution, (B) and (C) are addition reactions.
- (A) and (B) are elimination reactions and (C) is addition reaction.
- (A) is elimination, (B) is substitution and (C) is addition reaction

13. Treatment of cyclopentanone  with methyl lithium gives which of the following species?

- Cyclopentanonyl radical
- Cyclopentanonyl biradical
- Cyclopentanonyl anion
- Cyclopentanonyl cation

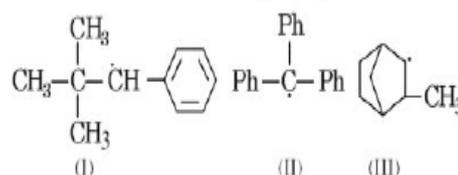
14. Given:



Which of the given compounds can exhibit tautomerism?

- II and III
- I, II and III
- I and II
- I and III

15. Consider the following compounds



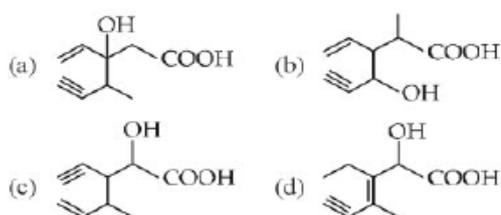
Hyperconjugation occurs in

- III only
- I and III
- I only
- II only

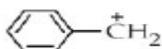
16. In the Kjeldah's method for estimation of nitrogen present in a soil sample, ammonia evolved from .75 g of sample neutralized 10 ml of 1 M H_2SO_4 . The percentage of nitrogen in the soil is

- 37.33
- 45.33
- 35.33
- 43.33

17. Structure of the compound whose IUPAC name is 3- Ethyl-2-hydroxy-4-methylhex-3-en-5-ynoic acid is



18. What is the hybridisation state of benzyl carbonium ion

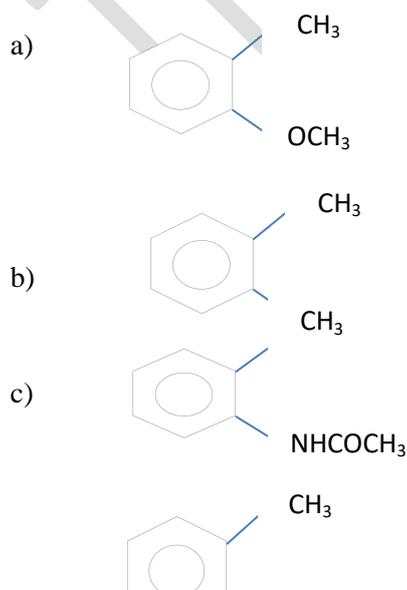


- sp^2
- sp^d
- sp^2d
- sp^3

19. Among the following compounds the one that is most reactive towards electrophilic nitration is

- benzoic acid
- nitrobenzene
- toluene
- benzene

20. Which one of the following is most reactive towards electrophilic reagent?



d)

21. A device that converts energy of combustion of fuels like hydrogen and methane, directly into electrical energy is known as

- Dynamo
- Ni-Cd cell
- Fuel cell
- electrolytic cell

22. Limiting molar conductivity of NH_4OH [i.e., $\Lambda_m^\circ(NH_4OH)$] is equal to

- $\Lambda_m^\circ(NH_4Cl) + \Lambda_m^\circ(NaCl) - \Lambda_m^\circ(NaOH)$
- $\Lambda_m^\circ(NaOH) + \Lambda_m^\circ(NaCl) - \Lambda_m^\circ(NH_4Cl)$
- $\Lambda_m^\circ(NH_4OH) + \Lambda_m^\circ(NH_4Cl) - \Lambda_m^\circ(HCl)$
- $\Lambda_m^\circ(NH_4Cl) + \Lambda_m^\circ(NaOH) - \Lambda_m^\circ(NaCl)$

23. For the reduction of silver ions with copper metal, the standard cell potential was found to be +0.46 V at 25° C. The value of standard Gibb's energy, ΔG° will be ($F = 96500 \text{ C mol}^{-1}$)

- 89.0 kJ
- 89.0 J
- 44.5 kJ
- 98.0 kJ

24. Kohlrausch's law states that at

- Infinite dilution, each ion makes definite contribution to conductance of an electrolyte, whatever be the nature of the other ion of the electrolyte
- Infinite dilution, each ion makes definite contribution to equivalent conductance of an electrolyte, whatever be the nature of the other ion of the electrolyte
- Finite dilution, each ion makes definite contribution to equivalent conductance of an electrolyte, whatever be the nature of the other ion of the electrolyte
- Infinite dilution, each ion makes definite contribution to equivalent conductance of an electrolyte depending on the nature of the other ion of the electrolyte.

25. The standard e.m.f of a galvanic cell involving cell reaction with $n=2$ is found to be 0.295 V at 25°C. the equilibrium constant of the reaction would be

- a) 2.0×10^{11} b) 4.0×10^{12}
 c) 1.0×10^2 d) 1.0×10^{10}

(Given $F = 96500 \text{ C mol}^{-1}$, $R = 8.314 \text{ JK}^{-1} \text{ mol}^{-1}$)

26. For the cell reaction, $\text{Cu}^{2+} (\text{C}_1, \text{aq}) + \text{Zn}_{(\text{s})} = \text{Zn}^{2+} (\text{C}_2, \text{aq}) + \text{Cu}_{(\text{s})}$ of an electrochemical cell, the change in free energy ΔG at a given temperature is a function of

- a) $\ln (\text{C}_2)$ b) $\ln (\text{C}_2/\text{C}_1)$
 c) $\ln (\text{C}_1)$ d) $\ln (\text{C}_1 + \text{C}_2)$

27. On electrolysis of dilute sulphuric acid using platinum electrodes, the product obtained at the anode will be

- a) hydrogen b) oxygen
 c) hydrogen sulphide d) sulphur dioxide

28. The weight of silver (at. Wt. = 108) displaced by a quantity of electricity which displaces 5600 mL of O_2 at STP will be

- a) 5.4 g b) 10.8 g
 c) 54.0 g d) 108.0 g

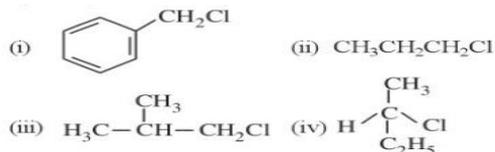
29. When 0.1 mol MnO_4^{2-} is oxidised the quantity of electricity required to completely oxidise MnO_4^{2-} to MnO_4^- is

- a) 96500 C b) $2 \times 96500 \text{ C}$
 c) 9650 C d) 96.50 C

30. A device that converts energy of combustion of fuels like hydrogen and methane, directly into electrical energy is known as

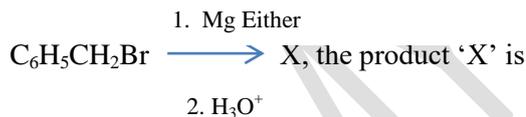
- a) dynamo b) Ni-Cd cell
 c) fuel cell d) electrolytic cell

31. Which of the following compounds will undergo racemisation when solution of KOH hydrolyses?



- a) (i) and (ii)
 b) (ii) and (iv)
 c) (iii) and (iv)
 d) (i) and (iv)

32. In the following reaction



- a) $\text{C}_6\text{H}_5\text{CH}_2\text{OCH}_2\text{C}_6\text{H}_5$
 b) $\text{C}_6\text{H}_5\text{CH}_2\text{OH}$
 c) $\text{C}_6\text{H}_5\text{CH}_3$
 d) $\text{C}_6\text{H}_5\text{CH}_2\text{CH}_2\text{C}_6\text{H}_5$

33. Which of the following is least reactive in a nucleophilic substitution reaction?

- a) $(\text{CH}_3)_3\text{C}-\text{Cl}$
 b) $\text{CH}_2=\text{CHCl}$
 c) $\text{CH}_3\text{CH}_2\text{Cl}$
 d) $\text{CH}_2=\text{CHCH}_2\text{Cl}$

34. A compound of molecular formula C_7H_{16} shows optical isomerism compound will be

- a) 2,3 - dimethylpentane
 b) 2,2 - dimethylbutane
 c) 2 - methylhexane
 d) None of these

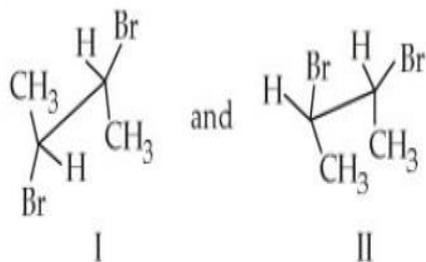
35. Grignard reagent is prepared by the reaction between

- a) magnesium and alkane
 b) magnesium and aromatic hydrocarbon
 c) zinc and alkyl halide
 d) magnesium and alkyl halide

36. Which of the following is an optically active compound?

- a) 1- Butanol
 b) 1-Propanol
 c) 2-Chlorobutane
 d) 4- Hydroxyheptane

37. Given



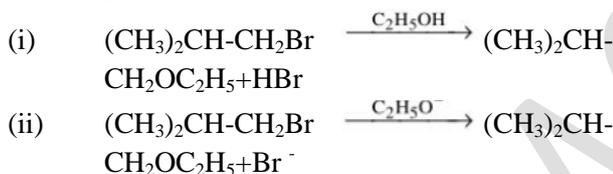
I and II are

- Identical
- A pair of conformers
- A pair of geometrical isomers
- A pair of optical isomers

38. Which of the following reaction is the example of nucleophilic substitution reaction?

- $2RX + 2Na \rightarrow R-R + 2NaX$
- $RX + H_2 \rightarrow RH + HX$
- $RX + Mg \rightarrow RMgX$
- $RX + KOH \rightarrow ROH + KX$

39. Consider the reactions



- SN1 and SN2
- SN1 and SN1
- SN2 and SN2
- SN2 and SN1

40. In the replacement reaction



The reaction will be most favourable if M happens to be

- Na
- K
- Rb
- Li

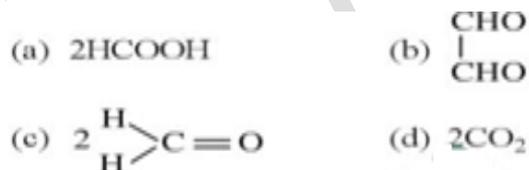
41. Among the following set of reactants which one produces anisole?

- CH_3CHO ; $RMgX$
- C_6H_5OH ; $NaOH$; CH_3I
- C_6H_5OH ; neutral $FeCl_3$
- $C_6H_5CH_3$; CH_3COCl ; $AlCl_3$

42. Given are cyclohexanol (I), acetic acid (II), 2,4,6-trinitrophenol (III) and phenol (IV). In these the order of decreasing acidic character will be

- $III > II > IV > I$
- $II > III > I > IV$
- $II > III > IV > I$
- $III > IV > II > I$

43. $HOCH_2CH_2OH$ on heating with periodic acid gives



44. Which one of the following will not form a yellow precipitate on heating with an alkaline solution of iodine?

- $CH_3CH(OH)CH_3$
- $CH_3CH_2CH(OH)CH_3$
- CH_3OH
- CH_3CH_2OH

45. When 3,3-dimethyl-2-butanol is heated with H_2SO_4 , the major product obtained is

- 2,3-dimethyl-2-butene
- cis and trans isomers of 2,3-dimethyl-2-butene
- 2,3-dimethyl-1-butene
- 3,3-dimethyl-1-butene

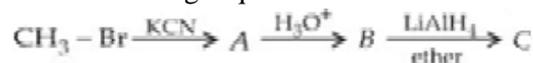
46. When hydrochloric acid gas is treated with propene in presence of benzoyl peroxide, it gives

- 2-chloropropane
- allyl chloride
- no reaction
- n-propyl chloride

47. Propene, $CH_3CH=CH_2$ can be converted into 1-propanol by oxidation. Indicate which set of reagents amongst the following is ideal for the above conversion?

- $KMnO_4$ (alkaline)
- Osmium tetroxide (OsO_4/CH_2Cl_2)
- B_2H_6 and alk. H_2O_2
- O_3/Zn

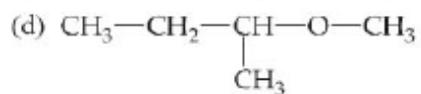
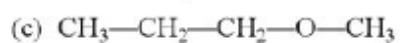
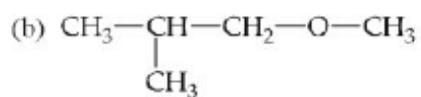
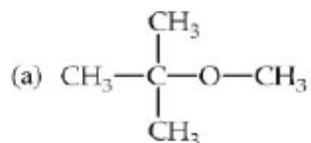
48. In the following sequence of reactions



the end product (C) is

- a) acetone
- b) methane
- c) acetaldehyde
- d) ethyl alcohol

49. Among the following ethers, which one will produce methyl alcohol on treatment with hot concentrated HI?



50. Among the following set of reactants which one produces anisole?

- a) CH_3CHO ; RMgX
- b) $\text{C}_6\text{H}_5\text{OH}$; NaOH ; CH_3I
- c) $\text{C}_6\text{H}_5\text{OH}$; neutral FeCl_3
- d) $\text{C}_6\text{H}_5\text{CH}_3$; CH_3COCl ; AlCl_3