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Motto :
“We are saviour of nation.”



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STARS ACADEMY LAHORE

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STARS ENTRY TEST SYSTEM-2020

ONLINE SESSION: MDCAT

Test Code: C8 (Fundamental Principles + Hydrocarbons)

Time Allowed: 40 mins


- The maximum number of isomer for an alkene with the molecular formula C_4H_8
 A) 2
 B) 3
 C) 4
 D) 5
- An isomer of ethanol is
 A) Methanol
 B) Dimethyl ether
 C) Diethyl ether
 D) Ethylene glycol
- The slow rate of organic reactions is due to the reason that organic compounds have
 A) Ionic nature
 B) Molecular nature
 C) Polar nature
 D) Metallic Nature
- The electrophile in the aromatic sulphonation is
 A) H_3O^+
 B) HSO_3^-
 C) SO_3
 D) SO_3^-
- Which one is the correct IUPAC name of the given structure; $CH_3 - \underset{\substack{| \\ CH_3}}{CH} - \underset{\substack{| \\ Br}}{CH} - CH_3$
 A) 2-bromo-3-methylbutane
 B) 3-methyl-2-bromobutane
 C) 2-methyl-3-bromobutane
 D) All of these
- What is the IUPAC name for $CH_3CHClCH(CH_3)CH_2CH_2CH_2CH_2Br$?
 A) 1-bromo-6-chloro-5-methylheptane
 B) 7-bromo-2-chloro-3-methylheptane
 C) 1-bromo-6-chloro-5,6-dimethylhexane
 D) 6-bromo-1-chloro-1,2-dimethylhexane
- The IUPAC name of phthalic acid is
 A) 1,2 Benzenedicarboxylic acid
 B) 1,3 Benzenedicarboxylic acid
 C) 1,4 Benzenedicarboxylic acid
 D) Benzoic acid
- Which of the following is not a heterocyclic compound in nature?
 A) Furan
 B) Thiophene
 C) Pyridine
 D) Aniline
- The general formula of alcohol is
 A) $C_nH_{2n}OH$
 B) $C_nH_{2n+1}OH$
 C) $C_nH_{2n-1}COOH$
 D) $C_nH_{2n+1}O_n$
- Active part of an organic compound is called
 A) Active site
 B) Functional group
 C) Binding site
 D) Oxidation and reduction site
- Indicate the number of isomers of C_5H_{14}
 A) 7
 B) 6
 C) 5
 D) 4
- Type of isomerism shown by fumaric acid and maleic acid is
 A) Functional group
 B) Geometrical
 C) Metamerism
 D) Positional
- Ethers show the phenomenon of
 A) Positions isomerism
 B) Functional group isomerism
 C) Metamerism
 D) Cis-trans isomerism

14. The IUPAC name of $CH_2 = CH - CH(CH_3)_2$ is
 A) 2-vinylpropane
 B) 3-methylbut-1-ene
 C) 1-isopropylethylene
 D) 1,1-dimethylprop-2-ene
15. Which of the following pairs shows isomerism
 A) CH_2Cl_2 and $CHCl_3$
 B) C_2H_4 and C_3H_6
 C) C_6H_6 and C_3H_6
 D) CH_3OCH_3 and C_2H_5OH
16. The compound $C_4H_{10}O$ can show
 A) Position isomerism
 B) metamerism
 C) Functional isomerism
 D) All are possible
17. The IUPAC name of $C(CH_3)_4$ is
 A) Iso-propyl methane
 B) Neo-pentane
 C) Iso-pentane
 D) 2,2-dimethyl propane
18. Which heterocyclic organic compounds contains 'O' atom.
 A) furan
 B) thiophene
 C) pyridine
 D) pyrrol
19. The carbon atom of HCHO is
 A) SP hybridized
 B) SP^2 hybridized
 C) SP^3 hybridized
 D) $d^2 SP^3$ hybridized
20. The type of isomerism arises due to shifting of proton from one atom to other in the same molecule.
 A) metaamorism
 B) tautomerism
 C) position isomerism
 D) functional group isomerism
21. The chemical formual of benzyl alcohol is
 A) C_6H_5OH
 B) C_6H_5CHO
 C) $C_6H_5CH(OH)_2$
 D) $C_6H_5CH_2OH$
22. Ethoxy ethane and Methoxy propane is the example of the.
 A) chain isomerism
 B) position isomerism
 C) metamers
 D) functional group isomerism
23. Which of the following can show geometrical isomerism?
 A) 1 - butene
 B) 2 - butene
 C) propene
 D) 1,1 - dichloride butane
24. Which one of the following is the name of given structure $CH_3 - CH(OH) - CO_2H$
 A) Maleic acid
 B) Lactic acid
 C) Malonic acid
 D) Tartaric acid
25. How many sigma bond are present in ethene
 A) 2
 B) 4
 C) 5
 D) 6
26. Metamerism is the process in which.
 A) small molecules are converted to bigger molecular
 B) Bigger molecular are converted to smaller molecule
 C) Compound have same molecular formula but different functional group
 D) Compound have same molecular formula but different alkyl group on either side of functional group
27. Which class of compounds cannot show positional isomerism?
 A) alkanes
 B) alkene
 C) alkynes
 D) alcohol
28. The molecule which shows geometrical isomer always has.
 A) $C=C$ double bonds
 B) $C \equiv C$ triple bond
 C) cyclic structure
 D) both a and c
29. Which one of the following is not an electrophile
 A) H_2O
 B) BF
 C) H^+
 D) CH_3^+
30. Propionaldehyde and acetone are isomers
 A) Chain
 B) Position
 C) tautomers
 D) functional

31. Which is not alicyclic
 A) cyclo hexane
 B) Phenol
 C) methyl cyclo hexane
 D) cyclo hexene
32. The saturated hydrocarbons can show isomerism
 A) Chain isomerism
 B) Position isomerism
 C) functional group isomerism
 D) meta-megrimis
33. The catalyst used in the manufacture of Polyethene is:
 A) $\text{TiCl}_4 + (\text{C}_2\text{H}_5)_3\text{Li}$
 B) $\text{TiCl}_4 + (\text{C}_2\text{H}_5)_3\text{Al}$
 C) TiO_2
 D) None of these
34. Baeyer's reagent is 1% alkaline solution of KMnO_4 and used in the laboratory for:
 A) Detection of unsaturation
 B) Detection of saturation
 C) Reduction
 D) Oxidation
35. Complete combustion of CH_4 gives:
 A) $\text{CO} + \text{H}_2\text{O}$
 B) $\text{CO}_2 + \text{H}_2\text{O}$
 C) COCl_2
 D) $\text{CO}_2 + \text{CO} + \text{H}_2\text{O}$
36. The order of reactivity of halogens in aliphatic substitution reactions are:
 A) $\text{Br}_2 > \text{Cl}_2 > \text{F}_2$
 B) $\text{Cl}_2 > \text{Br}_2 > \text{F}_2$
 C) $\text{F}_2 > \text{Cl}_2 > \text{Br}_2$
 D) $\text{F}_2 > \text{Br}_2 > \text{Cl}_2$
37. The heat of hydrogenation of vitamin A is nearly 600 kJ/mole. The no. of double bonds present in vitamin A are;
 A) 3
 B) 4
 C) 5
 D) 6
38. Alcoholic KOH is a specific reagent for
 A) Dehydration
 B) Dehydrohalogenation
 C) Dehydrogenation
 D) Hydration
39. Which thing explains the stability of benzene.
 A) Delocalized electronic cloud
 B) resonating structures
 C) Resonance energy
 D) All are correct
40. When bromine reacts with propene in an organic solvent at room temperature, what is the mechanism by which the bromine attacks the propene?
 A) electrophilic addition
 B) nucleophilic addition
 C) electrophilic substitution
 D) nucleophilic substitution
41. Which of the following reagents could best be used to distinguish between hex-1-ene and methylbenzene?
 A) $\text{Ag}(\text{NH}_3)_2$ in H_2O
 B) I_2 in $\text{NaOH}(\text{aq})$
 C) Br_2 in CCl_4
 D) 2,4-dinitrophenylhydrazine in CH_3OH
42. A liquid hydrocarbon decolourizes the alkaline KMnO_4 will be
 A) C_2H_2
 B) C_3H_4
 C) C_4H_6
 D) C_5H_{10}
43. Alkenes are prepared by dehydration of alcohol in the presence of suitable dehydrating agent. The order of ease of dehydration will be;
 A) tertiary > secondary > Primary
 B) Secondary > primary > tertiary
 C) Primary > Secondary > tertiary
 D) all have same tendency
44. Benzene reacts with chlorine as shown.

$$\text{C}_6\text{H}_6 + \text{Cl}_2 \longrightarrow \text{C}_6\text{H}_5\text{Cl} + \text{HCl}$$

 Which term describes this type of reaction?
 A) electrophilic substitution
 B) nucleophilic addition
 C) free – radical substitution
 D) nucleophilic substitution

45. $HC \equiv CH \xrightarrow[\text{reagent}]{\text{Bayer's}} A \xrightarrow{-H_2O} B \xrightarrow[H_2SO_4]{K_2Cr_2O_7} C$ What is B.
- A) Glycol
B) Glykol
C) Oxalic acid
D) Glycerin
- B) CH_3CHO and $HO_2CCH_2CO_2H$ D) $CH_3CH_2CO_2H$ and $HO_2CCH_2CO_2H$
46. Bromine is an inert solvent, it is added separately to hexane, hexene, benzene and methylbenzene. In which of the following pairs will the observations be the same?
- I. hexane and benzene
II. Hexane and hexene
III. hexene and methyl benzene
- A) I only
B) I and II only
C) II and III only
D) all are correct
47. Amongst the following, the strongest 2,4-directing group is
- A) $-Cl$
B) $-C_6H_5$
C) $-OH$
D) $-Br$
48. Which of the following compounds reacts slower than benzene in electrophilic substitution.
- A) C_6H_5-OH
B) $C_6H_5-NO_2$
C) $C_6H_5-CH_3$
D) $C_6H_5-NH_2$
49. Anhydrous $AlCl_3$ is used in the friedal-craft's reaction, because it is;
- A) insoluble in chloride and aluminium ion
B) electron deficient
C) soluble in ether
D) electron rich
50. The compound that is nitrated with difficulty is
- A) benzene
B) toluene
C) phenol
D) nitrobenzene
51. If $[Cl]$ is in excess in the halogenation of CH_4 . The major product is:
- A) CH_3Cl
B) CH_2Cl_2
C) $CHCl_3$
D) CCl_4
52. Which will increase nucleophilicity of benzene:
- A) $COOH$
B) NO_2
C) OH
D) $OCCH_3$
53. The mechanism of halogenation of toluene in the presence of sun light:
- A) Electrophilic sub.
B) Nucleophilic sub.
C) Free radical sub.
D) Elimination.
54.  $\xrightarrow[\text{AlCl}_3]{CH_3Cl} A \xrightarrow{KMnO_4} B \xrightarrow{LiAlH_4} C$. in the following sequences:
- A) Benzene
B) Toluene
C) Benzoic acid
D) Benzyl Alcohol
55. Aluminium chloride catalyses certain reaction by forming carbocations with chloroalkanes as shown in the following equation.



This can occur because

- A) $AlCl_3$ is a covalent molecule
B) the aluminium atom in $AlCl_3$ has an incomplete octet of electrons.
C) $AlCl_3$ exists as the polymer Al_2Cl_6 in the vapour
D) the Chlorine atom in RCl has a vacant p orbital.

56. Nitrobenzene may be prepared by reacting benzene with a mixture of concentrated sulfuric and nitric acids.



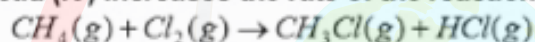
Which of the following best explains the role of the sulfuric acid?

- A) removing the water produced
 B) protonating nitric acid
 C) forming an unstable complex with benzene
 D) acting as a solvent
57. Which substance in a vehicle exhaust results from incomplete combustion of a hydrocarbon fuel?
 A) CO
 B) N₂
 C) H₂O
 D) NO

58. Which one of following is a propagation step in the reaction between methane and chlorine when they are irradiated with light?



59. Tetramethyl-lead (IV) increases the rate of the reaction of methane with chlorine.



Why can tetramethyl-lead (IV) behave in this way?

- A) it is a source of methyl radicals
 B) it reacts prevents equilibrium being established
 C) it releases $CH_3^+(g)$.
 D) metal ions catalyse the reaction
60. The compound hex-3-en-1-ol, has a strong 'leafy' smell of newly cut grass and is used in perfumery



What is produced when it is treated with an excess of hot concentrated acidic $KMnO_4$?

- A) $CH_3CH_2CH(OH)CH(OH)CH_2CH_2OH$
 B) CH_3CHO and $HO_2CCH_2CO_2H$
 C) $CH_3CH_2CH = CHCH_2CO_2H$
 D) $CH_3CH_2CO_2H$ and $HO_2CCH_2CO_2H$

Medicos Hub Chem Test #17 Key

1.	C	17.	D	33.	B	49.	B	65.	81.	97.
2.	B	18.	A	34.	A	50.	D	66.	82.	98.
3.	B	19.	B	35.	B	51.	D	67.	83.	99.
4.	C	20.	B	36.	C	52.	C	68.	84.	100.
5.	A	21.	D	37.	C	53.	C	69.	85.	101.
6.	A	22.	C	38.	B	54.	B	70.	86.	102.
7.	A	23.	B	39.	D	55.	B	71.	87.	103.
8.	D	24.	B	40.	A	56.	B	72.	88.	104.
9.	B	25.	C	41.	C	57.	A	73.	89.	105.
10.	B	26.	D	42.	D	58.	B	74.	90.	106.
11.	C	27.	A	43.	A	59.	A	75.	91.	107.
12.	B	28.	A	44.	A	60.	B	76.	92.	108.
13.	C	29.	A	45.	None	61.		77.	93.	109.
14.	B	30.	D	46.	A	62.		78.	94.	110.
15.	D	31.	B	47.	C	63.		79.	95.	111.
16.	D	32.	A	48.	B	64.		80.	96.	112.