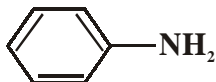
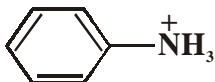
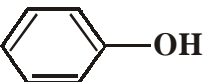
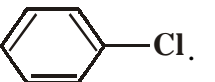


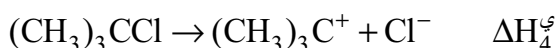
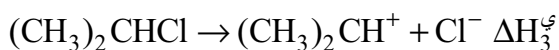
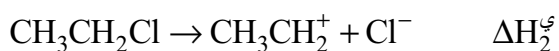
27. If free end is pulled downward then :
- Linear momentum and mechanical energy of block will remain conserved.
 - Linear momentum and angular momentum of block will remain conserved.
 - Angular momentum of block will remain conserved.
 - Mechanical energy of block will remain conserved.
28. If at free end a block of same mass is suspended instead of applying force then with what angular velocity the block should move on same circular path to make the hanging block at rest :
- $\sqrt{\frac{mg}{F}}$
 - $\sqrt{\frac{F}{mg}}$
 - $\omega\sqrt{\frac{mg}{F}}$
 - $\frac{\omega}{2}\sqrt{\frac{mg}{F}}$
29. Which of the following statements is correct :
- Radial acceleration of block is zero.
 - Tangential acceleration of block is zero while radial acceleration is $\frac{F}{m}$.
 - Radial acceleration of block is $\frac{F}{2m}$
 - Net acceleration of block is zero.
30. If force at free end of string is increased to twice then to maintain the circular path of same radius the angular velocity of block must be increased by :
- 100%
 - 141.4%
 - 41.4%
 - 50%.

CHEMISTRY

31. In which of the following molecules, the resonance effect is not present ?
- 
 - 
 - 
 - 
32. The order of reactivity of halogens towards halogenation of alkanes is
- $F_2 > Br_2 > Cl_2$
 - $F_2 > Cl_2 > Br_2$
 - $Cl_2 > F_2 > Br_2$
 - $Cl_2 > Br_2 > F_2$
33. The treatment of CH_3OH with CH_3MgI releases 1.04 mL of a gas at STP. The mass of CH_3OH added is :
- 1.49 mg
 - 2.98 mg
 - 3.71 mg
 - 4.47 mg .

34. A sample of 1.79 mg of a compound of molar mass 90 g mol^{-1} when treated with CH_3MgI releases 1.34 mL of a gas at STP. The number of active hydrogen in the molecule is :
 (a) 1 (b) 2 (c) 3 (d) 4.
35. The order of stability of three alkenes $\text{R}_2\text{C}=\text{CR}_2$, $\text{R}_2\text{C}=\text{CHR}$ and $\text{RCH}=\text{CHR}$ is
 (a) $\text{RCH}=\text{CHR} > \text{R}_2\text{C}=\text{CHR} > \text{R}_2\text{C}=\text{CR}_2$
 (b) $\text{RCH}=\text{CHR} < \text{R}_2\text{C}=\text{CHR} > \text{R}_2\text{C}=\text{CR}_2$
 (c) $\text{RCH}=\text{CHR} > \text{R}_2\text{C}=\text{CHR} < \text{R}_2\text{C}=\text{CR}_2$
 (d) $\text{RCH}=\text{CHR} < \text{R}_2\text{C}=\text{CHR} < \text{R}_2\text{C}=\text{CR}_2$
36. The addition of HBr to an alkene in the presence of peroxide is the example of
 (a) electrophilic addition reaction
 (b) nucleophilic addition reaction
 (c) free radical addition reaction
 (d) the formation of carbocation as an intermediate
37. The addition of Br_2 to trans-2-butene produces
 (a) (+)-2,3-dibromobutane (b) (-)-2,3-dibromobutane
 (c) rac-2,3-dibromobutane (d) meso-2,3-dibromobutane
38. The treatment of propene with Cl_2 at 500-600 °C produces
 (a) 1,2-dichloropropane (b) allyl chloride
 (c) 2,3-dichloropropene (d) 1,3-dichloropropene
39. The electrophilic addition of 1,3-butadiene produces
 (a) 1,2-addition product only
 (b) 1,4-addition product
 (c) both 1,2- and 1,4- addition products which are not at equilibrium with each other
 (d) both 1,2- and 1,4-addition products which are at equilibrium with each other

40. For the following reactions :



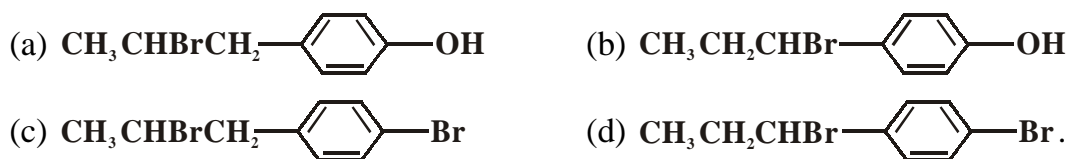
The correct order of enthalpies of ionizations is :

- (a) $\Delta H_1^\ominus > \Delta H_2 > \Delta H_3 > \Delta H_4$ (b) $\Delta H_1^\ominus < \Delta H_2 < \Delta H_3 < \Delta H_4$
 (c) $\Delta H_1^\ominus > \Delta H_2 > \Delta H_3 < \Delta H_4$ (d) $\Delta H_1^\ominus > \Delta H_2 < \Delta H_3 < \Delta H_4$.

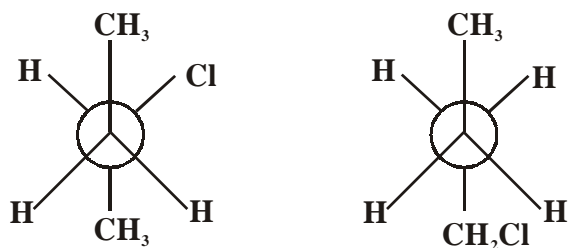
41. An alkene on treating with hot acidified KMnO_4 gives 4-oxopentanoic acid. The alkene is
 (a) pentene (b) 2-pentene
 (c) 1-methylcyclobutene (d) 1,2-dimethylcyclopropene

42. An alkene on treating with hot acidified KMnO_4 gives succinic acid. The alkene is
 (a) 1-butene (b) 2-butene (c) 2-methylbutene (d) cyclobutene

43. The reaction of $\text{CH}_3-\text{CH}=\text{CH}-\text{C}_6\text{H}_4-\text{OH}$ with HBr gives



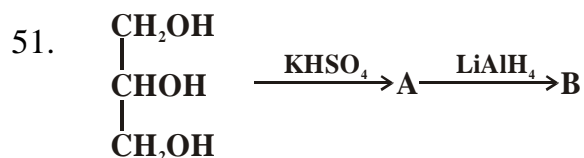
44. The pair of structures represents-



- (a) Enantiomers (b) Position isomers
 (c) Conformers (d) None.
45. EAN of Cr is $[\text{Cr}(\text{NH}_3)_6]\text{Cl}_3$ is :
 (a) 32 (b) 33 (c) 34 (d) 25.
46. In SCN ligand if N is attached to central atom, the name of ligand is :
 (a) Thiocyanato-N (b) Cyanato-N (c) Thiocyanato-S (d) Cyanato-S.
47. The two compounds sulphato penta-ammine cobalt(III) bromide and sulphato penta-ammine cobalt(III) chloride present :
 (a) Linkage isomerism (b) Ionisation isomerism
 (c) Co-ordination isomerism (d) No isomerism.
48. The complex $[\text{Pt}(\text{NH}_3)_6]\text{Cl}_4$ furnishes :
 (a) 5 ions (b) 6 ions (c) 4 ions (d) 2 ions.

49. Chemically borax is :
- (a) Sodium metaborate (b) Sodium orthoborate
(c) Sodium tetraborate (d) Sodium tetraborate decahydrate

50. Increasing order of the acidic strengths of BBr_3 , BF_3 and BCl_3 is :
- (a) $\text{BF}_3 > \text{BCl}_3 > \text{BBr}_3$ (b) $\text{BBr}_3 > \text{BCl}_3 > \text{BF}_3$
(c) $\text{BCl}_3 > \text{BBr}_3 > \text{BF}_3$ (d) $\text{BBr}_3 > \text{BF}_3 > \text{BCl}_3$



Compound B is :

- (a) Propanol (b) Allyl alcohol (c) Acrolein (d) None of these.

Directions for questions 52 to 56.

- (a) Both A and R are true and R is the correct explanation of A.
(b) both A and R are true but R is not the correct explanation of A.
(c) A is true but R is false.
(d) A is false but R is true.
52. A : The freezing point of 0.05 M urea solution is different from that of 0.05 M sodium chloride solution.
R : The depression in freezing point is directly proportional to the number of species present in the solution.
53. A : If one component obeyed Raoult's law over a certain range of composition, the other component would not obey Henry's law in that range.
R : Raoult's law is a special case of Henry's law.
54. A : The boiling point of 0.1 M urea solution is less than that of 0.1 M KCl solution.
R : Elevation of boiling point is directly proportional to the number of species present in the solution.
55. A : Acetic acid has a molecular weight of 120 in benzene solution.
R : There is dimer formation by H-bonding.
56. A : The vapour pressure of 0.1 M sugar solution is more than that of 0.1 M potassium chloride solution.
R : Lowering of vapour pressure is directly proportional to the number of species present in the solution.

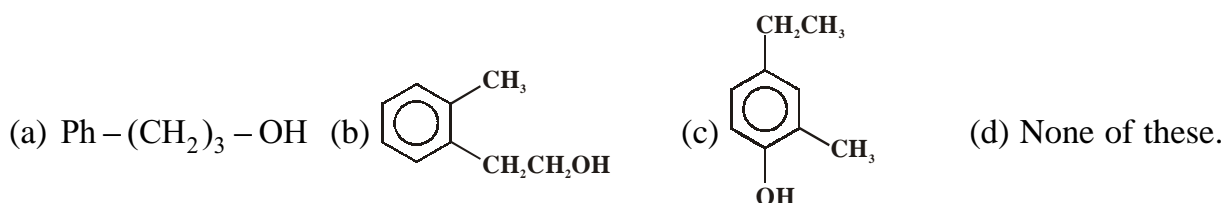
Directions for questions 57 to 60.

Shahzeb was given an unknown compound with molecular formula $C_9H_{12}O$, to find out its structure, for this he did some experiments with following results :

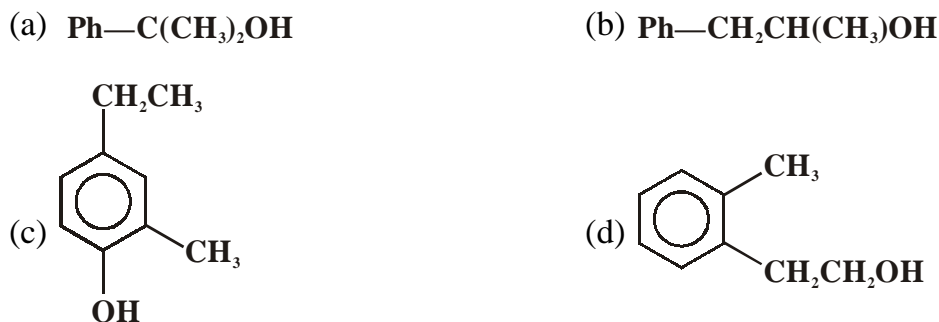
Experiment	Results
(i) Reaction with Br_2/CCl_4 .	: Decolourisation.
(ii) Reaction with $KMnO_4/OH^-$.	: A white solid(benzoic acid) was formed.
(iii) Reaction with Na.	: $H_2 \uparrow$ gas was evolved.

In between his teacher comes to him and asks some question. What should be the answers of following asked question to Shahzeb.

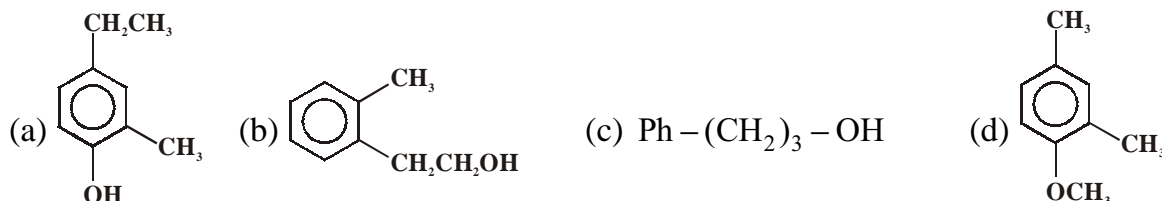
57. Teacher : If your (unknown) compound changes the colour of $Cr_2O_7^{--}$ to green, then the compound is:



58. Teacher : If it(unknown compound) can be resolved and also changes the colour of $Cr_2O_7^{--}$ to green, then the compound is :



59. Teacher : If it(unknown compound) gives no ppt with $I_2/NaOH$ but changes the colour of $Cr_2O_7^{--}$ to green, then the compound is :



60. Teacher : If oxidation with CrO_3 /pyridine gives chiral compound, then the compound is :

