# Gurudas College

## Internal Assessment, 2021

### CHEMISTRY (General)

## Semester-IV

### Paper-CC4/GE4

**Full Marks-10**                                                                                       **Time- 30 mins**

Answer **any ten** questions                                      $10\times1=10$

1. Rotational spectra obtain in ------------ region of electromagnetic radiation.

    (a) visible              (b) infrared              (c) microwave          (d) ultra-violet

2. Which of the following molecule is IR active molecule

    (a) $N_2$           (b) HCl           (c) $H_2$           (d) $O_2$

3. For a particle in a one dimensional box of width L, the wave function is given by

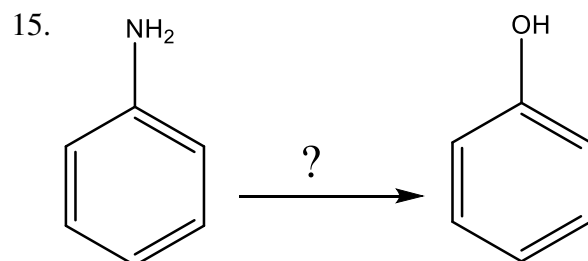    $\Psi(x) = NSin\left(\frac{\Pi x}{L}\right)$, where $0 < x < L$

    The normalization constant N is given by

    (a) $N=\sqrt{\frac{1}{L}}$

    (b) $N=\sqrt{\frac{2}{L}}$

    (c) $N=\sqrt{\frac{3}{L}}$

    (d) $N=\sqrt{\frac{4}{L}}$

4. The square of the magnitude of the wave function is called_____

    (a) current density              (b) probability density          (c) zero density          (d) volume density

5. Phenol on heating with alcoholic KOH and chloroform undergoes

   (a) Kolbe reaction     (b) Rosenmund reduction     (c) Reimer-Tiemann reaction (d)
   Cannizzaro reaction

6. Salol is
   (a) Acetyl salicylic acid     (b) Phenol benzoate    (c) Acetyl salicylate    (d) Phenyl
   salicylate

7. The carbon atom of the carbonyl group is
   (a) $sp^2$ hybridized     (b) sp hybridized     (c) $sp^3$ hybridized     (d) $dsp^2$ hybridized

8. Aldol is
   (a) β-hydroxybutyraldehyde   (b) α-hydroxybutanal   (c) β-hydroxypropanal      (d)
   None of the above

9. Aldol condensation will not occur in
   (a) HCHO     (b) $CH_3CH_2CHO$     (c) $CH_3COCH_3$     (d) $CH_3CHO$

10. Which of the following is the strongest acid?

   (a) $CH_3\overset{|}{\underset{F}{C}}HCOOH$    (b) $FCH\overset{|}{\underset{F}{}}CH_2COOH$    (c) $CH_3CH_2COOH$    (d) $CH_2\overset{|}{\underset{F}{}}\overset{|}{\underset{F}{C}}HCOOH$

11. The electronic distribution of $d^5$ –orbital in low and high spin complex would be
   (a) $t_{2g}^3\ e_g^2,\ t_{2g}^5\ e_g^0$     (b) $t_{2g}^5\ e_g^0,\ t_{2g}^3\ e_g^2$     (c) $t_{2g}^2\ e_g^3,\ t_{2g}^4\ e_g^1$     (d) None of these,
   respectively.

12. Calculate the CFSE of $[CoF_6]^{3-}$ and $[Fe(CN)_6]^{4-}$, respectively
   (a) 0.4 $\Delta_0$ and 2.4 $\Delta_0$    (b) 2.4 $\Delta_0$ and 0.4 $\Delta_0$    (c) 1.2 $\Delta_0$ and 0.4 $\Delta_0$    (d) None of these

13. The magnetic moment of the complex $[Mn(CN)_6]^{4-}$ is

   (a) 1.73 BM      (b) 5.9 BM      (c) 3.87 BM      (d) 0 BM

14. D-glucose and D-fructose can be differentiated by

(a) Tollen's or Fehling's reagent    (b) $Br_2$-$H_2O$ oxidation    (c) $HNO_3$ oxidation    (d) None of these.

15.



(a) 1. $NaNO_2$, Conc. HCl / 2. $H_2O$, Δ

(b) 1. $NaNO_2$, Conc. HCl/ 2. $H_3PO_2$

(c) 1. Zn/HCl, / 2. $H^+$/$H_2O$

(d) 1. Sn/HCl, /2. EtOH/Δ