

Signature of Invigilator .....	To be filled in by candidate by ball-point pen only	OMR Sl. No. _____
	Roll No. _____	_____
Time of Examination .....	<b>Declaration : I have read and understood the instructions given below.</b>	
Date of Examination .....	Full Signature of Candidate .....	<b>Full Marks : 80/50</b> <b>Time : 1 hour</b>
	Name of Candidate .....	

Number of Questions  
in the Booklet } **50/40****UU 6th Semester Examination, 2020****INSTRUCTIONS TO CANDIDATES**

- Immediately after getting the booklet read instructions carefully mentioned on the front and back page of the Question Booklet. Do not open the seals unless asked by the Invigilator.
- Write your Roll No., OMR Response Sheet No., in the specified places given above and put your signature.
- Write the subject code of the booklet in your OMR Sheet.
- Make all entries in the OMR Response Sheet as per the given instructions; otherwise OMR Response Sheet will not be evaluated.
- After opening the seals, ensure that the Question Booklet contains total no. of pages as mentioned above and printing of all the **50 / 40** questions are proper. If any discrepancy is found, inform the invigilator within **15** minutes and get the correct Question Booklet.
- For each question in the Question Booklet choose the correct option from the given four alternatives and darken the same circle in the OMR Response Sheet with Black or Blue ball-point pen.
- Darken the circle of correct answer properly; otherwise answers will not be evaluated. The candidate will be fully responsible for it.
- If more than one option is darkened for a particular question, then it will be treated as wrong answer.
- After completion of the examination, only OMR Response Sheet is to be handed over to the invigilator.

**THERE IS NO NEGATIVE MARKING FOR WRONG ANSWER**

## Rough Work

# CHEMISTRY (CORE -13)

(Answer any 25 questions)

- What is the formula of Zeise's salt?  
(A)  $K_2[PtCl_3(C_2H_4)_2]$   
(B)  $K[PtCl_3(C_2H_4)]$   
(C)  $K[PtCl_2(C_2H_4)_2]$   
(D)  $K_2[PtCl_3(C_2H_4)_3]$
- The stability of the ionic organometallic compounds depends on the stability of —.  
(A) Carbocation  
(B) Carbanion  
(C) Metal ion  
(D) none of these
- What is the EAN in  $[Mn(CO)_6]^+$  ?  
(A) 36  
(B) 24  
(C) 30  
(D) 18
- What is the number of electrons of metal ion in  $Fe(CO)_5$  ?  
(A) 18  
(B) 26  
(C) 36  
(D) 8
- The number of carbon atoms from the ligand that are directly bonded to the metal atom is called \_\_\_\_\_ of the organic moiety.  
(A) EAN  
(B) valency  
(C) hapticity  
(D) bond order
- Which complex obey 18-electron rule?  
(A)  $V(CO)_6$   
(B)  $Cr(CO)_6$   
(C)  $Fe(CO)_4$   
(D)  $Mn(CO)_3$
- Which of the following complexes form bridge structure?  
(A)  $Fe_3(CO)_{12}$   
(B)  $Ru_3(CO)_{12}$   
(C)  $Os_3(CO)_{12}$   
(D)  $Os_3(CO)_{12}$
- Ligands are classified into how many types depending on hapticity?  
(A) 3  
(B) 8  
(C) 4  
(D) 10
- Number of metal-metal bonds in  $[Fe(C_5H_5)(CO)_2]_2$  is  
(A) 2  
(B) 1  
(C) 3  
(D) 0
- In  $Cr(C_6H_6)_2$ , benzene show \_\_\_\_\_ bonded ligands.  
(A) six carbon  
(B) five carbon  
(C) two carbon  
(D) three carbon

- 11 What types of bondings are involved in organometallic compounds?
- (A) ionic and covalent  
 (B) covalent and coordinate covalent  
 (C) ionic and co-ordinate covalent  
 (D) none of these
- 12 What is the structure of Methyl lithium?
- (A) Octahedral  
 (B) square planar  
 (C) Tetrahedral  
 (D) pentagonal
- 13 What is the chemical name of Ziegler-Natta catalyst?
- (A)  $\alpha$ -TiCl<sub>3</sub> + Al(C<sub>2</sub>H<sub>5</sub>)<sub>3</sub>  
 (B) TiCl<sub>2</sub> + Al(C<sub>6</sub>H<sub>5</sub>)<sub>3</sub>  
 (C) AlCl<sub>3</sub> +  $\alpha$ -TiCl<sub>3</sub>  
 (D) TiCl<sub>3</sub> + Al(C<sub>6</sub>H<sub>5</sub>)<sub>3</sub>
- 14 Ferrocene was discovered by
- (A) Goeffrey  
 (B) Woodward  
 (C) Fischer & Wilkinson  
 (D) None of these
- 15 What is the formula of ferrocene?
- (A) Fe(CO)<sub>10</sub>  
 (B) Fe(C<sub>5</sub>H<sub>5</sub>)<sub>2</sub>  
 (C) Fe<sub>2</sub>(CO)<sub>9</sub>  
 (D) Fe(C<sub>6</sub>H<sub>5</sub>)<sub>2</sub>
- 16 Choose the correct statement:
- (A) Ferrocene is aromatic in nature and more reactive than benzene  
 (B) Ferrocene is aromatic in nature and less reactive than benzene  
 (C) Ferrocene is not aromatic in nature and less reactive than benzene  
 (D) Ferrocene is not aromatic in nature and more reactive than benzene
- 17 Trialkyl aluminium behaves as a strong \_\_\_\_\_ and form adduct with amines.
- (A) Lewis acid  
 (B) Bronsted acid  
 (C) Bronsted base  
 (D) Lewis base
- 18 What is the formula of Grignard's reagent?
- (A) R<sub>2</sub>MgX  
 (B) 2RMgX  
 (C) RMg<sub>2</sub>X  
 (D) RMgX<sub>2</sub>
- 19 The tests in which there is interaction between the chemical substance and the appropriate reagent in solution is observed are called
- (A) dry tests  
 (B) wet tests  
 (C) preliminary tests  
 (D) micro tests
- 20 What is the formula of Borax?
- (A) Na<sub>2</sub>B<sub>4</sub>O<sub>7</sub>  
 (B) Na<sub>2</sub>B<sub>2</sub>O<sub>7</sub>  
 (C) NaB<sub>4</sub>O<sub>7</sub>  
 (D) NaB<sub>2</sub>O<sub>7</sub>
- 21 The colour of PbS is
- (A) blue  
 (B) red  
 (C) black  
 (D) white

- 22 The salts of which element are yellow when hot and white when cold?
- (A) Cu  
(B) Zn  
(C) Na  
(D) Ca
- 23 What is the formula of Wilkinson's catalyst?
- (A)  $\text{RhCl}(\text{PPh}_3)_3$   
(B)  $\text{RhCl}_3 \cdot \text{H}_2\text{O}$   
(C)  $\text{RbCl}(\text{PPh}_3)_3$   
(D)  $\text{Rh}(\text{PR}_3)_2$
- 24 The solubility product ( $K_{sp}$ ) of a binary sparingly soluble salt is
- (A)  $s^2$   
(B)  $s^3$   
(C)  $s^4$   
(D) none of these
- 25 Gasoline is synthesized by
- (A) Wacker process  
(B) Fischer-Tropsch method  
(C) Wilkinson's method  
(D) None of these
- 26 Which one of the following is an interfering ion?
- (A) phosphate  
(B) carbonate  
(C) sulphate  
(D) chloride
- 27 Which process is used to convert alkenes to aldehydes?
- (A) Heck process  
(B) Fischer-Tropsch process  
(C) Wilkinson's process  
(D) Wacker process
- 28 Calculate the solubility product of AgCl if a saturated solution of AgCl contains 0.0018g of salt per litre. (Mol. Wt. of AgCl=143.3  $\text{g mol}^{-1}$ )
- (A)  $1.56 \times 10^{-10} \text{ mol}^2/\text{lit}^2$   
(B)  $1.56 \times 10^{-5} \text{ mol}^2/\text{lit}^2$   
(C)  $1.36 \times 10^{-10} \text{ mol}^2/\text{lit}^2$   
(D)  $1.56 \times 10^{-10} \text{ mol}/\text{lit}$
- 29 In a saturated solution the ionic product and solubility product are related for a binary electrolyte as:
- (A)  $[\text{A}^+][\text{B}^+] > K_{sp}(\text{AB})$   
(B)  $[\text{A}^+][\text{B}^+] = K_{sp}(\text{AB})$   
(C)  $[\text{A}^+][\text{B}^+] < K_{sp}(\text{AB})$   
(D) none of these
- 30 Which element shows persistent golden yellow in flame test?
- (A) K  
(B) Na  
(C) Ca  
(D) Zn
- 31 Between cis and trans isomers of amines of the type  $\text{PtX}_2\text{Y}_2$  \_\_\_\_\_ isomers are generally more stable
- (A) cis  
(B) trans  
(C) both  
(D) none of these

- 32 The nucleophilicity of the halide ions decrease in the order
- (A)  $I^- > Br^- > Cl^- > F^-$   
 (B)  $Br^- > I^- > Cl^- > F^-$   
 (C)  $F^- > Cl^- > Br^- > I^-$   
 (D)  $Br^- > I^- > F^- > Cl^-$
- 33 Choose the correct statement.
- (A) The trans- $Pt(NH_3)_2Cl_2$  is less stable than cis isomer  
 (B) The trans- $Pt(NH_3)_2Cl_2$  is more stable than cis isomer  
 (C) Both cis and trans isomers of  $Pt(NH_3)_2Cl_2$  are equally stable  
 (D) Stability can't be determined
- 34 For the general reaction of the type  $ML_3X + Y \rightarrow ML_3Y + X$ , the rate law  $\frac{-d[ML_3X]}{dt}$  is given by
- (A)  $k_s[ML_3X]$   
 (B)  $k_s[ML_3X] + k_y[Y][ML_3X]$   
 (C)  $k_y[Y][ML_3X]$   
 (D) none of these
- 35 The substitution reactions in complexes are suggested by
- (A) Alfred Nobel  
 (B) Alfred Werner  
 (C) Woodward  
 (D) Wilkinson
- 36 Which is true for hydrolysis and anation reactions?
- (A) Both the reactions follow the same reaction coordinate in opposite directions  
 (B) Both the reactions follow different reaction coordinate in opposite directions  
 (C) Both the reactions follow the same reaction coordinate in same directions  
 (D) None of these
- 37 The effect of a coordinated ligand upon the rate of substitution reaction of ligands opposite to it in a metal complex is called
- (A) cis effect  
 (B) trans effect  
 (C) nucleophilic effect  
 (D) none of these
- 38 Which of the following theories explains the trans effect?
- (A) polarisation theory  
 (B)  $\pi$ -bonding theory  
 (C) MO theory  
 (D) All of these
- 39 The I-mechanism stands for
- (A) Interchange mechanism  
 (B) Inversion mechanism  
 (C) Intermediate mechanism  
 (D) Induced mechanism
- 40 Which element shows brick red colour in naked eye in flame test?
- (A) K  
 (B) Na  
 (C) Ca  
 (D) Ba



