SUBJECT : CHEMISTRY	DAY – 2
SESSION : AFTERNOON	TIME : 02.30 P.M. TO 03.50 P.M.

MAXIMUM MARKS	TOTAL DURATION	MAXIMUM TIME FOR ANSWERING
60	80 MINUTES	70 MINUTES

MENTION YOUR CET NUMBER					QUESTION BOOKLET DETAILS	
					VERSION CODE	SERIAL NUMBER
					A - 1	633409

DOs :

1. Check whether the CET No. has been entered and shaded in the respective circles on the OMR answer sheet.
2. This Question Booklet is issued to you by the invigilator after the **2nd Bell i.e., after 2.30 p.m.**
3. The Serial Number of this question booklet should be entered on the OMR answer sheet.
4. The Version Code of this question booklet should be entered on the OMR answer sheet and the respective circles should also be shaded completely.
5. Compulsorily sign at the bottom portion of the OMR answer sheet in the space provided.

DON'TS :

1. **THE TIMING AND MARKS PRINTED ON THE OMR ANSWER SHEET SHOULD NOT BE DAMAGED / MUTILATED / SPOILED.**
2. The **3rd Bell rings at 2.40 p.m., till then;**
   - Do not remove the paper seal present on the right hand side of this question booklet.
   - Do not look inside this question booklet.
   - Do not start answering on the OMR answer sheet.

IMPORTANT INSTRUCTIONS TO CANDIDATES

1. This question booklet contains 60 questions and each question will have one statement and four distracters. (Four different options / choices.)
2. After the **3rd Bell is rung at 2.40 p.m.,** remove the paper seal on the right hand side of this question booklet and check that this booklet does not have any unprinted or torn or missing pages or items etc., if so, get it replaced by a complete test booklet. Read each item and start answering on the OMR answer sheet.
3. During the subsequent 70 minutes:
   - Read each question carefully.
   - Choose the correct answer from out of the four available distracters (options / choices) given under each question / statement.
   - **Completely darken / shade the relevant circle with a BLUE OR BLACK INK BALL POINT PEN against the question number on the OMR answer sheet.**

Correct Method of shading the circle on the OMR answer sheet is as shown below :

4. Please note that even a minute unintended ink dot on the OMR answer sheet will also be recognised and recorded by the scanner. Therefore, avoid multiple markings of any kind on the OMR answer sheet.
5. Use the space provided on each page of the question booklet for Rough Work. Do not use the OMR answer sheet for the same.
6. After the **last bell is rung at 3.50 p.m.,** stop writing on the OMR answer sheet and affix your LEFT HAND THUMB IMPRESSION on the OMR answer sheet as per the instructions.
7. Hand over the **OMR ANSWER SHEET** to the room invigilator as it is.
8. After separating the top sheet (Our Copy), the invigilator will return the bottom sheet replica (Candidate's copy) to you to carry home for self-evaluation.
9. Preserve the replica of the OMR answer sheet for a minimum period of ONE year.

1. The process of zone refining is used in the purification of

(1) Al (2) Ge

(3) Cu (4) Ag

2. The number of water molecules present in a drop of water weighing 0.018 gm is

(1) 6.022×10^{26} (2) 6.022×10^{23}

(3) 6.022×10^{19} (4) 6.022×10^{20}

3. Empirical formula of a compound is CH_2O and its molecular mass is 90, the molecular formula of the compound is

(1) $C_3H_6O_3$ (2) $C_2H_4O_2$

(3) $C_6H_{12}O_6$ (4) CH_2O

4. Hybridised states of carbon in Graphite and Diamond are respectively

(1) sp^3, sp^3 (2) sp^3, sp^2

(3) sp^2, sp^2 (4) sp^2, sp^3

5. The mass of 112 cm^3 of NH_3 gas at STP is

(1) 0.085 g (2) 0.850 g

(3) 8.500 g (4) 80.500 g

Space For Rough Work

6. IUPAC name of $CH_3 - \underset{\underset{OH}{|}}{CH} - CH_2 - \underset{\underset{COOH}{|}}{CH} - CH_3$ is

(1) 4-hydroxy 1 methyl pentanoic acid

(2) 4-hydroxy 2 methyl pentanoic acid

(3) 2-hydroxy 4 methyl pentanoic acid

(4) 2-hydroxy 2 methyl pentanoic acid

7. Alkali metals have negative reduction potential and hence they behave as

(1) Oxidising agents (2) Lewis bases

(3) Reducing agents (4) Electrolytes

8. Which of the following gases has the highest value of RMS-velocity at 298 K ?

(1) CH_4 (2) CO

(3) Cl_2 (4) CO_2

9. Cycloalkane formed when 1, 4-dibromopentane is heated with Sodium is

(1) Methyl cyclobutane (2) Cyclopentane

(3) Cyclobutane (4) Methyl cyclopentane

Space For Rough Work

10. In the reaction, $2FeSO_4 + H_2SO_4 + H_2O_2 \rightarrow Fe_2(SO_4)_3 + 2H_2O$, the oxidizing agent is

(1) $FeSO_4$ (2) H_2SO_4

(3) H_2O_2 (4) Both H_2SO_4 and H_2O_2

11. Given Thermochemical equation, $2H_{2(g)} + O_{2(g)} \rightarrow 2H_2O_{(l)}$; $\Delta H = -571.6$ kJ. Heat of decomposition of water is

(1) – 571.6 kJ (2) + 571.6 kJ

(3) – 1143.2 kJ (4) + 285.8 kJ

12. In Buna-S, the symbol 'Bu' stands for

(1) 1-Butene (2) n-Butene

(3) 2-Butene (4) Butadiene

13. The electronic configuration of Cu^{2+} ion is

(1) [Ar] $3d^8\ 4s^1$ (2) [Ar] $3d^9\ 4s^0$

(3) [Ar] $3d^7\ 4s^2$ (4) [Ar] $3d^8\ 4s^0$

Space For Rough Work

14. The yield of the products in the reaction, $A_{2(g)} + 2B_{(g)} \rightleftharpoons C_{(g)} + Q.$ kJ would be higher at

(1) High temperature and high pressure

(2) High temperature and low pressure

(3) Low temperature and high pressure

(4) Low temperature and low pressure

15. Mesomeric effect involves

(1) delocalisation of π -electrons

(2) delocalisation of σ-electrons

(3) partial displacement of electrons

(4) delocalisation of π and σ electrons

16. Which one of the following sets of ions represents the collection of isoelectronic species ?

(1) $K^+, Cl^-, Mg^{2+}, Sc^{3+}$

(2) $Na^+, Ca^{2+}, Sc^{3+}, F^-$

(3) $K^+, Ca^{2+}, Sc^{3+}, Cl^-$

(4) $Na^+, Mg^{2+}, Al^{3+}, Cl^-$

17. Adsorption theory is applicable for

(1) Homogeneous catalysis

(2) Heterogeneous catalysis

(3) Autocatalysis

(4) Induced catalysis

Space For Rough Work

18. Methane can be converted into Ethane by the reactions

(1) Chlorination followed by the reaction with alcoholic KOH.

(2) Chlorination followed by the reaction with aqueous KOH.

(3) Chlorination followed by Wurtz reaction.

(4) Chlorination followed by decarboxylation.

19. Intramolecular Hydrogen bonding is formed in

(1) H_2O (2) Salicylaldehyde

(3) NH_3 (4) Benzophenone

20. If 50% of the reactant is converted into a product in a first order reaction in 25 minutes, how much of it would react in 100 minutes ?

(1) 93.75% (2) 87.5%

(3) 75% (4) 100%

21. The number of optical isomers of the compound $CH_3 - CHBr - CHBr - COOH$ is

(1) 0 (2) 1

(3) 3 (4) 4

Space For Rough Work

22. When limestone is heated, CO_2 is given off. The metallurgical operation is

(1) Smelting (2) Reduction

(3) Calcination (4) Roasting

23. The rate of reaction increases with rise in temperature because of

(1) increase in number of activated molecules.

(2) increase in energy of activation.

(3) decrease in energy of activation.

(4) increase in the number of effective collisions.

24. Meso compounds do not show optical activity because

(1) they do not contain chiral carbon atoms.

(2) they have non-super imposable mirror images.

(3) they contain plane of symmetry.

(4) they do not contain plane of symmetry.

25. When formic acid is heated with concentrated H_2SO_4, the gas evolved is

(1) only CO_2 (2) only 'CO'

(3) a mixture of 'CO' and 'CO_2' (4) a mixture of 'SO_2' and 'CO_2'

Space For Rough Work

26. Temperature coefficient of a reaction is '2'. When temperature is increased from 30 °C to 90 °C, the rate of reaction is increased by

(1) 60 times (2) 64 times

(3) 150 times (4) 400 times

27. Conversion of benzene to acetophenone can be brought by

(1) Wurtz reaction (2) Wurtz-Fittig's reaction

(3) Friedel Crafts alkylation (4) Friedel Crafts acylation

28. Excess of PCl_5 reacts with concentrated H_2SO_4 giving

(1) Chlorosulphuric acid (2) Sulphurous acid

(3) Sulphuryl chloride (4) Thionyl chloride

29. An example for a neutral buffer is

(1) Ammonium hydroxide and Ammonium chloride

(2) Acetic acid and Sodium acetate

(3) Acetic acid and Ammonium hydroxide

(4) Citric acid and Sodium citrate

Space For Rough Work

30. Least energetic conformation of cyclohexane is

(1) Chain conformation (2) Boat conformation

(3) Cis conformation (4) E-z form

31. Which of the following is employed in flash tubes in photography ?

(1) Ar (2) Ne

(3) Kr (4) Xe

32. Conjugate base of $H_2PO_4^-$ is

(1) HPO_4^- (2) HPO_4^{2-}

(3) H_3PO_4 (4) PO_4^{3-}

33. An alkyl bromide (X) reacts with Sodium in ether to form 4, 5-diethyl octane, the compound 'X' is

(1) $CH_3(CH_2)_3Br$ (2) $CH_3(CH_2)_5Br$

(3) $CH_3(CH_2)_3CH(Br)CH_3$ (4) $CH_3–(CH_2)_2 – CH(Br) – CH_2 – CH_3$

34. Which one of the following shows highest magnetic moment ?

(1) Fe^{2+} (2) CO^{2+}

(3) Cr^{3+} (4) Ni^{2+}

Space For Rough Work

35. The emf of a galvanic cell constituted with the electrodes Zn^{2+} | Zn (– 0.76 V) and Fe^{2+}| Fe(–0.41 V) is

(1) – 0.35 V (2) + 1.17 V

(3) + 0.35 V (4) – 1.17 V

36. Which of the following pairs are correctly matched ?

	Reactants	**Products**
I.	$RX + AgOH_{(aq)}$	RH
II.	$RX + AgCN_{(alco)}$	RNC
III.	$RX + KCN_{(alco)}$	RNC
IV.	$RX + Na_{(ether)}$	R–R

(1) I alone (2) I and II

(3) II and III (4) II and IV

37. In a transition series, with the increase in atomic-number, the paramagnetism

(1) increases gradually

(2) decreases gradually

(3) first increases to a maximum and then decreases

(4) first decreases to a minimum and then increases

Space For Rough Work

38. Identify a species which is 'NOT' a Bronsted acid but a Lewis acid.

(1) BF_3 (2) H_3^+O

(3) NH_3 (4) HCl

39. The compound formed when calcium acetate and calcium formate is dry distilled.

(1) Acetone (2) Acetaldehyde

(3) Benzaldehyde (4) Acetophenone

40. d^2sp^3 hybridisation of the atomic orbitals gives

(1) Square planar structure (2) Triangular structure

(3) Tetrahedral structure (4) Octahedral structure

41. The pH of 10^{-8}M HCl solution is

(1) 8 (2) 6.9586

(3) More than 8 (4) Slightly more than 7

Space For Rough Work

42. Which of the following is strongly acidic ?

(1) Phenol (2) o-cresol

(3) p-nitrophenol (4) p-cresol

43. A group of atoms can function as a ligand only when

(1) it is a small molecule. (2) it has an unshared electron pair.

(3) it is a negatively charged ion. (4) it is a positively charged ion.

44. Which of the following is 'NOT' a colligative property ?

(1) Elevation in boiling point (2) Depression in freezing point

(3) Osmotic pressure (4) Lowering of vapour pressure

45. Acetone and Propanal are

(1) Functional isomers (2) Position isomers

(3) Geometrical isomers (4) Optical isomers

46. Which of the following is diamagnetic ?

(1) H_2^+ (2) He_2^+

(3) O_2 (4) N_2

Space For Rough Work

47. 3 gms of urea is dissolved in 45 gms of H_2O. The relative lowering in vapour pressure is

(1) 0.05 (2) 0.04

(3) 0.02 (4) 0.01

48. The reagent used to distinguish between acetaldehyde and benzaldehyde is

(1) Tollen's reagent (2) Fehling's solution

(3) 2-4-dinitrophenyl hydrazine (4) Semicarbazide

49. Metallic lustre is due to

(1) high density of metals

(2) high polish on the surface of metals

(3) reflection of light by mobile electrons

(4) chemical inertness of metals

50. Which of the following aqueous solutions will exhibit highest boiling point ?

(1) 0.01 M urea (2) 0.01 M KNO_3

(3) 0.01 M Na_2SO_4 (4) 0.015 M $C_6H_{12}O_6$

Space For Rough Work

51. Which one of the following gives amine on heating with amide ?

(1) Br_2 in aqueous KOH

(2) Br_2 in alcoholic KOH

(3) Cl_2 in Sodium

(4) Sodium in Ether

52. The number of antibonding electrons present in O_2^- molecular ion is

(1) 8

(2) 6

(3) 5

(4) 4

53. The process is spontaneous at the given temperature, if

(1) ΔH is +ve and ΔS is –ve

(2) ΔH is –ve and ΔS is +ve

(3) ΔH is +ve and ΔS is +ve

(4) ΔH is +ve and ΔS is equal to zero

54. Glucose when reduced with HI and Red Phosphorus gives

(1) n-hexane

(2) n-heptane

(3) n-pentane

(4) n-octane

55. The stability of a Lyophobic colloid is due to

(1) Adsorption of covalent molecules on the colloid

(2) The size of the particles

(3) The charge on the particles

(4) Tyndall effect

Space For Rough Work

56. Oils are liquids at room temperature since they contain higher percentage of

(1) Oleates
(2) Palmitates
(3) Stearates
(4) Myristates

57. Which of the following cations will have minimum flocculation value for arsenic sulphide sol ?

(1) Na^+
(2) Mg^{2+}
(3) Ca^{2+}
(4) Al^{3+}

58. The value of entropy of solar system is

(1) increasing
(2) decreasing
(3) constant
(4) zero

59. In face centred cubic lattice, a unit cell is shared equally by how many unit cells ?

(1) 6
(2) 4
(3) 2
(4) 8

60. The number of disulphide linkages present in Insulin are

(1) 4
(2) 3
(3) 2
(4) 1

Space For Rough Work

A-1