Question Booklet Series: **A** *Question Booklet Serial No.:* **211359**

CET (UG) – 2023

Important: *Please consult your Admit Card/Roll No. slip before filling your Roll Number on the Test Booklet and Answer Sheet.*

Roll No. ***(In Figure)*** ***(In Words)***

O.M.R. Answer Sheet Serial No.

Signature of Candidate: _____ *Signature of Invigilator:* _____

SUBJECT: CHEMISTRY

Time: 70 Minutes **Number of Questions: 60** **Total Marks: 120**

DO NOT OPEN THE SEAL ON THE BOOKLET UNTIL ASKED TO DO SO.

INSTRUCTIONS:

1. Write your Roll No. on the Questions Booklet and also on the OMR Answer Sheet in the space provided and nowhere else.
2. Enter the Question Booklet Serial No. on the OMR Answer Sheet. Darken the corresponding bubbles with **Black Ball /Black Gel Pen**.
3. Do not make any identification mark on the Answer Sheet or Question Booklet.
4. The medium of examination shall be **English** only.
5. Please check that this Question Booklet contains **60** Questions. In case of any discrepancy, inform the Assistant Superintendent within 10 minutes of the start of Test.
6. Each question has four alternative answer (A,B,C,D) of which only one is correct. For each question, darken only one bubble (A or B or C or D), whichever you think is the correct answer, on the Answer Sheet with **Black Ball /Black Gel Pen.**
7. If you do not want to answer a question, leave all the bubbles corresponding to that question blank in the Answer Booklet. No marks will be deducted in such cases.
8. Darken the bubbles in the OMR Answer Sheet according to the Serial No. of the question given in the Question Booklet.
9. **Negative marking will be adopted for evaluation i.e. 25% of the marks of the question will be deducted for each wrong answer. A wrong answer means incorrect answer or wrong filling of bubble.**
10. The University will provide logarithmic table. Borrowing of log tables and any other material is not allowed.
11. For rough work only the blank sheet at the end of the Question Booklet be used.
12. The Answer Sheet is designed for computer evaluation. Therefore, if you do not follow the instructions given on the Answer Sheet, it may make evaluation by the computer difficult. **Any resultant loss to the candidate on the above account, i.e. not following the instructions completely.**
13. After the test, hand over the Question Booklet and the Answer Sheet to the Assistant Superintendent on duty.
14. In no case the Answer Sheet, the Question Booklet, or its part or any material copied/noted from this Booklet is to be taken out of the examination hall. Any candidate found doing so would be expelled from the examination.
15. **20 minutes** extra will be given to the visually handicapped/Person with Disability (PwD) for each paper.
16. A candidate who creates disturbance of any kind or changes his/her seat or is found in possession of any paper possibly of any assistant or found giving or receiving assistant or found using any other unfair means during the examination will be expelled from the examination by the Centre Superintendent/Observer whose decision shall be final.
17. Tele-communication equipment such as Cellular/cordless phones, pager, wireless, scanner, camera or any electronic/digital gadget etc., is not permitted inside the examination hall. **Use of calculator is not allowed**.
18. The candidates will not be allowed to leave the Examination Hall/Room before the expiry of the allotted time.

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(CHEM-A)

1. How many moles of KI are required to produce 0.4 moles of K_2HgI_4?
   (A) 0.4 (B) 0.8 (C) 3.2 (D) 1.6

2. Bakelite is a product of the reaction between
   (A) Formaldehyde and NaOH (B) Aniline and urea
   (C) Phenol and methanol (D) Phenol and chloroform

3. On heating glucose with Fehling's solution we get a precipitate whose colour is
   (A) Yellow (B) Red (C) Green (D) White

4. Activated charcoal is employed to remove colouring matter from substances, it works by
   (A) Bleaching (B) Oxidation (C) Reduction (D) Adsorption

5. Which of the following cannot be used for purification of liquids?
   (A) Chromatography (B) Fractional distillation
   (C) Steam distillation (D) Sublimation

6. In Kjeldhal's method, nitrogen present is estimated as
   (A) N_2 (B) NH_3 (C) NO_2 (D) NO_3^-

7. The correct ground state electronic configuration of chromium atom (At. No. = 24) is
   (A) $[Ar]3d^5 4s^1$ (B) $[Ar]3d^4 4s^2$ (C) $[Ar]3d^6 4s^0$ (D) $[Ar]4d^5 4s^1$

8. Maximum number of electrons present in 'N' shell is
   (A) 18 (B) 32 (C) 2 (D) 8

9. The half-life period of a radioactive element is 140 days. After 560 days, one gram of the element will reduce to
   (A) $\frac{1}{2}g$ (B) $\frac{1}{4}g$ (C) $\frac{1}{8}g$ (D) $\frac{1}{16}g$

10. Which one has a pyramidal structure?
    (A) CH_4 (B) NH_3 (C) H_2O (D) CO_2

11. Which one has a minimum dipole moment?
    (A) But-1-ene (B) *cis*-But-2-ene
    (C) *trans*-But-2-ene (D) 2-Methyl propene

12. The one that is not a Lewis acid among the following is
    (A) $AlCl_3$ (B) BF_3 (C) NH_3 (D) $FeCl_3$

13. Oxidation number of iron in $K_4[Fe(CN)_6]$ is
    (A) +2 (B) +3 (C) +4 (D) +1

14. The effect of a catalyst in a chemical reaction is to change the
    (A) Activation energy (B) Equilibrium concentration
    (C) Heat of reaction (D) Final products

15. Which one of the following is not represented by sols?
    (A) Adsorption (B) Tyndall effect (C) Flocculation (D) Paramagnetism

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16. Which one is the correct order of the size?
(A) $I > I^+ > I^-$ (B) $I > I^- > I^+$ (C) $I^+ > I^- > I$ (D) $I^- > I > I^+$

17. The maximum density of water is reached at a temperature
(A) 273K (B) 277K (C) 373K (D) 298K

18. Froth floatation process may be used to increase the concentration of the mineral in
(A) Chalcopyrites (B) Bauxite (C) Haematite (D) Calamine

19. Out of following; which is manufactured by the electrolysis of fused sodium chloride?
(A) Sodium Hydroxide (B) NaClO
(C) $NaClO_3$ (D) Sodium

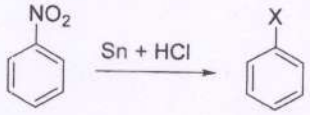
20. A solution of sodium metal in liquid ammonia is strongly reducing due to the presence of
(A) Sodium atoms (B) Sodium hydride
(C) Sodium amide (D) Solvated electron

21. Picric acid is
(A) 2,4,6-Trinitroaniline (B) 2,4,6-Trinitrotoluene
(C) Trinitrobenzene (D) 2,4,6-Trinitrophenol

22. In Stephen reduction, the reducing agent is
(A) Mn/HCl (B) Zn/HCl
(C) $SnCl_2$/HCl (D) $ZnCl_2$/HCl

23. Aromatic aldehydes react with primary amine to give
(A) Amides (B) Schiff's bases
(C) Oximes (D) Ureas

24. In the reaction given below, 'X' stands for



(A) NH_2 (B) $SnCl_2$ (C) Cl (D) $NH_4^+Cl^-$

25. $Na_2CO_3.10H_2O$ is prepared by
(A) Castner process (B) Solvay process
(C) Ostwald's process (D) Haber's process

26. Magnesium is present in
(A) Ascorbic acid (vitamin C) (B) Haemoglobin
(C) Chlorophyll (D) Vitamin B_{12}

27. In the electrolysis of alumina, cryolite is added to
(A) Increase the melting point of alumina (B) Increase the electrical conductivity
(C) Minimise the anodic effect (D) Remove impurities from alumina

28. Which of the following is a conductor of electricity?
(A) Graphite (B) Diamond (C) CO_2 (D) SiO_2

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29. Which is not hydrolysed?
(A) VCl_4 (B) $SiCl_4$ (C) $SnCl_4$ (D) CCl_4

30. The bond angle H-N-H in ammonia molecule is near to
(A) 109^o (B) 90^o (C) 120^o (D) 106^o

31. There is no S-S bond in
(A) $S_2O_4^{2-}$ (B) $S_2O_5^{2-}$ (C) $S_2O_3^{2-}$ (D) $S_2O_7^{2-}$

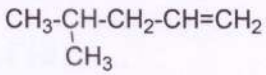
32. Iodine readily dissolves in potassium iodide solution giving
(A) I^- (B) KI_2 (C) KI_2^- (D) KI_3

33. Among the following ions which one has the highest paramagnetism?
(A) $[Cr(H_2O)_6]^{3+}$ (B) $[Fe(H_2O)_6]^{2+}$ (C) $[Cu(H_2O)_6]^{2+}$ (D) $[Zn(H_2O)_6]^{2+}$

34. AgCl dissolves in NH_4OH due to the formation of
(A) $[Ag(NH_4)_2]Cl$ (B) $[Ag(NH_4)_3]Cl$ (C) $[Ag(NH_3)_2]Cl$ (D) $[Ag(NH_3)_2OH]$

35. Shape of XeF_4 molecule is
(A) Linear (B) Trigonal planar (C) Pyramidal (D) Square planar

36. The IUPAC name of the following compound is



(A) 2-Methyl-4-pentene (B) 4-Methyl-1-pentene
(C) 1-Hexene (D) 3-Methyl pentene

37. The number of π electrons in cyclobutadienyl anion $(C_4H_4)^{2-}$ is
(A) 2 (B) 4 (C) 6 (D) 8

38. Which of the following species is paramagnetic in nature?
(A) Free radical (B) Carbonium ion (C) Carbanion (D) Singlet carbene

39. At higher altitude the boiling point of water lowers because
(A) atmospheric pressure is low (B) temperature is low
(C) atmospheric pressure is high (D) oxygen level is low

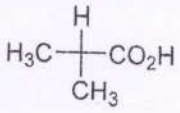
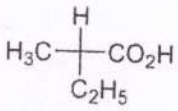
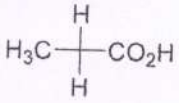
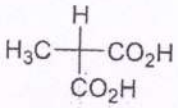
40. Which of the following solutions will have highest boiling point?
(A) 1% glucose (B) 1% sucrose (C) 1% NaCl (D) 1% $CaCl_2$

41. Which of the following factors will favour the reverse reaction in a chemical equilibrium?
(A) Increase in concentration of one of the reactants
(B) Increase in concentration of one of the products
(C) Removal of one of the products regularly
(D) Increase in reaction temperature

42. The *p*H of a 10^{-8} molar solution of HCl in water is
(A) 8 (B) Above 8 (C) Between 7 and 8 (D) Between 6 and 7

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43. Which is a buffer solution?
(A) $CH_3COOH + CH_3COONa$
(B) $CH_3COOH + HCl$
(C) $NaOH + HCl$
(D) $NaOH + NaCl$

44. Which of the following compounds can occur in enantiomeric form?
(A) 
(B) 
(C) 
(D) 

45. Conjugated double bonds are present in
(A) Propylene (B) Isobutylene (C) Butylene (D) Butadiene

46. Toluene reacts with Cl_2 in the presence of light to give
(A) Benzyl chloride (B) Benzoyl chloride (C) *p*-chlorotoluene (D) *o*-chlorotoluene

47. In the presence of $AlCl_3$, benzene and *n*-propyl bromide react in Friedel-Craft's reaction to form
(A) *n*-propyl benzene
(B) 1,2-dipropyl benzene
(C) 1,4-dipropyl benzene
(D) isopropyl benzene

48. Iodoform cannot be prepared from
(A) CH_3OH (B) CH_3CHO (C) $(CH_3)_2CO$ (D) C_2H_5OH

49. Ethanol is converted into ethyl chloride by reacting with
(A) Cl_2 (B) $SOCl_2$ (C) HCl (D) NaCl

50. Isocyanide test is used for the detection of
(A) Primary amines
(B) Primary alcohols
(C) Secondary amines
(D) Secondary alcohols

51. Which of the following enzymes hydrolyses triglycerides to fatty acids and glycerol?
(A) Amylase (B) Maltase (C) Lipase (D) Pepsin

52. The catalyst usually used in the hydrogenation of oils and fats is
(A) V_2O_5 (B) Fe (C) Ni (D) Pt

53. Proteins fulfil several functions in living systems. An example of a protein which acts as a hormone is
(A) Casein (B) Oxytocin (C) Trypsin (D) Keratin

54. Orlon is a polymer of
(A) Styrene
(B) Tetrafluoroethylene
(C) Vinyl chloride
(D) Acrylonitrile

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55. An endothermic reaction is the one in which

(A) Heat is converted into electricity
(B) Heat is absorbed
(C) Heat is evolved
(D) Heat is converted into mechanical energy

56. A solution of sodium sulphate in water is electrolysed using inert electrodes. The products at the cathode and anode are respectively

(A) H_2, O_2 (B) O_2, H_2 (C) O_2, Na (D) O_2, SO_2

57. Faraday's laws of electrolysis are related to the

(A) Atomic number of the cation
(B) Atomic number of the anion
(C) Equivalent weight of the electrolyte
(D) Speed of the cation

58. How many Cl^- ions are there around Na^+ ion in NaCl crystal?

(A) 3 (B) 4 (C) 6 (D) 8

59. The amount of heat measured for a reaction in a bomb calorimeter is

(A) ΔG (B) ΔH (C) ΔE (D) $P\Delta V$

60. An atom with atomic number 21 belongs to

(A) *s*-block elements
(B) *p*-block elements
(C) *d*-block elements
(D) *f*-block elements

x-x-x

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