



MOCK CET - 2015

DATE	SUBJECT	TIME
16.04.2015	CHEMISTRY	3.50 PM TO 5.00 PM
MAXIMUM MARKS	TOTAL DURATION	MAXIMUM TIME FOR ANSWERING
60	80 MINUTES	70 MINUTES
MENTION YOUR CET NUMBER	QUESTION BOOKLET DETAILS	
	VERSION CODE	SERIAL NUMBER
	D-1	

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 **1st Bell** i.e, after **3.45 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 be shaded completely.
5. Compulsory sign at the bottom portion of the OMR answer sheet in the space provided.

DONTS:

1. **The timing and marks printed on the OMR answer sheet should not be damaged/mutilated/ spoiled.**
2. The **2nd Bell** rings at **3.50 p.m.** till then,
 - Do not remove the seal/staple 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 distraction (four different options / choices).
2. After the **2nd Bell** is rung at **3.50 p.m.** Remove the seal/staple present on the right hand side of this question booklet 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 BALLPOINT PEN** against the **question number on the answer sheet.**

CORRECT METHOD OF SHADING THE CIRCLE ON THE ANSWER SHEET IS AS SHOWN BELOW:



4. Please note that even a minute unintended ink dot on the answer sheet will also be recognized and recorded by the scanner. Therefore, avoid multiple markings of any kind on the OMR 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 **5.00 pm** 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 and retaining the top sheet, (UA 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 week**. For results, log on to the website www.uaes.in 5 days after the examination.

CHEMISTRY CET - 1

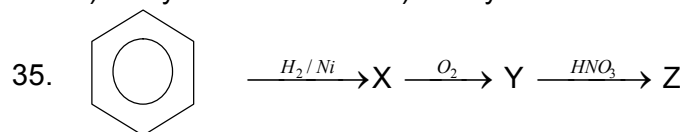
1. Schottky defect in crystals is observed when
 - a) Unequal number of cations and anions are missing from the lattice
 - b) Equal number of cations and anions are missing from the lattice
 - c) An ion leaves its normal site and occupies an interstitial site
 - d) Density of the crystal is increased
2. Total volume of atoms present in face centred cubic unit cell of metal is (r is atomic radius)
 - a) $\frac{24}{3}\pi r^3$
 - b) $\frac{12}{3}\pi r^3$
 - c) $\frac{16}{3}\pi r^3$
 - d) $\frac{20}{3}\pi r^3$
3. Which of the following liquid pairs shows a positive deviation from Raoult's law?
 - a) Water-nitric acid
 - b) Benzene-methanol
 - c) Water-hydrochloric acid
 - d) Acetone-chloroform
4. 18g of glucose ($C_6H_{12}O_6$) is added to 178.2g of water. The vapour pressure of water for this aqueous solution at $100^\circ C$ is
 - a) 7.60 torr
 - b) 76.00 torr
 - c) 752.40 torr
 - d) 759.00 torr
5. In a first order reaction, the concentration of the reactant decreases from 0.8 to 0.4 M in 15 minutes. The time taken for the concentration to change from 0.1M to 0.025M is:
 - a) 7.5min
 - b) 15min
 - c) 30min
 - d) 60min
6. A reaction was found to be second order with respect to the concentration of carbon monoxide. If the concentration of carbon monoxide is doubled, with everything else kept the same, the rate of reaction will:
 - a) triple
 - b) increase by a factor of 4
 - c) double
 - d) remain unchanged
7. Lyophilic sols are:
 - a) Irreversible sols
 - b) They are prepared from inorganic compound
 - c) Coagulated by adding electrolytes
 - d) Self stabilizing
8. The movement of colloidal particles under the influence of an applied electric field is called
 - a) Brownian movement
 - b) Electrophoresis
 - c) Dialysis
 - d) Ultra-centrifugation
9. The chemical composition of slag formed during the smelting process in the extraction of copper is:
 - a) $Cu_2O + FeS$
 - b) $FeSiO_3$
 - c) $CuFeS_2$
 - d) $Cu_2S + FeO$
10. Which of the following statements, about the advantage of roasting of sulphide ore before reduction is not true?
 - a) The $\Delta_f G^\theta$ of the sulphide is greater than those for CS_2 and H_2S
 - b) The $\Delta_f G^\theta$ is negative for roasting of sulphide ore to oxide
 - c) Roasting of the sulphide to the oxide is thermodynamically feasible
 - d) Carbon and hydrogen are suitable reducing agents for metal sulphides
11. Amongst H_2O , H_2S , H_2Se and H_2Te . The one with the highest boiling point is:
 - a) H_2O because of hydrogen bonding
 - b) H_2Te because of higher molecular weight
 - c) H_2S because of hydrogen bonding
 - d) H_2Se because of lower molecular weight
12. KO_2 (potassium superoxide) is used in oxygen cylinders in space and submarines because it:
 - a) Absorbs CO_2 and increases O_2 content
 - b) Eliminates moisture
 - c) Absorbs CO_2
 - d) Produces ozone
13. Most of the compounds formed by noble gases are with:
 - a) Fluorine
 - b) Oxygen
 - c) Fluorine and oxygen
 - d) Fluorine and chlorine
14. The number of hydrogen atoms attached to phosphorus atom in hypophosphorus acid is:
 - a) Zero
 - b) Two
 - c) One
 - d) Three
15. The structure of diborane (B_2H_6) contains:
 - a) Four 2c-2e bonds and two 3c-2e bonds
 - b) Two 2c-2e bonds and four 3c-2e bonds
 - c) Two 2c-2e bonds and two 3c-2e bonds
 - d) Four 2c-2e bonds and four 3c-2e bonds
16. Regular use of which of the following fertilizers increases the acidity of soil?
 - a) Urea
 - b) Superphosphate of lime

- c) Ammonium sulphate d) Potassium nitrate
17. Lanthanoid contraction is caused due to
- The appreciable shielding on outer electrons by 5d electrons from the nuclear charge
 - The same effective nuclear charge from Ce to Lu
 - The imperfect shielding on outer electrons by 4f electrons from the nuclear charge
 - The appreciable shielding on outer electrons by 4f electrons from the nuclear charge
18. The colour of lanthanides and actinides is due to:
- s – f transitions
 - p – f transitions
 - d – f transitions
 - f – f transitions
19. Which one of the following complexes is outer orbital complex?
- $[\text{Co}(\text{NH}_3)_6]^{3+}$
 - $[\text{Mn}(\text{CN})_6]^{4-}$
 - $[\text{Fe}(\text{CN})_6]^{4-}$
 - $[\text{Ni}(\text{NH}_3)_6]^{2+}$
20. A gas 'X' is passed through water to form a saturated solution. The aqueous solution on treatment with silver nitrate gives white ppt. The saturated aqueous solution also dissolves magnesium ribbon with evolution of a colourless gas 'Y'. Identify 'X' and 'Y'
- X = CO_2 , Y = Cl_2
 - X = Cl_2 , Y = CO_2
 - X = Cl_2 , Y = H_2
 - X = H_2 , Y = Cl_2
21. The enolic form of acetone contains:
- 9 σ bonds, 1 π bond and 2 lone pairs
 - 8 σ bonds, 2 π bonds and 2 lone pairs
 - 10 σ bonds, 1 π bond and 1 lone pair
 - None is correct
22. Which one of the following would be optically active?
- Succinic acid
 - Lactic acid
 - Meso tartaric acid
 - Chloroacetic acid
23. Aniline is purified by:
- Extraction with a solvent
 - Steam distillation
 - Vacuum distillation
 - Sublimation
24. Acid catalysed hydration of alkene except ethene leads to the formation of:
- Primary alcohol
 - Secondary or tertiary alcohol
 - Mixture of primary and secondary alcohols
 - Mixture of secondary and tertiary alcohols
25. When isopropyl iodide in ethereal solution is warmed with sodium, the product formed is:
- n-Hexane
 - neohexane
 - 2, 3-dimethylbutane
 - mixture of the above
26. Ethylene dibromide is heated with metallic zinc in the presence of alcohol. The gas so produced is allowed to react with hydrogen bromide. The product is:
- Ethylene dibromide
 - Ethyl bromide
 - Ethylene bromide
 - none of above
27. An organic compound 'X' on treatment with acidified $\text{K}_2\text{Cr}_2\text{O}_7$ gives a compound 'Y' which reacts with I_2 and sodium carbonate to form Triiodomethane. The compound 'X' is
- CH_3OH
 - CH_3CHO
 - $\text{CH}_3\text{CH}(\text{OH})\text{CH}_3$
 - CH_3COCH_3
28. In the reaction given below, X is neopentyl alcohol $\xrightarrow{\text{H}_2\text{SO}_4}$ X
- 2-methylpentane
 - 2-methylpent-2-ene
 - 2-methylbut-2-ene
 - neopentane
29. Phenol reacts with bromine in chloroform at low temperature to give
- m-bromophenol
 - a mixture of ortho and para phenol
 - p-bromophenol
 - 2, 4, 6-tribromophenol
30. Product C in the reaction, $\text{C}_2\text{H}_5\text{Br} \xrightarrow[\text{(aqueous)}]{\text{NaOH}} \text{A} \xrightarrow{\text{Na}} \text{B} \xrightarrow{\text{CH}_3\text{I}} \text{C}$ will be
- Propane
 - Ethyl iodide
 - Ethane
 - Ethyl methyl ether
31. In acidic medium KMnO_4 oxidizes oxalic acid to
- Oxalate
 - Carbon dioxide
 - Acetate
 - Acetic acid
32. 3-Hydroxybutanal is formed when (X) reacts with (Y) in dilute (Z) solution. What are X, Y and Z?
- CH_3CHO , $(\text{CH}_3)_2\text{CO}$, NaOH
 - CH_3CHO , CH_3CHO , NaCl
 - $(\text{CH}_3)_2\text{CO}$, $(\text{CH}_2)_2\text{CO}$, HCl
 - CH_3CHO , CH_3CHO , NaOH
33. Which of the following orders of relative strengths of acids is correct?
- $\text{FCH}_2\text{COOH} > \text{ClCH}_2\text{COOH} > \text{BrCH}_2\text{COOH}$
 - $\text{ClCH}_2\text{COOH} > \text{BrCH}_2\text{COOH} > \text{FCH}_2\text{COOH}$

- c) $\text{BrCH}_2\text{COOH} > \text{ClCH}_2\text{COOH} > \text{FCH}_2\text{COOH}$
 d) $\text{ClCH}_2\text{COOH} > \text{FCH}_2\text{COOH} > \text{BrCH}_2\text{COOH}$

34. Hydrolysis of an ester gives a carboxylic acid which on Kolbe's electrolysis yields ethane. The ester is

- a) ethyl methanoate b) methyl ethanoate c) propylamine d) ethylamine



X, Y, Z in the above reaction are

- a) Cyclohexane, Cyclohexanol, Cyclohexanoic acid
 b) Cyclohexane, Cyclohexanone, Adipic acid
 c) Cyclohexane, Cyclohexanal, Cyclohexanoic acid
 d) Cyclohexane, Cyclohexanone, Cyclohexanoic acid

36. Among dimethylamine (I), aniline (II) and methylaniline (III), the increasing order of basic strength is

- a) $\text{II} < \text{III} < \text{I}$ b) $\text{I} < \text{III} < \text{II}$ c) $\text{III} < \text{I} < \text{II}$ d) $\text{II} < \text{I} < \text{III}$

37. Which amino acid is achiral?

- a) Alanine b) Glycine c) Proline d) Histidine

38. Which is correct statement?

- a) Starch is a polymer of β -glucose
 b) Amylose is a component of cellulose
 c) Proteins are compounds of only one type of amino acid
 d) In cyclic structure of fructose, there are four carbons and one oxygen atom

39. Which of the following is not correct?

- a) Chlorophyll is responsible for the synthesis of carbohydrates in plants
 b) The compound formed in the addition of oxygen to haemoglobin is called oxyhaemoglobin
 c) Acetyl salicylic acid is known as aspirin
 d) The metal ion present in vitamin B₁₂ is Mg^{2+}

40. Which one of the following pairs is not correctly matched?

- a) Terylene-condensation polymer of terephthalic acid and ethylene glycol
 b) Teflon-thermally stable cross linked polymer of phenol and formaldehyde
 c) Perspex-A homopolymer of methyl methacrylate
 d) Synthetic rubber-A copolymer of butadiene and styrene

41. The catalyst used for the polymerization of olefins is

- a) Ziegler-Natta catalyst b) Wilkinson's catalyst
 c) Pd-catalyst d) Zeolite

42. Among the following sweeteners which one has the lowest sweetness value?

- a) alitame b) aspartame c) saccharin d) sucralose

43. Which of the following is used as a morning after pill?

- a) Norethindrone b) Ethynylestradiol c) Miflperitone d) Bithional

44. Which one of the following is an outer orbital complex and exhibits paramagnetic behaviour?

- a) $[\text{An}(\text{NH}_3)_6]^{2+}$ b) $[\text{Cr}(\text{NH}_3)_6]^{3+}$ c) $[\text{Co}(\text{NH}_3)_6]^{3+}$ d) $[\text{Ni}(\text{NH}_3)_6]^{2+}$

45. In a reaction, $\text{A} + \text{B} \rightarrow \text{Product}$, rate is doubled when the concentration of B is doubled, and rate increases by a factor of 8 when the concentrations of both the reactants (A and B) are doubled, rate law for the reaction can be written as:

- a) $\text{Rate} = k[\text{A}]^2[\text{B}]^2$ b) $\text{Rate} = k[\text{A}][\text{B}]$ c) $\text{Rate} = k[\text{A}]^2[\text{B}]$ d) $\text{Rate} = k[\text{A}][\text{B}]^2$

46. The ease of adsorption of the hydrated alkali metal ions on an ion-exchange resins follows the order:

- a) $\text{Rb}^+ < \text{K}^+ < \text{Na}^+ < \text{Li}^+$ b) $\text{K}^+ < \text{Na}^+ < \text{Rb}^+ < \text{Li}^+$
 c) $\text{Na}^+ < \text{Li}^+ < \text{K}^+ < \text{Rb}^+$ d) $\text{Li}^+ < \text{K}^+ < \text{Na}^+ < \text{Rb}^+$

47. Which one of the following statements regarding photochemical smog is not correct?

- a) Photochemical smog is an oxidising agent in character
 b) Photochemical smog is formed through photochemical reaction involving solar energy
 c) Photochemical smog does not cause irritation in eyes and throat
 d) Carbon monoxide does not play any role in photochemical smog formation
48. The orbital angular momentum of a p-electron is given as:
 a) $\frac{h}{\sqrt{2\pi}}$ b) $\sqrt{3} \frac{h}{2\pi}$ c) $\sqrt{\frac{3}{2}} \frac{h}{\pi}$ d) $\sqrt{6} \frac{h}{2\pi}$
49. Which one of the following sets forms the biodegradable polymer?
 a) $\text{CH}_2 = \text{CH} - \text{CN}$ and $\text{CH}_2 = \text{CH} - \text{CH} = \text{CH}_2$
 b) $\text{H}_2\text{N} - \text{CH}_2 - \text{COOH}$ and $\text{H}_2\text{N} - (\text{CH}_2)_5 - \text{COOH}$
 c) $\text{HO} - \text{CH}_2 - \text{CH}_2 - \text{OH}$ and $\text{HOOC} - \text{C}_6\text{H}_4 - \text{COOH}$
 d) $\text{C}_6\text{H}_5 - \text{CH} = \text{CH}_2$ and $\text{CH}_2 = \text{CH} - \text{CH} = \text{CH}_2$
50. Limiting molar conductivity of NH_4OH (i.e., $\overset{\circ}{\wedge}m(\text{NH}_4\text{OH})$) is equal to:
 a) $\overset{\circ}{\wedge}m(\text{NaOH}) + \overset{\circ}{\wedge}m(\text{NaCl}) - \overset{\circ}{\wedge}m(\text{NH}_4\text{Cl})$ b) $\overset{\circ}{\wedge}m(\text{NH}_4\text{OH}) + \overset{\circ}{\wedge}m(\text{NH}_4\text{Cl}) - \overset{\circ}{\wedge}m(\text{HCl})$
 c) $\overset{\circ}{\wedge}m(\text{NH}_4\text{Cl}) + \overset{\circ}{\wedge}m(\text{NaOH}) - \overset{\circ}{\wedge}m(\text{NaCl})$ d) $\overset{\circ}{\wedge}m(\text{NH}_4\text{Cl}) + \overset{\circ}{\wedge}m(\text{NaCl}) - \overset{\circ}{\wedge}m(\text{NaOH})$
51. The mass of 112cm^3 of NH_3 gas at STP is
 a) 0.085g b) 0.800g c) 8.50g d) 80.500g
52. The pH of 10^{-8} M HCl solution is
 a) 8 b) 6.9586 c) More than 8 d) Slightly more than 7
53. The emf of a galvanic cell constituted with the electrodes Zn^{2+}/Zn |(-0.76V) and Fe^{2+}/Fe (-0.41V) is
 a) -0.35V b) +1.17V c) +0.35V d) -1.17V
54. Which of the following is diamagnetic?
 a) H_2^+ b) He_2^+ c) O_2 d) N_2
55. Empirical formula of a compound is CH_2O and its molecular mass is 90, the molecular formula of the compound is
 a) $\text{C}_3\text{H}_6\text{O}_3$ b) $\text{C}_2\text{H}_4\text{O}_2$ c) $\text{C}_6\text{H}_{12}\text{O}_6$ d) CH_2O
56. Which of the following numbers does not have five significant figures?
 a) 20.762 b) 0.20700 c) 0.02076 d) 0.20760
57. Which of the following hydrogen bond is the strongest?
 a) $\text{F} - \text{H} \cdots \cdots \text{F}$ b) $\text{O} - \text{H} \cdots \cdots \text{O}$ c) $\text{O} - \text{H} \cdots \cdots \text{F}$ d) $\text{O} - \text{H} \cdots \cdots \text{N}$
58. Consider the reaction, $\text{N}_2 + 3\text{H}_2 \rightarrow 2\text{NH}_3$ carried out at a constant temperature and pressure. If ΔH and ΔU are the enthalpy and internal energy changes for the reaction, which of the following expression is true?
 a) $\Delta H = 0$ b) $\Delta H = \Delta U$ c) $\Delta H < \Delta U$ d) $\Delta H > \Delta U$
59. The conjugate base of H_2PO_4^- is
 a) H_3PO_4 b) P_2O_5 c) PO_4^{3-} d) HPO_4^{2-}
60. On treatment of propanone with dilute $\text{Ba}(\text{OH})_2$, the product formed is
 a) Aldol b) Phorone
 c) Propionaldehyde d) 4-Hydroxy-4-methyl-2-pentanone