UNIVERSAL ACADEMY

Icon of Success and Excellence

MOCK CET - 2015

DATE	SUBJECT	TIME
20.04.2015	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–2	

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 - 2

1. A compound consisting of monovalent ions, A^+, B^- crystallises in the body-centred cubic lattice. If one of A+ ions from the corner in replaced by a monovalent ion C+, the simplest formula of the resulting compound is
   a) A_8BC_7 b) A_7BC_8 c) A_3BC_4 d) A_6BC_5
2. Out of molarity (M), molality (m), formality (F) and mole fraction (x) those independent of temperature are
   a) M, m b) F, x c) m, x d) M, x
3. How long will it take for a current of 3 amperes to decompose 36g of water? (Eq. wt of hydrogen 1 & that of oxygen is 8)
   a) 36 hours b) 18 hours c) 9 hours d) 4.5 hours
4. A gas X at 1 atm is bubbled through a solution containing a mixture of 1M Y- and 1M Z- at 25^0C. If the reduction potential is Z > Y >X, then
   a) Y will oxidise X and not Z b) Y will oxidise Z and not X
   c) Y will oxidise both X & Z d) Y will reduce both X & Z
5. The rate law for a reaction between the substances A and B is given by rate = $K[A]^n [B]^n$.
   On doubling the concentration of A and having the concentration of B, the ratio of the new rate to the earlier rate of the reaction will be as
   a) $M + n$ b) $(n - m)$ c) $2^{(n-m)}$ d) $\frac{1}{2^{(n-m)}}$
6. The dispersed phase & dispersion medium in soap lather are respectively
   a) Gas & liquid b) Liquid & gas c) Solid & gas d) Solid & liquid
7. Heating mixture of Cu_2O and Cu_2S will give
   a) $Cu + SO_3$ b) $Cu + SO_2$ c) Cu_2SO_3 d) $Cu_2O + CuS$
8. The number of P-O-P bonds in cyclic metaphosphoric acid is
   a) 0 b) 2 c) 3 d) 4
9. Which has largest radius?
   a) CO^{3+} b) Mn^{3+} c) Fe^{3+} d) Cr^{3+}
10. Assign the hybridization, shape and magnetic moment of $K_2[Cu(CN)_4]$
    a) sp^3, tetrahedral, 1.73BM b) dsp^2, square planar, 1.73BM
    c) sp^3, tetrahedral, 2.44BM d) dsp^2, square planar, 2.44BM
11. The compound $C_7H_8 \xrightarrow{3Cl_2/\Delta} A \xrightarrow{Br_2/Fe} B \xrightarrow{Zn/Hcl} C$ the compound C is
    a) o-bromotoluene b) m-bromotoluene
    c) p-bromotoluene d) 3-bromo-2,4,6-trichlorotolnene
12. Consider the following set of reactions,
    Phenol $\xrightarrow[\Delta]{conc.H_2SO_4}$ A $\xrightarrow{Br_2}$ B
    a) 2,4-dibromophenol b) 2,4,6-tribromophenol
    c) 3-bromobenzenesulphonic acid d) 3,5-dibromophenol
13. The cross Aldol product formed when propanol acts as the electrophile and butanal as nucleophile is
    a) 3-hydroxy-2-methylphentanal b) 3-hydroxy-2-methylhexanal
    c) 2-ethyl-3-hydroxypentanal d) 2-ethyl-3-hydroxyhexanal
14. Increasing p^k values of O - , m - , p-toluidines is
    a) $p < m < o$ b) $o < m < p$ c) $p < o < m$ d) $m < o < p$
15. Find the isoelectric point of the given amino acid
    $CH - \underset{\underset{+NH_3}{|}}{CH} - COO-$; $P^{Ka} = 2.34$, $P^{Kb} = 4.32$
    a) 3.3 b) 6.66 c) 6.01 d) 3.67
16. The catalyst used for olefin polymerization is
    a) Ziegler-Natta catalyst b) Wilkinson catalyst
    c) Raney nickel catalyst d) Merrified resin

17. Zinc sulphate contains 22.65% of zinc and 43.9% of water of crystallization. If the law of constant proportions is true , then the weight of zinc required to produce 20g of the crystal will be
    a) 45.3g b) 4.53g c) 0.453g c) 453g
18. The relationship between the wavelength λ associated with a moving particle of mass 'm' and its kinetic energy E is
    a) $\lambda = \frac{2h}{\sqrt{mE}}$ b) $\lambda = \frac{1}{2}\frac{h}{\sqrt{mE}}$ c) $\lambda = \frac{h}{\sqrt{2mE}}$ d) $\lambda = \frac{\sqrt{2mE}}{h}$
19. One litre of a gas weights 2g at 300K and 1atm pressure. If the pressure is made 0.75atm, at which of the following temperatures will one litre of the same gas weigh one gram?
    a) 450K b) 600K c) 800K d) 900K
20. The latent heat of vapourization of a liquid at 500K and 1atm pressure is 10.0kcal/mol. What will be the change in internal energy of 3mol of the liquid at the same temperature & pressure?
    a) 27.0kcal b) 13.0kcal c) -27.0kcal d) -13.0kcal
21. For the following three reactions, equilibrium constants are given Which of the following three reactions is correct?
    a) $K_3 = K_1 + K_2$ b) $K_3K_2^2 = K_1^2$ c) $K_1\sqrt{K_2} = K_3$ d) $K_2K_2 = K_1$
22. The p^{Ka} of 0.1M acetic acid solution is 4.78. The p^H of the solution will be
    a) 1.89 b) 8.89 c) 4.89 d) 2.19
23. The hybrid state of S in SO_2 is similar to that of
    a) C inC_2H_4 b) C in C_2H_4 c) C in CH_4 d) C in CO_2
24. The pair of compounds having metals in their highest oxidation state is
    a) MnO_2, $FeCl_3$ b) MnO_4^-, CrO_2Cl_2 c) $[Fe(CN)_6]^{3-}$, $[Co(CN)_3]$ d) $[NiCl_4]^{2-}$, $[CoCl_4]$
25. Element with atomic number 56 belongs to which block?
    a) s b) p c) d d) f
26. One would expect proton to have a very large
    a) Charge b) Ionization enthalpy c) Hydration energy d) radius
27. For alkali metals, which of the following trends is incorrect?
    a) Hydration energy: $Li > Na > K > Rb$ b) Ionization enthalpy: $Li > Na > K > Rb$
    c) Density: $Li < Na < K < Rb$ d) Atomic size: $Li < Na < K < Rb$
28. The IUPAC name of  is
    a) Oxocyclohex-1-ene b) Oxocyclohex-2-ene c) Oxocyclohex-2-ene d) Oxocyclohex-1-ene
29. Which of the following compounds will answer Lassaigne's test for nitrogen?
    a) NH_2NH_2 b) NH_4Cl c) NaCN d) $NaNO_3$
30. What happens when Cl_2/H_2O (HOCl) adds to l-butyne?
    a) $CH_3CH_2COCHCl_2$ b) $CH_3CH_2COCH_2Cl$ c) $CH_3CH(Cl)$-CHO d) $CH_3CH(Cl)COCH_2Cl$
31. In a primitive cubic lattice, the percentage of void volume is
    a) 52.36% b) 25.95% c) 74.05% d) 47.64%
32. A compound formed by element A and B crystallises in the cubic structure where A atoms are at the corners of the cube and B atoms are at the face centres. The formula of the compound is
    a) AB_3 b) AB c) A_3B d) A_2B_2
33. 2N HCl will have the same molar concentration as
    a) 0.5N-H_2SO_4 b) 1.0M-H_2SO_4 c) 1N-H_2SO_4 d) 4N-H_2SO_4
34. The values of observed and normal molar masses of acetic acid are 118 and 60 respectively. The Van't Hoff factor is
    a) 1.97 b) 0.51 c) 0.9 d) 1.6
35. In an electrochemical cell, the half cell reaction and their oxidation potentials are:
    $Zs(s) \rightarrow Zn^{2+}(aq) + 2e^-$ (E^0 = +0.76V)
    $Ag(s) \rightarrow Ag^+(aq) + e^-$ (E^0 = -0.80V)
    Which of the following reactions actually occurs?
    a) $Zn^{2+}(aq) + 2Ag(s) \rightarrow Zn(s) + 2Ag^+(aq)$ b) $Zn(s) + 2Ag^+(aq) \rightarrow Zn^{2+}(aq) + 2Ag(s)$

c) $Zn(s) + Ag^+(aq) \rightarrow Zn^{2+}(aq) + Ag(s)$ d) $Zn^{2+} + Ag(s) \rightarrow Zn(s)\ Ag^+(aq)$

36. Which of the following relations is correct for Kohlrausch's law?

a) $\alpha = \frac{A}{A^0}$ b) $\lambda_+^0 \times \lambda_-^0 = A^0$ c) $\lambda_+^0 = A - \lambda_-^0$ d) $\frac{A^0}{\lambda_+^0} = \lambda_-^0$

37. Rate constant depends on

a) Temperature b) Time c) Initial conc. d) None of these

38. For reaction $N_2 + 3H_2 \rightarrow 2NH_3$ if $\xrightarrow{\Delta[NH_3]}{\Delta t}$ = 2 x 10^{-4} mol $L^{-1}s^{-1}$, the value of $-\xrightarrow{\Delta[H_2]}{\Delta t}$ would be

a) 1×10^{-4} mol $L^{-1}s^{-1}$ b) 3×10^{-4} mol $L^{-1}s^{-1}$

c) 4×10^{-4} mol $L^{-1}s^{-1}$ d) 6×10^{-4} mol $L^{-1}s^{-1}$

39. As_2S_3 is a:

a) Negative sol b) Positive sol

c) Neutral sol d) May be positive or negative sol

40. Physical adsorption is:

a) High specific b) Irreversible

c) Considerable at high temperature d) Not very specific

41. Autoreduction process is used for the extraction of:

a) Cu and Pb b) Zn and Hg c) Cu and Al d) Fe and Pb

42. Electrolytic reduction method is used in extraction of:

a) High electronegative elements b) Metalloids

c) Transition metals d) Highly electropositive elements

43. Which of the following hydrides of group 15 has maximum basic character?

a) NH_3 b) BiH_3 c) AsH_3 d) PH_3

44. What type of hybridization is involved in SF_6 molecule?

a) sp^3 b) sp^3d c) sp^3d^2 d) sp^3d^3

45. In case of actinides, the degree of complex formation decreases as:

a) $M^{4+} > M^{3+} > MO_2^{2+} > MO_2^+$ b) $M^{3+} > M^{4+} > MO_2^{2+} > MO_2^+$

c) $M^{4+} > MO_2^{2+} > M^{3+} > MO_2^+$ d) $MO_2^{2+} > M^{4+} > MO_2^+ > M^{3+}$

46. Lead acetate paper turns black on exposure to:

a) CO_2 b) H_2S c) SO_2 d) NO_2

47. Amongst $Ni(CO)_4$, $[Ni(CN_4)]^{2-}$ and $[NiCl_4]^{2-}$:

a) $Ni(CO)_4$ and $NiCl_4^{2-}$ are diamagnetic and $[Ni(CN)_4]^{2-}$ is paramagnetic

b) $NiCl_4^{2-}$ and $[Ni(CN)_4]^{2-}$ are diamagnetic and $Ni(CO)_4$ is paramagnetic

c) $Ni(CO)_4$ and $[Ni(CN)_4]^{2-}$ are diamagnetic and $NiCl_4^{2-}$ is paramagnetic

d) $Ni(CO)_4$ is diamagnetic and $NiCl_4^{2-}$ and $[Ni(CN)_4]^{2-}$ are diamagnetic

48. The EAN of copper in $[Cu(NH_3)_4]^{2+}$ is (atomic number of Cu = 29) :

a) 35 b) 36 c) 34 d) 37

49. Identify Z in the reaction

$C_2H_5I \xrightarrow{alc.\ KOH} X \xrightarrow{Br_2} Y \xrightarrow{KCN} Z$

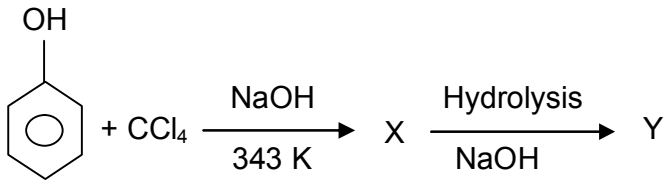
a) CH_3CH_2CN b) $CNCH_2CH_2CN$ c) $BrCH_2CH_2CN$ d) BrCH = CHCN

50. In SN_1 reactions, the order r of reactivity of halides is :

a) $3^0 > 2^0 > 1^0 >$ methyl b) methyl $1^0 > 2^0 > 3^0$

c) $3^0 > 2^0 >$ methyl $> 1^0$ d) $2^0 > 1^0 >$ methyl $> 3^0$

51. In the reaction,



Y is:

a) Salicylaldehyde b) Salicylic acid c) 0-cresol d) Benzoic acid

52. The total number of isomers of the molecular formula C_3H_8O is :

a) 2 b) 3 c) 4 d) 5

53. Cannizzaro's reaction involves

a) Oxidation b) Reduction

c) Both oxidation and reduction d) decarboxylation

54. The compound which can form intramolecular hydrogen bond is

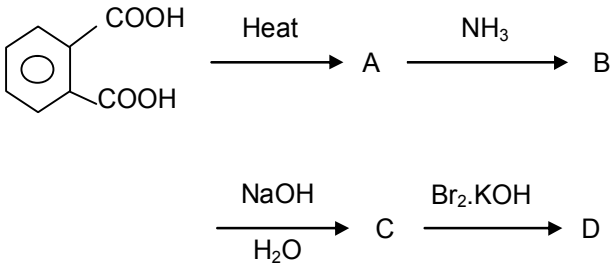
a) m-Hydroxybenzaldehyde b) Salicyaldehyde

c) Benzaldehyde d) p-Hydroxybenzaldehyde

55. If formaldehyde and KOH are heated, the product obtained is :

a) Acetylene b) Methanol c) Formic acid d) Methyl formate

56. In the reaction



a) Salicylic acid b) 0-nitrobenzonic acid c) Anthranillic acid d) Crotonic acid

57. Which of the following compound on treatment with LiAlH4 will give a product that will give positive iodoform test?

a) $CH_3\ CH_2\ CHO$ b) $CH_3\ CH_2\ COOCH_3$ c) $CH_3\ CO\ CH_3$ d) $CH_3\ CH_2O\ CH_2\ CH_3$

58. Acetyl chloride is reduced to acetaldehyde by :

a) Na, C_2H_5OH b) $LiAlH_4$ c) H_2, Pd, $BaSO_4$ d) H_2, Ni

59. Consider the amines:

1) NH_3 2.RNH_2 3.$C_6H_5NH_2$

The correct sequence of basicity is

a) $3 < 2 < 1$ b) $3 < 1 < 2$ c) $1 < 2 < 3$ d) $2 < 3 < 1$

60. Which of the following molecules is insoluble in water?

a) α-Keratin b) Haemoglobin c) Ribonuclease d) Adenine