UNIVERSAL ACADEMY

Icon of Success and Excellence

MOCK CET - 2015

DATE	SUBJECT	TIME
01.05.2015	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–3	

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 – 3

1. In which reactants are not contained within the cell but are continuously supplied from external source?
   a) Fuel cell b) Dry cell c) Lithium battery d) Lead storage battery
2. In Leclanche cell, Zinc rod is placed in
   a) 10% NH_4Cl b) 20% NH_4Cl c) 30% NH_4Cl d) 40% NH_4Cl
3. The equivalent conductance of 0.02 Macetic acid is 1.162 x 10^{-3} ohm^{-1} mol^{-1} m^2. percentage ionization of CH_3COOH is
   $(\lambda_{H+} = 349.83\, ohm^{-1}\ \lambda_{CH_3COO^-} = 40.89\, ohm^{-1})$
   a) 1 b) 2 c) 3 d) 4
4. The number of electrons participating in the electrode reaction when one atomic weight of a bivalent metal was deposited at the cathode
   a) 9.65 x 10^{23} b) 0.6 x 10^{23} c) 12.04 x 10^{23} d) 3.01 x 10^{23}
5. The graph drawn between the reaction time and which of the following concentration term gives a straight line plot passing through origin for the first order reaction
   a) log x b) $\frac{1}{(a-x)}$ c) $\log\frac{a}{a-x}$ d) $\frac{1}{(a-x)^2}$
6. For a given reaction which one is higher than the rest among the following
   a) Average energy b) Threshold energy c) activation energy d) Normal energy
7. For which of the following reactions k_{310}/k_{300} would be maximum
   a) A + B $\rightarrow$ C; E_a = 50kJ b) X + Y $\rightarrow$ Z; E_a = 60kJ
   c) P + Q $\rightarrow$ R; E_a = 60kJ d) E + F $\rightarrow$ G; E_a = 100kJ
8. What is the unit for rate constant k of a reaction which has a rate expression?
   rate = $k[A]^{3/2}[B]^{-1}$
   a) $\frac{3}{2}$ b) $\frac{1}{2}$ c) zero d) none of these
9. The rate constant of a reaction at temperature 200K is 10times less than the rate constant at 400k. What is the active energy (E_a) of the reaction? (R = Gas constant)
   a) 1842.4R b) 921.2R c) 460.6 d) 230.3R
10. The rate of reaction increase 4-fold when concentration of reactant is increased 16 times. If the rate of reaction is 4 x 10^{-6} mole $L^{-1}S^{-1}$ when concentration of the reactant is 4 x 10^{-4} mole L^{-1}, the rate constant of the reaction will be
    a) 2 x 10^{-4} $mole^{1/2}$ $L^{-1}/2$ S^{-1} b) 1 x 10^{-2} S^{-1}
    c) 2 x 10^{-2} $mole^{-1/2}$ $L^{1/2}$ S^{-1} d) 25 $mole^{-1/2}$ $Lmin^{-1}$
11. In which of the following arrangements a metal could have least density
    a) BCC b) CCP c) HCP d) None
12. The fraction of total volume occupied by the atoms in a simple cube is
    a) $\frac{\pi}{4}$ b) $\sqrt{2}\frac{\pi}{8}$ c) $\sqrt{2}\frac{\pi}{6}$ d) $\frac{\pi}{6}$
13. Body diagonal of a cube in 866 pm. Its edge length would be
    a) 408 pm b) 1000 pm c) 500 pm d) 600 pm
14. In an oxidation reduction reaction, dichromate ($Cr_2O_7^{-2}$) ion is reduced to Cr^{+3} ion. The equivalent weight of $K_2Cr_2O_7$ in this reaction is
    a) $\frac{\text{Molecularweight}}{3}$ b) $\frac{\text{Molecularweight}}{6}$ c) $\frac{\text{Molecularweight}}{1}$ d) $\frac{\text{Molecularweight}}{2}$
15. A solution is obtained by dissolving 12g of urea (Mol.wt. = 60) in a litre of solution. Another solution is prepared by dissolving 68.4 gof cane sugar (Mol.wt. = 342) in a litre of solution at the same temperature. The lowering of vapour pressure in the first solution is
    a) nearly 5 times that of the second solution b) same as the that of second solution
    c) double that of second solution d) nearly one fifth of the second solution

16. When 45 grams of a solute is added to 900 gm of water, its vapour pressure decreased from 30mm to 24mm. The mole fraction of the solvent in the solution is
    a) 0.2 b) 0.8 c) 0.1 d) 0.9
17. The rise in the boiling point of a solution containing 1.8g of glucoe n 100g of solvent is $0.1^{O}C$. The molal elevation constant of the liquids is
    a) 0.01 K/m b) 0.1 K/m c) 1 K/m d) 10 k/m
18. Which of the following solutions will have the lowest F.pt
    a) 0.1 MFeCl3 b) 0.1 M Bacl2 c) 0.1 M NaCl d) 0.1 M urea
19. A 0.001 molal solution of $[Pt(NH_3)_4Cl_4$ in water had a freezing point depression of $0.0054^{O}C$. If K for water is 1.80, the correct formulation for the above molecule is
    a) $[Pt(NH_3)_4Cl_3$ b) $[Pt(NH_3)_4Cl]Cl_2$ c) $[Pt(NH_3)_4Cl_2]Cl_3$ d) $[Pt(NH_3)_4Cl_4]$
20. The adsorption theory explains all except
    a) Heterogeneous catalysis b) Catalytic promoters
    c) Catalyst poisons d) Acid-base catalysis
21. Micelles can be formed by
    a) Carboxylic acids
    b) Sodium stearate solution at low concentration
    c) Sdium stearte solution at high concentration
    d) Sodium chloride aqueous solution
22. The forth floatation process is used for the concentration of
    a) ore having low density b) ore having magnetic nature
    c) ore having high density d) ore having water soluble gangue
23. The solubility of the impurities in the metal in molten and solid states is different. This is the principle involved in the refining of metal by following method
    a) Poling b) Liquation c) Zone refining d) Electrolysis
24. Which of the following has lowest magnetic moment?
    a) $3d^2$ b) $3d^7$ c) $3d^9$ d) $3d^3$
25. When $K_2Cr_2O_2$ is heated with cone. H_2SO_4 in the presence of a soluble metal chloride, orange red vapours are produced. These are due to:
    a) $CrCl_3$ b) CrOCl2 c) CrO_2Cl d) CrO_4^{2-}
26. The magnetic moment of a transition metal ion is found to be 3.87 B.M. It is probably:
    a) Fe^{2+} b) Ti^{3+} c) Cr^{3+} d) Ni^{2+}
27. In the dehydrohalogenation of ethyl chloride the following change occurs
    a) sp^2 carbon converts to sp^3 carbon b) sp^2 carbon converts to sp carbon
    c) sp^3 carbon converts sp carbon d) sp^3 carbon converts to sp^2 carbon
28. 2-methyl butane on reaction with Br2 in the presence of sunlight gives mainly
    a) 1-bromo-3-methyl butane b) 2-bromo-3-methyl-butane
    c) 2-bromo-2methyl-butane d) 1-bromo-2methyl butane
29. The compound(B) in the below reaction is:

$$C_2H_5Cl \xrightarrow{KCN} A \xrightarrow{H_2O^-} B$$

    a) ethylene chloride b) acetic acid c) propionic acid d) ethyl cyanide
30. The halo compound of methane used as fire extinguisher under the name pyrene is
    a) $CHCl_3$ b) CH_2Cl_2 c) CCl_2F_2 d) CCl_4
31. The reactivity of alkyl halides follows the order
    a) $RI > RBr > RCl > RF$ b) $RF > RCl > RBr > RI$
    c) $RBr > RCl > RI > RF$ d) $RF > RI > RBr > RCl$
32. The order of reactivity of various alkyl halides towards S_N1 reaction is
    a) $3^{O} > 2^{O} > 1^{O}$ b) $1^{O} > 2^{O} > 3^{O}$ c) $3 = 2^{O} = 1^{O}$ d) $1^{O} > 3^{O} > 2^{O}$
33. Which of the following alcohols reacts most readily with Lucas reagent
    a) $CH_3CH_2CH_2OH$ b) $(CH_3)_2CHOH$ c) $(CH_3)_3COH$ d) CH_3CH_2OH

34. Excess of C_2H_5OH at 140^OC reacts with conc. H_2SO_4, then compound formed is
    a) Diethyl ether b) Diethyl sulphate
    c) Ethylene d) Ethylene hydrogen sulphate
35. The solvent used in Etard's reaction during the formation of benzaldehyde from toluene is
    a) acetic acid b) water c) liq.NH3 d) CS_2
36. Match the following

A)	Grignard reagent	1)	$H_2/Pd - BaSO_4$
B)	Clemmenson reduction	2)	$N_2H_4/KOH/CH_2OH - CH_2OH$
C)	Rosenmund's reduction	3)	CH_3MgX
D)	Wolf-Kishner reduction	4)	$Zn - Hg/Conc.HCl$
		5)	H_2/Ni

	A	B	C	D
a)	3	4	2	1
b)	3	4	1	2
c)	2	1	4	5
d)	5	3	2	1

37. Haloform reaction is not given by
    a) CH_3COCH_3 b) $CH_3COC_2H_5$ c) $C_6H_5COC_2H_5$ d) $CH_3CHOHCH_3$
38. The – COONa group can be replaced by H atom on reaction with
    a) Zn + HCl b) H_2 / Ni c) Soda lime d) Br_2 + dil.NaOH
39. What is decreasing order of bascity of p, s, t ethyl amines and NH_3?
    a) $NH_3>C_2H_5NH_2>(C_2H_5)_2NH>(C_2H_5)_3N$ b) $(C_2H_5)_3N>(C_2H_5)_2NH>C_2H_5NH_2>NH_3$
    c) $(C_2H_5)_2NH>C_2H_5NH_2>NH_3>(C_2H_5)_3N$ d) $(C_2H_5)_2NH>(C_2H_5)_3N>C_2H_5NH_2>NH_3$
40. Which of the following carbohydrate is most abundant in nature?
    a) Glucose b) Fructose c) Starch d) Cellulose
41. Transform of rubber is called
    a) Isoprene b) Neoprene c) Gutta percha d) Glyptal
42. 4.48 litre of mehane at S.T.P. corresponds to
    a) 1.2×10^{22} molecules of methane b) 0.5 mole of methane
    c) 3.2 g of methane d) 0.1 mole of methane
43. The correct set of quantum number for the outermost electron of Rubidium (37) is
    a) 5, 0, 0, $+\frac{1}{2}$ b) 4, 3, 2, $-\frac{1}{2}$ c) 5, 1, 0, $-\frac{1}{2}$ d) 5, 1, 1, $+\frac{1}{2}$
44. The ionization energy of the element is a measure of
    a) the power of an atom to attract the shared pair in a molecule
    b) the energy required to remove the most loosely bound electron from the gaseous atom
    c) energy released when atom forms uninegative ion
    d) tendency of an ion to undergo hydration
45. Which one of the following sets of ions represents the collection of isoelectronic species?
    a) $K^+, Ca^{2+}, Sc^{3+}, Cl^-$ b) $Na^+, Ma^{2+}, Al^{3+}, Cl^-$ c) $K^+, Cl^-, Mg^{2+}, Sc^{3+}$ d) $Na^+, Ca^{2+}, Sc^{3+}, F^-$
46. In the molecular orbital diagram for O_2^+ ion the highest occupied orbital is
    a) σ MO orbital b) π MO orbital c) π^* MO orbital d) σ^* MO orbital
47. The temperature at which the r.m.s. velocity of carbon dioxide becomes the same as that of nitrogen at 21^OC is
    a) 462^OC b) 273 K c) 189^OC d) 546 K
48. What is kinetic energy of 1 gm of O_2 at 47^OC?
    a) 2.17×10^2 J b) 2.24×10^2 J c) 1.24×10^2 J d) None of these
49. For the reaction,
    $2H_3(g) \rightarrow N_2(g) + 3H_2(g)$, which of the following statement is correct?
    a) $\Delta H = \Delta E$ b) $\Delta H \geq \Delta E$ c) $\Delta H > \Delta E$ d) $\Delta H = 0$

50. If $N_2 + 3H_2 \rightleftharpoons 2NH_3$ has eq. constant, K and
$2Na + 6H_2 \rightleftharpoons 4NH_3$ has eq. constant, K' then K' =
a) K^2 b) $\sqrt{K}$ c) $\frac{1}{\sqrt{K}}$ d) $\frac{1}{K^2}$

51. The solubility product (K_{sp}) of AgCl is 1.8×10^{-10}. Precipitation of AgCl will occur only when equal volumes of solutions of
a) 10^{-4} M Ag^+ and 10^{-4} MCl^- are mixed b) 10^{-7} M Ag^+ and 10^{-7} MCl^- are mixed
c) 10^{-5} M Ag^+ and 10^{-5} MCl^- are mixed d) 10^{-10} M Ag+ and 10^{-10} MCl^- are mixed

52. An organic compound is found to contain C = 40.0%, H = 6.66%. The empirical formula is
a) CH_2O b) CHO_2 c) CHO d) C_2H_6O

53. In order to get propane gas which of the following should be subjected to sodlime decraboxylation
a) Sodium butyrate
b) Sodium propionate
c) Mixture of sodium acetate and sodium ethanoate
d) Sodium formate

54. Dehydrahalogenation of alkyl halide leads to the formation of a highly alkylated alkene. This generalization is called
a) Hoffmann's rule b) Markownikoff's rule c) Zaitsev's rule d) None of these

55. Most hazardous metal pollutant of automobile exhaust is
a) Mercury b) Lead c) Cadmium d) Copper

56. The correct arrangement for the ions in the increasing order of their radii is
a) Ca^{+2}, K^+, S^{-2} b) Cl^-, F^-, S^{-2} c) Na^+, Cl^-, Ca^{+2} d) Na^+, Al^{+3}, Be^{+2}

57. The substances which affect the central nervous system and induce sleep are called
a) antipyretics b) tranquilizers c) analgesics d) antibiotics

58. As the atomic number of halogens increases, the halogens
a) lose the outer most electrons less readily b) become lighter in colour
c) become less denser d) gain electron less readily

59. In Haber's process of Ammonia synthesis, the substance that acts as catalytic poison
a) Fe_2O_3 b) As_2O_3 c) CO_2 d) H_2S

60. A certain quantity of electricity is passed through an aqueous solution of $AgNO_3$ and cupric salt solution connected in series. The amount of silver deposited is 1.08g. The amount of copper deposited is (at.wt. of Cu = 63.54; Ag = 108)
a) 0.6454g b) 6.354g c) 0.3177g d) 3.177g