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FULL TEST-01

A1

VERSION CODE

THINK

Maximum Marks : 60
Total No. of Questions : 60
Total Duration : 80 Minutes
Maximum Time for Answering : 70 Minutes
Time : 10.30 AM to 11.50 AM

MENTION YOUR CET NUMBER				

CHEMISTRY

Serial Number :

Subject code	2C0025K

Dos:

1. This question booklet is issued to you by the room invigilator **after 10.30 AM.**
2. Check whether the CET Number has been entered and shaded in the respective circles on the OMR answer sheet
3. The version code of this question booklet should be entered on the OMR answer sheet and the respective circles should also be shaded completely.
4. The Version Code and Serial Number of this question booklet should be entered on the Nominal Roll without any mistakes.
5. Compulsorily 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 **3rd Bell rings at 10.40 AM, till then.**
   - Do not remove the seal present on the right hand side of this question booklet.
   - Do not look inside this question booklet or start answering on the OMR answer sheet.

IMPORTANT INSTRUCTIONS TO CANDIDATES

1. In case of usage of signs and symbols in the questions, the regular textbook connotation should be considered unless stated otherwise.
2. This question booklet contains 60 questions and each question will have one statement and four different options / respones & out of which you have to choose one correct answer.
3. After the **3rd Bell rings at 10.40 AM,** remove the paper seal 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.
4. Completely **darken/shade** the relevant circle with a **blue or black ink ballpoint pen against the question number on the OMR answer sheet.**

CORRECT METHOD	WRONG METHODS
(A) ● (C) (D)	(✗) (B) (C) (D) (A) (B) (C) (✓) (A) ● ● (D)
	(✓) (B) (C) (D) (A) ● (C) (D)

5. Please note that even a minute unintended ink dot on the OMR answer sheet will also be recognized and recored by the scanner. Therefore, avoid multiple markings of any kind on the OMR answer sheet.
6. Use the space provided on each page of the question booklet for Rough Work. Do not use the OMR answer sheet for the same.
7. **Last Bell will ring at 11.50 AM,** stop writing on the OMR answer sheet.
8. Hand over the **OMR answer sheet** to the room invigilator as it is.
9. After separating the top sheet (Office copy), the invigilator will return the bottom sheet replica (candidate's copy) to you.

CHEMISTRY

Q.1 For a first-order reaction, the half-life period is
(A) Independent of initial concentration
(B) Directly propotional to cube root of initial concentration
(C) Directly propotional to first power of final concentration
(D) Directly propotional to square root of final concentration
(A) 2 (B) –1 (C) – 2 (D) 4

Q.2 Positive Fehling test is not given by
(A) H–CHO (B) CH_3CHO (C) C_6H_5CHO (D) Glucose

Q.3 In a regular octahedral molecule, MX_6 the number of X – M – X bonds at 90° is
(A) Twelve (B) Two (C) Six (D) Four

Q.4 The bond that exists between NH_3 and BF_3 is called
(A) Electrovalent (B) Covalent (C) Coordinate (D) Hydrogen

Q.5 What is the weight of oxygen required for the complete combustion of 2.8 kg of ethylene?
(A) 2.8 kg (B) 6.4 kg (C) 9.6 kg (D) 96 kg

Q.6 IUPAC name for the compound having formula $C(CH_3)_4$ is
(A) Tetra methyl methane (B) 1, 1, 1, 1-Tetramethyl methane
(C) 2, 2-Dimethyl propane (D) 2, 2-Dimethyl isopropane

Q.7 Among the lanthanide the one obtained by synthetic method is :
(A) Lu (B) Pm
(C) Pr (D) Gd

Q.8 In an endothermic reaction, the value of ΔH is
(A) Zero (B) Positive
(C) Negative (D) Constant

Q.9 What is emergency equipments in the laboratory
(A) Eyewash fountains (B) First aid box
(C) Fire extinguishers (D) All

SPACE FOR ROUGH WORK

Q.10 The highest oxidation state of Cr will be

(A) 2 (B) 3· (C) 4 (D) 6

Q.11 Number of unpaired electrons in N^{2+} is/are

(A) 2 (B) 0 (C) 1 (D) 3

Q.12 $CH_3 - CH_2 - CH_2 - CH_3 \xrightarrow[\Delta]{AlCl_3 + HCl} CH_3 - \underset{\displaystyle CH_3}{\overset{\displaystyle |}{CH}} - CH_3$

Above reaction is an example of :-

(A) Isomerization (B) Polymerization

(C) Cracking (D) Dehydrogenation

Q.13 In borax bead test, which of the following match is correct in oxidising flame ?

(A) Cr3+ – Violet (B) Fe3+ – Blue

(C) Co2+–Blue (D) Cu2+– Yellow

Q.14 $2A \rightarrow B + C$

It would be a zero order reaction when :-

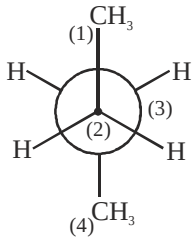
(A) The rate of reaction is proportional to square of conc. of A

(B) The rate of reaction remains same at any conc. of A

(C) The rate remains unchanged at any conc. of B and C

(D) The rate of reaction doubles if conc. of B is increased to double

Q.15 If C_2 in the following compound is rotated by 120º angle in anticlockwise direction along C_2–C_3, which of the following form will be produced.



(A) Partial eclipsed (B) Perfectly eclipsed

(C) Perfectly staggered (D) Gauche conformation

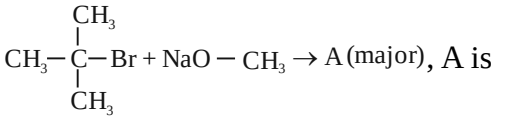
SPACE FOR ROUGH WORK

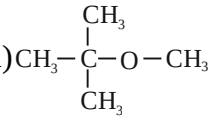
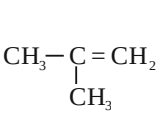
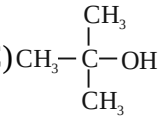
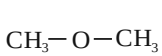
Q.16 Which of the following electronic configuration represents the maximum magnetic moment?
(A) d^3 (B) d^2 (C) d^8 (D) d^6

Q.17 During isothermal expansion of an ideal gas, its
(A) internal energy increases (B) enthalpy decreases
(C) enthalpy remains unaffected (D) enthalpy reduces to zero.

Q.18 The pair of compounds in which both the compounds give positive test with Tollen's reagent is
(A) Glucose and Sucrose (B) Fructose and Sucrose
(C) Acetophenone and Hexanal (D) Glucose and Fructose

Q.19 The number of spherical nodes in 3p orbitals are/is
(A) one (B) three (C) none (D) two

Q.20  , A is

(A)  (B)  (C)  (D) 

Q.21 In an octahedral crystal field, the t_{2g} orbitals are
(A) raised in energy by $0.4\Delta_0$ from barycenter
(B) lowered in energy by $0.4\ \Delta_0$ from barycenter
(C) raised in energy by $0.6\ \Delta_0$ from barycenter
(D) lowered in energy by $0.6\ \Delta_0$ from barycenter

Q.22 K_1 and K_2 are equilibrium constants for reactions (i) and (ii)

$N_{2(g)} + O_{2(g)} \rightleftharpoons 2NO_{(g)}$ ...(i)

$NO_{(g)} \rightleftharpoons \frac{1}{2}N_{2(g)} + \frac{1}{2}O_{2(g)}$ ...(ii)

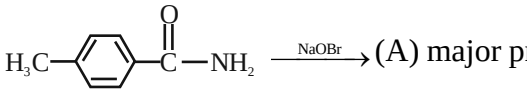
Then,

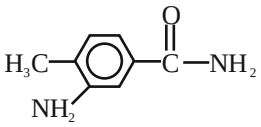
(A) $K_1 = \left(\frac{1}{K_2}\right)^2$ (B) $K_1 = K_2^2$ (C) $K_1 = \frac{1}{K_2}$ (D) $K_1 = (K_2)^0$

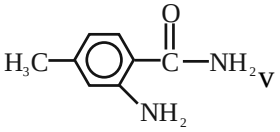
SPACE FOR ROUGH WORK

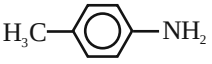
Q.23 The coordination number and oxidation number of X respectively in the compound $[X(SO_4)(NH_3)_5]$ will be

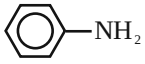
(A) 10 and 3 (B) 1 and 6 (C) 6 and 2 (D) 6 and 4

Q.24  (A) major product:

(A) 

(B) 

(C) 

(D) 

Q.25 The correct order of the calculated spin-only magnetic moments of complexes (A) to (D) is :

(I) $Ni(CO)_4$ (II) $[Ni(H_2O)_6]Cl_2$

(III) $Na_2[Ni(CN)_4]$ (IV) $PdCl_2(PPh_3)_2$

(A) (I) ≈ (III) < (II) ≈ (III) (B) (I) ≈ (III) ≈ (IV) < (II)

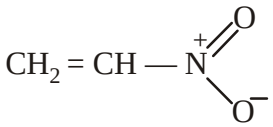
(C) (III) ≈ (IV) < (II) < (I) (D) (III) < (IV) < (II) < (I)

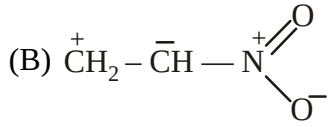
Q.26 Which substance is serving as a reducing agent in the following reaction?

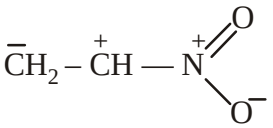
$14H^+ + Cr_2O_7^{2-} + 3Ni \rightarrow 7H_2O + 3Ni^{2+} + 2Cr^{3+}$

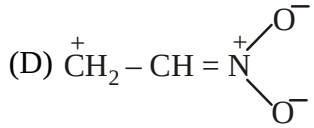
(A) H^+ (B) $Cr_2O_7^{2-}$ (C) H_2O (D) Ni

Q.27 Select the least stable resonating structure among following carbocation.

(A) 

(B) 

(C) 

(D) 

Q.28 Which of the following is a coordination compound

(A) $Al_2(SO_4)_3$ (B) $K_4[Fe(CN)_6]$ (C) $CaCO_3$ (D) $FeSO_4$

SPACE FOR ROUGH WORK

Q.29 According to Le-Chatelier's principle, adding heat to a solid $\rightleftharpoons$ liquid equilibrium will cause the :

(A) Temperature to increases (B) Temperature to decreases

(C) Amount of liquid to decreases (D) Amount of solid to decreases.

Q.30 In the following reaction,

$$C_6H_5COOCH_3 \xrightarrow[H_2O/H^+]{LiAlH_4} A + B$$

A and B are respectively

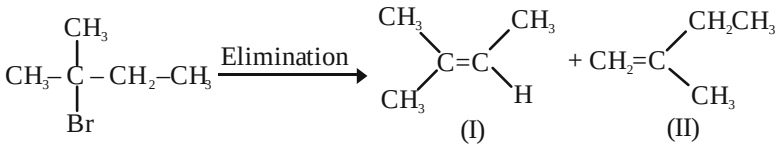
(A) $C_6H_5CH_2OH + HCOOH$ (B) $C_6H_5CH_2OH + CH_3OH$

(C) $C_6H_5OH + CH_3COOH$ (D) $C_6H_5COOH + CH_3OH$

Q.31 Oxidation state of Fe in Fe_3O_4 is :

(A) $\frac{5}{4}$ (B) $\frac{4}{5}$ (C) $\frac{3}{2}$ (D) $\frac{8}{3}$

Q.32 Consider the following reaction



Which of the following base will give the best yield of the alkene II as the major product -

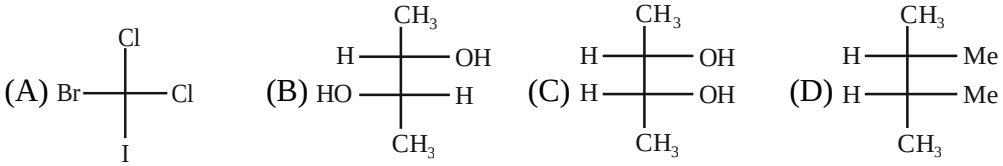
(A) Alc KOH (B) $C_2H_5O^-$ (C) $(CH_3)_3CO^-$ (D) $NaNH_2$

Q.33 Blood cells retain their normal shape in solutions which are

(A) hypotonic to blood (B) isotonic to blood

(C) hypertonic to blood (D) equinormal to blood

Q.34 Which of the following compound is optically active?



SPACE FOR ROUGH WORK

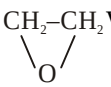
Q.35 An electrochemical cell is shown below :
Pt, H_2 (1 atm) |HCl (0.1 M)| CH_3 COOH (0.1 M)| H_2(1atm),Pt
The EMF of the cell will not be zero, because :
(A) EMF depends on molarities of acid used
(B) pH of 0.1 M HCl and 0.1 M CH_3COOH is not same
(C) the temperature is constant
(D) acids used in two compartment are different

Q.36 An alkyl halide reacted with a metal cyanide to give an alkanenitrile. The metal cyanide is -
(A) AgCN (B) KCN (C) $Cu_2(CN)_2$ (D) $Ba(CN)_2$

Q.37 The relative lowering of the vapour pressure is equal to the ratio between the number of
(A) Solute moleules and solvent molecules
(B) Solute molecules and the total molecules in the solution
(C) Solvent molecules and the total molecules in the solution
(D) Solvent molecules and the total number of ions of the solute

Q.38 Which of the following compounds shows geometrical isomerism?
(A) 2-methylpent-1-ene (B) 4-methylpent-1-ene
(C)2-methylpent-2-ene (D) 4-methylpent-2-ene

Q.39 Electrode potential for the following half-cell reactions are
$Zn \rightarrow Zn^{2+} + 2e^-$; $E^o = + 0.76$ V ;
$Fe \rightarrow Fe^{2+}$ $2e^-$; $E^o = + 0.44$ V.
The EMF for the cell reaction
$Fe^{2+} + Zn \rightarrow Zn^{2+} + Fe$ will be
(A) – 0.32 (B) + 1.20 V (C) – 1.20 V (D) + 0.32 V

Q.40 Reaction of  with RMgX leads to the formation of
(A) RCH_2CH_2OH (B) $RCHOHCH_3$
(C) RCHOHR (D) 

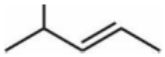
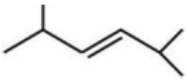
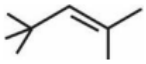
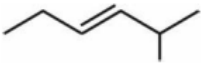
SPACE FOR ROUGH WORK

Q.41 Which one is a colligative property?
(A) Boiling point (B) Vapour pressure
(C) Osmotic pressure (D) Freezing point

Q.42 When phenol is treated with excess bromine water. It gives :
(A) m-bromophenol (B) o and p-bromophenols
(C) 2,4-dibromiphenol (D) 2,4,6-tribromophenol

Q.43 A 5 amp. current is passed through a solution of zinc sulphate for 40 min. The amount of zinc deposited at the cathode is :
[Atomic weight of Zn = 65.3]
(A) 40. 65 g (B) 0.4065 g (C) 4.065 g (D) 65.04 g

Q.44 Which compound on reductive ozonolysis gives propanone as one of the product?

(A)  (B)  (C)  (D) 

Q.45 At 25°C, the highest osmotic pressure is exhibited by 0.1 M solution of
(A) $CaCl_2$ (B) KCl (C) glucose (D) urea

Q.46 Which of the following is ambident nucleophile ?
(A) OH^- (B) CN^Q (C) CH_3O^- (D) Cl^Q

Q.47 On electrolysis of dilute sulphuric acid using platinum electrodes, the product obtained at the anode will be
(A) hydrogen (B) oxygen
(C) hydrogen sulphide (D) sulphur dioxide

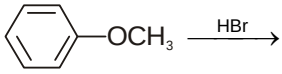
Q.48 Presence of a cyano group in a benzene ring.
(A) Activates the ring towards electrophilic substitution.
(B) Renders the ring basic.
(C) Deactivates the ring towards nucleophilic substitution.
(D) Deactivates the ring towards electrophilic substitution.

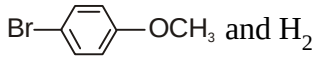
SPACE FOR ROUGH WORK

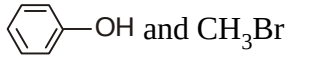
Q.49 All form ideal solution except

(A) C_2H_5Br and C_2H_5I (B) C_2H_5Cl and C_6H_5Br

(C) C_6H_6 and $C_6H_5CH_3$ (D) C_2H_5I and C_2H_5OH

Q.50 In the reaction  the products are :

(A)  and H_2 (B)  and CH_3Br

(C)  and CH_3OH (D)  and CH_3Br

Q.51 Standard reduction potentials at 25ºC of Li^+/Li, Ba^{2+}/Ba, Na^+/Na and Mg^{2+}/Mg are –3.05, –2.90, –2.71 and –2.37 V respectively. Which one of the following is the strongest oxidizing agent ?

(A) Mg^{2+} (B) Ba^{2+} (C) Na^+ (D) Li^+

Q.52 Which of the following reactions is appropriate for converting acetamide to methanamine?

(A) Hoffmann bromamide reaction.

(B) Stephen's reaction.

(C) Gabriel phthalimide synthesis

(D) Carbylamine reaction.

Q.53 Activation energy (E_a) and rate constants (k_1 and k_2) of a chemical reaction at two different temperatures (T_1 and T_2) are related by

(A) $\text{In}\dfrac{k_2}{k_1} = -\dfrac{E_a}{R}\left(\dfrac{1}{T_1}-\dfrac{1}{T_2}\right)$ (B) $\text{In}\dfrac{k_2}{k_1} = -\dfrac{E_a}{R}\left(\dfrac{1}{T_2}-\dfrac{1}{T_1}\right)$

(C) $\text{In}\dfrac{k_2}{k_1} = -\dfrac{E_a}{R}\left(\dfrac{1}{T_2}+\dfrac{1}{T_1}\right)$ (D) $\text{In}\dfrac{k_2}{k_1} = \dfrac{E_a}{R}\left(\dfrac{1}{T_1}-\dfrac{1}{T_2}\right)$

Q.54 Which of the following will be most stable diazonium salt $RN_2^+X^-$?

(A) $CH_3N_2^+X^-$ (B) $C_6H_5N_2^+X^-$

(C) $CH_3CH_2N_2^+X^-$ (D) $C_6H_5CH_2N_2^+X^-$

SPACE FOR ROUGH WORK

Q.55 The data for the reaction $A + B \rightarrow C$, is

Exp.	**$[A]_0$**	**$[B]_0$**	**Initial rate ($\times 10^{-4}$)**
1	0.012	0.035	0.40
2	0.024	0.070	0.80
3	0.024	0.035	0.40
4	0.012	0.070	0.80

The rate law corresponds to the above data is

(A) rate = $k[A][B]^3$ (B) rate = $k[A]^2[B]^2$

(C) rate = $k[B]$ (D) rate = $k[B]^4$

Q.56 Which of the following compounds can form a Zwitter ion ?

(A) Aniline (B) Acetanilide (C) Benzoic acid (D) Glycine

Q.57 For the reaction, $H^+ + BrO_3^- + 3Br^- \rightarrow 5Br_2 + H_2O$

which of the following relations correctly represents rate of the consumption and formation of products?

(A) $\frac{d[Br^-]}{dt} = -\frac{3}{5}\frac{d[Br_2]}{dt}$ (B) $\frac{d[Br^-]}{dt} = \frac{3}{5}\frac{d[Br_2]}{dt}$

(C) $\frac{d[Br^-]}{dt} = -\frac{5}{3}\frac{d[Br_2]}{dt}$ (D) $\frac{d[Br^-]}{dt} = \frac{5}{3}\frac{d[Br_2]}{dt}$

Q.58 Enzymes are made up of :

(A) edible proteins (B) proteins with specific structure

(C) nitrogen containing carbohydrates (D) carbohydrates

Q.59 The correct order of radii is :

(A) N < Be < B (B) $Cl^- < S^{2-} < P^{3-}$

(C) Na < Li < K (D) $Fe^{2+} < Fe^{3+}$

Q.60 $CH_3CH_2COO^-Na^+ \xrightarrow[\text{Heat}]{NaOH,+?} CH_3CH_3 + Na_2CO_3$

Consider the above reaction and idetify the missing reagent/chemical.

(A) Red Phosphorus (B) CaO

(C) DIBAL-H (D) B_2H_6

SPACE FOR ROUGH WORK