GUJCET-PCE-2025

Test Booklet No. | | **Test Booklet Set No.** **03**

This booklet contains 32 pages.

DO NOT open this Test Booklet until you are asked to do so.

Important Instructions :

1) The Physics and Chemistry test consists of 80 questions. Each question carries **1** mark. For each correct response, the candidate will get **1** mark. For each incorrect response ¼ mark will be deducted. The maximum marks are **80**.
2) This Test is of **2 hours** duration.
3) Use **Black Ball Point Pen only** for writing particulars on OMR Answer Sheet and marking answers by darkening the circle '●'.
4) Rough work is to be done on the space provided for this purpose in the Test Booklet only.
5) **On completion of the test, the candidate must handover the Answer Sheet to the Invigilator in the Room / Hall. The candidates are allowed to take away this Test Booklet with them.**
6) The Set No. for this Booklet is **03**. Make sure that the Set No. printed on the Answer Sheet is the same as that on this booklet. In case of discrepancy, the candidate should immediately report the matter to the Invigilator for replacement of both the Test Booklet and the Answer Sheet.
7) The candidate should ensure that the Answer Sheet is not folded. Do not make any stray marks on the Answer Sheet.
8) Do not write your Seat No. anywhere else, except in the specified space in the Test Booklet / Answer Sheet.
9) Use of White fluid for correction is not permissible on the Answer Sheet.
10) Each candidate must show on demand his / her Admission Card to the Invigilator.
11) No candidate, without special permission of the Superintendent or Invigilator, should leave his / her seat.
12) Use of Simple (Manual) Calculator is permissible.
13) The candidate should not leave the Examination Hall without handing over their Answer Sheet to the Invigilator on duty and must sign the Attendance Sheet (Patrak - 01). Cases where a candidate has **not** signed the Attendance Sheet (Patrak - 01) will be deemed not to have handed over the Answer Sheet and will be dealt with as an unfair means case.
14) The candidates are governed by all Rules and Regulations of the Board with regard to their conduct in the Examination Hall. All cases of unfair means will be dealt with as per Rules and Regulations of the Board.
15) No part of the Test Booklet and Answer Sheet shall be detached under any circumstances.
16) The candidates will write the Correct Test Booklet Set No. as given in the Test Booklet / Answer Sheet in the Attendance Sheet. (Patrak - 01)

CHEMISTRY

41) Half life period for certain zero order reaction is 10 min. then how much time i required for this reaction to complete 100%?

(A) 20 min.

(B) 30 min.

(C) 60 min.

(D) 40 min.

42) The half-life for radioactive decay of ^{14}C is 5730 years. An archaeological artifact containing wood had only 80% of the ^{14}C found in a living tree. Which is the correct formula for age (t) of the sample?

(A) $t = \frac{0.3}{5730} \log \frac{20}{100}$

(B) $t = \frac{5730}{0.3} \log \frac{100}{80}$

(C) $t = \frac{0.3}{5730} \log \frac{100}{20}$

(D) $t = \frac{5730}{0.3} \log \frac{80}{100}$

(Space for Rough Work)

43) According to Arrhenius equation which of the following statement is correct?

(A) Decrease in temperature or increase in Activation Energy will increase rate of reaction.

(B) Increase in temperature and increase in Activation Energy will increase rate of reaction.

(C) Increase in temperature or decrease in Activation Energy will increase rate of reaction.

(D) Decrease in temperature and decrease in Activation Energy will increase rate of reaction.

44) Select correct reaction for the given rate.

$$\text{rate} = -6\frac{d[A]}{dt} = -4\frac{d[B]}{dt} = 3\frac{d[C]}{dt} = 4\frac{d[D]}{dt}$$

(A) $2A + 3B \rightarrow 4C + 3D$

(B) $6A + 4B \rightarrow 3C + 4D$

(C) $3A + 2B \rightarrow 3C + 4D$

(D) $3A + 2B \rightarrow 4C + 3D$

45) The highest Mn fluoride is MnF_4 whereas the highest oxide is Mn_2O_7 because ___.

(A) Fluorine does not have d-orbital.

(B) Electronegativity of oxygen is more than fluorine.

(C) Atomic volume of oxygen is less than fluorine.

(D) Oxygen forms multiple bonds and fluorine form single bond.

(Space for Rough Work)

46) Identify the metal whose divalent ion has 'spin only' magnetic moment $\sqrt{35}$ BM

(A) Cr
(B) Mn
(C) Fe
(D) Co

47) In acidic solution MnO_4^{2-} convert into _____.

(A) MnO_4^- and MnO_2
(B) MnO_4^- and MnO
(C) MnO and Mn_2O_3
(D) MnO_2 and Mn_2O_3

48) What is the oxidation state of Ti in Zeigler catalyst?

(A) +3
(B) +5
(C) +4
(D) +2

49) If $\left[Co(NH_3)_x(NO_2)_y\right]$ shows facial and meridional isomers, identify values of x and y.

(A) $x=4, y=2$
(B) $x=2, y=2$
(C) $x=2, y=4$
(D) $x=3, y=3$

50) Which statement is correct?

(A) $[NiCl_4]^{2-}$ is an inner orbital complex where as $\left[Ni(CN)_4\right]^{2-}$ is an outer orbital complex.

(B) $[NiCl_4]^{2-}$ is an outer orbital complex where as $\left[Ni(CN)_4\right]^{2-}$ is an inner orbital complex.

(C) $[NiCl_4]^{2-}$ and $\left[Ni(CN)_4\right]^{2-}$ are inner orbital complexes.

(D) $[NiCl_4]^{2-}$ and $\left[Ni(CN)_4\right]^{2-}$ are outer orbital complexes.

(Space for Rough Work)

51) What will be the value of Van't Hoff factor (i) for following coordination compound? (compound completely dissociate in aqueous solution) Potassium trioxalatoaluminate (III)

(A) 4 (B) 5

(C) 2 (D) 3

52) According to crystal field theory for which of the following coordination entities Δ_0 is maximum?

(A) $[CoCl(NH_3)_5]^{2+}$ (B) $[Co(NH_3)_6]^{3+}$

(C) $[Co(CN)_6]^{3-}$ (D) $[Co(NH_3)_5(H_2O)]^{3+}$

53) Which of the following compound is not allylic halide?

(A) 1-Bromo-2-methylbut-2-ene (B) 1-Bromobut-2-ene

(C) 3-Bromo-2-methylbut-1-ene (D) 2-Bromo-2-methylbut-2-ene

54) How many minimum numbers of C-atom containing monohaloalkane shows Optical Isomerism?

(A) 6 (B) 4

(C) 3 (D) 5

(Space for Rough Work)

55) Which of the following compound has highest reactivity towards S_N2 reaction?

(A) 1-Bromo-3-methylbutane

(B) 1-Bromo-2, 2-dimethylpropane

(C) 1-Bromo-2-methylbutane

(D) 1-Bromobutane

56) _____ compound is slowly oxidised by air in presence of light to an extremely poisonous gas, carbonyl chloride.

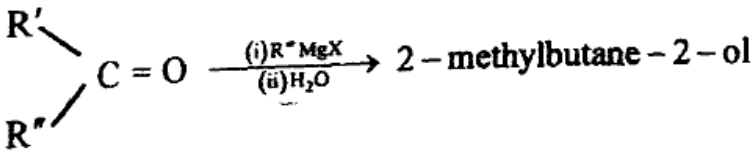
(A) Trichloromethane

(B) Methylene chloride

(C) Chlorobenzene

(D) Chloromethane

57) Identify R', R" and R"' for the following reaction



(A) $R' = C_2H_5, R'' = C_2H_5, R''' = CH_3$

(B) $R' = CH_3, R'' = C_2H_5, R''' = CH_3$

(C) $R' = C_2H_5, R'' = CH_3, R''' = C_2H_5$

(D) $R' = CH_3, R'' = CH_3, R''' = CH_3$

(Space for Rough Work)

58) $C_6H_6 + X \xrightarrow[AlCl_3]{\text{anhydrous}} \text{Isopropylbenzene} \xrightarrow[(ii)H^+]{(i)O_2} Y + Z$

In this reaction X, Y and Z are _____ respectively.

(A) CH_3CH_2Cl, C_6H_5OH, CH_3COCH_3

(B) CH_3CH_2Cl, $C_6H_4(OH)_2$, CH_3CHO

(C) $CH_3CH_2CH_2Cl$, C_6H_5OH, CH_3COCH_3

(D) $CH_3-\underset{\underset{Cl}{|}}{CH}-CH_3$, C_6H_5CHO, CH_3COCH_3

59) Which enzyme is used for fermentation of glucose?

(A) Sucrase (B) Maltase

(C) Invertase (D) Zymase

60) Ethanol $\xrightarrow[413K]{H_2SO_4}$ diethyl ether.

The above reaction is which type?

(A) Substitution nucleophilic bimolecular

(B) Substitution electrophilic bimolecular

(C) Substitution nucleophilic unimolecular

(D) Substitution electrophilic unimolecular

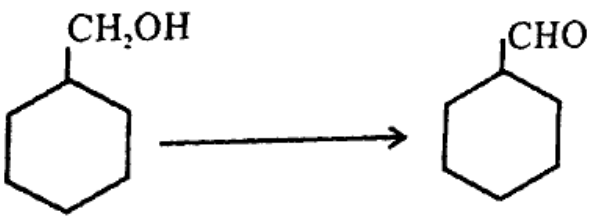
(Space for Rough Work)

61) Identify the functional group present in Vanillin.

(A) $-COOH, -OH, -OC_2H_5$ (B) $-CHO, -OH, -OCH_3$

(C) $-COOH, -CH_3, -OCH_3$ (D) $-CHO, -OH, -OC_2H_5$

62) For the given reaction, identify the proper reagent.



(A) $KMnO_4 / H_2SO_4$ (B) $O_3 / H_2O - Zn$ dust

(C) $C_5H_5NH^+ CrO_3Cl^-$ (D) $CrO_3 + (CH_3CO)_2O$

63) Which reagent is used to distinguish Acetophenone and Benzophenone?

(A) Cu^{2+} / OH^- (B) Br_2 / H_2O

(C) $[Ag(NH_3)_2]^+ / OH^-$ (D) NaOI

(Space for Rough Work)

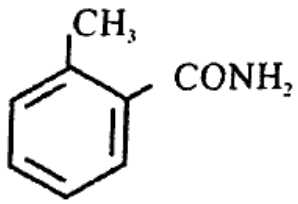
64) For which compound pKa is highest?

(A) $HCOOH$

(B) CH_3CH_2COOH

(C) $C_6H_5CH_2COOH$

(D) $ClCH_2CH_2COOH$

65) 

$\xrightarrow{NaOBr}$ Product "X".

Which statement is correct for Product "X"?

(A) It is soluble in $NaOH_{(aq)}$.

(B) It does not react with Hinsberg's reagent.

(C) It has one Isomer of 2° amine.

(D) It does not give Azo dye test.

66) The most reactive amine towards dil. HCl is _____.

(A) $(CH_3)_2NH$

(B) $(CH_3)_3N$

(C) CH_3NH_2

(D) $C_6H_5NH_2$

(Space for Rough Work)

67) Assertion: Only small amount of HCl is required in reduction of Nitrocompound with iron scrap.

Reason: $FeCl_2$, formed gets hydrolysed to release HCl during the reaction.

(A) Assertion is wrong but Reason is correct.

(B) Both Assertion and Reason are correct, Reason give correct explanation for Assertion.

(C) Assertion is correct but Reason is wrong.

(D) Both Assertion and Reason are correct, Reason does not give correct explanation for Assertion.

68) Which type of solution of phenol is required to prepare Orange dye by coupling reaction?

(A) Alkaline solution of phenol

(B) Neutral solution of phenol

(C) Acidic solution of phenol

(D) CCl_4 solution of phenol

69) _____ nucleotide is not present in RNA.

(A) Uracil containing

(B) Adenine containing

(C) Cytosine containing

(D) Thymine containing

(Space for Rough Work)

70) Each polypeptide in a protein has amino acids linked with each other in a specific sequence. This sequence of amino acids is called _____ structure of that protein.

(A) Quaternary structure

(B) Tertiary structure

(C) Primary structure

(D) Secondary structure

71) Deficiency of _____ vitamin causes scurvy disease.

(A) Pyridoxine

(B) Ascorbic acid

(C) Riboflavin

(D) Thiamine

72) Reaction with which reagent glucose form oxime?

(A) CH_3OH

(B) NH_2OH

(C) NH_4OH

(D) NH_2NH_2

(Space for Rough Work)

73) What will be mass percentage of aqueous solution of NaOH in which mole fractio of NaOH is 0.2?

(A) 64.86% W/W

(B) 35.71% W/W

(C) 23.38% W/W

(D) 27.78% W/W

74) For which of the following mixture Δ_{mix} H > 0?

(A) $CHCl_3+CH_3COCH_3$

(B) $C_6H_5NH_2+C_6H_5OH$

(C) $C_2H_5OH+CH_3COCH_3$

(D) $C_6H_6+C_6H_5CH_3$

75) Which is the correct order for solubility of following compound in n-octane (at Identical Condition) https://www.pyqonline.com

I) Cyclohexane

II) KCl

III) CH_3OH

IV) CH_3CN

(A) II < III < IV < I

(B) II < IV < III < I

(C) I < IV < III < II

(D) I < III < IV < II

(Space for Rough Work)

76) _____ solution is hypertonic with reference to fluid inside the blood cell.

(A) 0.8% W/V NaCl

(B) 0.6% W/V NaCl

(C) 0.9% W/V NaCl

(D) 1.2% W/V NaCl

77) Which relation is correct for $\Lambda^{\circ}_{m(H_2O)}$?

(A) $\Lambda^{\circ}_{m(HCl)} + \Lambda^{\circ}_{m(NH_4Cl)} - \Lambda^{\circ}_{m(NH_4OH)}$

(B) $\Lambda^{\circ}_{m(HCl)} + \Lambda^{\circ}_{m(NaOH)} - \Lambda^{\circ}_{m(NaCl)}$

(C) $\Lambda^{\circ}_{m(HNO_3)} + \Lambda^{\circ}_{m(NaNO_3)} - \Lambda^{\circ}_{m(NaOH)}$

(D) $\Lambda^{\circ}_{m(HNO_3)} + \Lambda^{\circ}_{m(Ba(OH)_2)} - \Lambda^{\circ}_{m(Ba(NO_3)_2)}$

78) For Daniell cell $E^{\circ}_{cell} = 1.1$ V. How Kc is represented for reaction occuring in Daniell cell?

(A) $Kc=10^{2.2/0.059}$

(B) $Kc=10^{-0.059/1.1}$

(C) $Kc=10^{-2.2/0.059}$

(D) $Kc=10^{0.059/1.1}$

(Space for Rough Work)

79) For the given reaction how much quantity of electricity in Coulomb is required?

$$\frac{2}{3}Al_2O_3 \rightarrow \frac{4}{3}Al + O_2$$

(A) 6×96500 C

(B) 2×96500 C

(C) 3×96500 C

(D) 4×96500 C

80) Which statement is correct for ΔG and E_{cell}? (For cell reaction)

(A) ΔG is intensive and E_{cell} is extensive property.

(B) Both ΔG and E_{cell} are intensive properties.

(C) ΔG is extensive and E_{cell} is intensive property.

(D) Both ΔG and E_{cell} are extensive properties.

(Space for Rough Work)