V11C

Virudhunagar District

Common First Mid Term Test - 2024

Standard 11

CHEMISTRY

Time: 1.30 Hrs. Marks: 50

Part - I

Choose the correct answer and answer all the questions: **10×1=10**

1) **Assertion** : If 30 ml of H_2 combines with 20 ml of O_2 to form water. 50ml of H_2 left after the reaction.
Reason : H_2 is the limiting reagent.
a) Assertion is true, Reason is true; Reason is a correct explanation for Assertion.
b) Assertion is true, Reason is true; Reason is not a correct explanation for Assertion.
c) Assertion is true, Reason is false.
d) Assertion is false, Reason is true.

2) What is the mass of precipitate formed when 50 ml of 8.5% solution of $AgNO_3$ is mixed with 100 ml of 1.865% Potassium Chloride solution?
a) 3.59g b) 7g c) 14g d) 28g

3) If azimuthal quantum number could have value of also (in addition to normal value), then Electronic configuration of Ti(Z = 22) would have been
a) $1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^2$
b) $1s^2, 1p^6, 2s^2, 2p^6, 3s^2, 3d^4$
c) $1s^2, 1p^6, 2s^2, 2p^6, 3s^1, 3d^5$
d) $1s^2, 1p^6, 2s^2, 2p^6, 2d^6$

4) How many electrons in an atom with atomic number 105 can have (n+l) = 8?
a) 30 b) 7 c) 15 d) unpredictable

5) Maximum deviation from ideal gas is expected from
a) $CH_{4(g)}$ b) $NH_{3(g)}$ c) $H_{2(g)}$ d) $N_{2(g)}$

6) At which one of the following temperature and pressure conditions, the deviation of a gas from ideal behaviour is expected to be minimum?
a) 350 K and 3 atm b) 550 K and 1 atm
c) 250 K and 4 atm d) 450 K and 2 atm

7) Standard enthalpy and standard entropy changes for the oxidation of NH_3 at 298K are -382.64 KJmol^{-1} and -145.6 JK^{-1}mol^{-1} respectively standard Gibbs energy change for the same reaction at 298 K is
a) -2221.1 KJ mol^{-1} b) -339.3 KJ mol^{-1}
c) -439.3 KJ mol^{-1} d) -523.2 KJ mol^{-1}

8) The amount of heat exchanged with the surrounding at constant pressure is given by the quantity
a) ΔE b) ΔH c) ΔS d) ΔG

9) The IUPAC name of the compound $CH_3-\underset{\underset{OH}{|}}{CH}-COOH$ is
a) 2-Hydroxy propionic acid b) 2-Hydroxy propanoic acid
c) Propan-2-ol-1-oic acid d) 1-carboxyethanol

10) Lassaigne's test for the detection of nitrogen fails in
a) $H_2N - CO - NH.NH_2.HCl$ b) $NH_2 - NH_2.HCl$
c) $C_6H_5 - NH - NH_2.HCl$ d) $C_6H_5CONH_2$

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Part - II

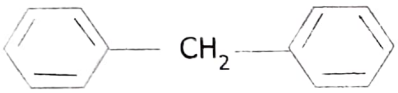
Answer any five questions and Question No. 17 is compulsory: **5×2=10**

11) What do you understand by the term oxidation number?
12) Find the oxidation number of oxygen in (a) KO_2 (b) OF_2.
13) Give the electronic configuration of Mn^{2+} and Cr^{3+}.
14) Describe the Aufbau principle.
15) Distinguish between diffusion and effusion.
16) Give Kelvin statement of Second law of thermodynamics.
17) An element X has the following isotopic composition.
$^{200}X = 90\%$, $^{199}X = 8\%$ and $^{202}X = 2\%$
Find the weighted average atomic mass of the element X is? (closest)

Part - III

Answer any five questions and Question No. 24 is compulsory: **5×3=15**

18) Mass of one atom of an element is 6.645×10^{-23}g. How many moles of element are there in 0.320 Kg?
19) State and explain Pauli exclusion principle.
20) Can a Van der Waals gas with a = 0 be liquefied? Explain.
21) Define Hess's law of constant heat summation.
22) Explain Metamerism with suitable example.
23) Write note on homologous series.
24) The molecular formula of diphenyl methane.



is $C_{13}H_{12}$

How many structural isomers are possible when one of the hydrogen is replaced by a chlorine atom?

Part - IV

Answer all questions: **3×5=15**

25) a) Balance the following equations by oxidation number method.
i) $K_2Cr_2O_7 + KI + H_2SO_4 \rightarrow K_2SO_4 + Cr_2(SO_4)_3 + I_2 + H_2O$
ii) $KMnO_4 + H_2C_2O_4 + H_2SO_4 \rightarrow K_2SO_4 + MnSO_4 + CO_2 + H_2O$

(OR)

b) An atom of an element contains 35 electrons and 45 neutrons. Deduce.
i) the number of protons
ii) the electronic configuration for the element
iii) all the four quantum numbers for the last electron

26) a) Derive the values of critical constants in terms of Van der Waals constants.

(OR)

b) List the characteristics of internal energy.

27) a) Briefly explain geometrical isomerism in alkene by considering 2-butene as an example.

(OR)

b) 0.30g of a substance gives 0.88g of carbon di oxide and 0.54g water. Calculate the percentage of carbon and hydrogen in it.
