25901628 **Reg.No : .....**

Name : .....

MAHATMA GANDHI UNIVERSITY, KOTTAYAM

MGU-UGP (HONOURS) REGULAR/IMPROVEMENT/REAPPEARANCE EXAMINATION APRIL 2026

SECOND SEMESTER

Discipline Specific Core Course (DSC) - MG2DSCCHE100 - FUNDAMENTALS OF CHEMISTRY - II

(2024 ADMISSION ONWARDS)

Duration: 1 Hour 30 Minutes **Maximum Marks: 50**

Remember(K), Understand(U), Apply(A), Analyse(An), Evaluate(E), Create(C), Skill(S), Interest(I) and Appreciation(Ap)

Students should attempt at least one question from each course outcome to enhance their overall outcome attainability.

Part A

Multiple choice questions

Answer all questions

Each question carries **1** marks

1. The best description of a Lewis acid-base reaction is: [U] / [CO1]

   a). A Lewis acid donates a proton to a Lewis base.

   b). A Lewis acid accepts a pair of electrons from a Lewis base.

   c). A Lewis base donates a proton to a Lewis acid.

   d). A Lewis base accepts a pair of electrons from a Lewis acid.

2. Which among the following is an example for a neutral electrophile? [U] / [CO2]

   a). H_2O b). NH_3 c). SO_3 d). ROH

3. Crystalline solids have: [U] / [CO3, CO4]

   a). Irregular arrangement of particles b). Long-range order

c). No definite melting point d). No fixed geometry

4. Kb is the dissociation constant of [K] / [CO1]

a). acid b). Water c). base d). None of these

5. What is the order of reactivity for alkyl halides in an SN2 reaction? [U] / [CO2]

a). 3° > 2° > 1° b). 1° > 2° > 3°

c). 2° > 3° > 1° d). All are equally reactive

6. The SI unit of surface tension is: [K] / [CO3, CO4]

a). N/m b). N/m² c). kg/m d). J/kg

7. How many ml of water is needed to make 100 ml of 0.2M NaOH from 2M solution [A] / [CO1]

a). 10 ml b). 90 ml c). 80 ml d). 75 ml

8. Markovnikov's rule states that in the addition of HX to an alkene, the hydrogen atom attaches to the carbon that: [U] / [CO2]

a). Has more hydrogen atoms

b). Has fewer hydrogen atoms

c). Is more electronegative

d). Forms the most stable carbanion

9. The ideal gas law can be written as [K] / [CO3, CO4]

a). PV = nRT b). P = nRTV

c). P = RT/nV d). P + V = nRT

10. What is the expected pH at the equivalence point in the titration of a strong acid with a strong base? [K] / [CO1]

a). 3 b). 9 c). 13 d). 7

[1x10 = 10]

Part B

Short Answer Questions

Answer any **4** questions

Each question carries **3** marks

11.	Explain the concept of 'oxidation' and 'reduction' in terms of electron transfer.	[U] / [CO1]
12.	Give an account of nucleophiles.	[U] / [CO2]
13.	Why do real gases behave ideally at high temperatures?	[U] / [CO3, CO4]
14.	What are primary and secondary standards in titrimetric analysis? Give an example of each.	[U] / [CO1]
15.	Explain anti-Markovnikov addition with a suitable example.	[U] / [CO2]
16.	What is the main difference between solids, liquids, and gases?	[K] / [CO3, CO4]

[3x4 = 12]

Part C

Short Essay Questions

Answer any **4** questions

Each question carries **7** marks

17.	Describe the principle of Redox titration with a suitable example. ?	[U] / [CO1]
18.	What are polymers? Illustrate addition polymerisation by taking polyethene and PVC as examples.	[A] / [CO2]
19.	Describe the role of hydrogen bonding in determining the boiling and melting points of water. How do intermolecular hydrogen bonds contribute to the unique physical properties of water?	[An] / [CO3, CO4]
20.	Define and discuss any four important concentration units commonly used in chemistry	[U] / [CO1]
21.	Illustrate the complete stepwise mechanism of E1 elimination, using curved-arrow notation. Discuss the role of carbocation stability and how reaction conditions influence the mechanism	[U] / [CO2]
22.	Explain the concept of dipole-dipole interactions. How do these forces arise, and what factors influence their strength? Provide examples of substances where dipole-dipole interactions occur.	[An] / [CO3, CO4]

[7x4 = 28]