

Anjuman Islam Janjira Degree College of Science
Murud-Janjira, Raigad-402401
Affiliated to University of Mumbai
As per NEP 2020

Class: -S.Y.B.Sc GS	Subject: - Major Chemistry – I
Semester:- IV	Course code: - S3MJ5
Exam Event: - Summer 2026 (FH)	Marks: 30
Date: - 05/03/2026	Duration: - 01:00 Hours

N.B:

1. **All** questions are compulsory.
2. **Figures** to the right indicate full marks.
3. Use of log-table/non programmable calculator is allowed.
4. Answer for the same question as far as possible should be written together.



Q. 1 A) Select the correct option and complete the following sentences. (any six)

06

- i) A chemical reaction that takes place in one step is called as
a) simple reaction b) complex reaction c) non-spontaneous reaction
- ii) $2\text{HI} \rightleftharpoons \text{H}_2 + \text{I}_2$ is an example of ----- reaction.
a) consecutive b) reversible c) parallel
- iii) The ratio of product to reactant concentration is called as
a) proportionality constant b) equilibrium constant c) rate constant
- iv) In which of the following cell electrical energy is converted to chemical energy
a) electrolytic cell b) galvanic cell c) Daniel cell
- v) Galvanic cell is a
a) reversible cell b) irreversible cell c) electrolytic cell
- vi) In which of the following electrode consists a metal rod in contact with a solution of its own ions.
a) gas b) metal-amalgam c) metal-metal ion
- vii) Electrochemical series is also called as
a) transition series b) activity series c) standard series
- viii) Phase rule is used to study the effect of pressure, temperature and composition on ---- system.
a) heterogeneous b) homogeneous c) both a and b
- ix) A mixture of two or more gases or vapours is considered as
a) single phase b) two phases c) multiple phases
- x) In water system at triple point the system is
a) bivalent b) trivalent c) non-variant

B) Attempt the following. (any three)

09

- A. Explain steps involved in thermal chain reaction with suitable example.
- B. Discuss reversible reaction with suitable examples.
- C. What is electrochemical cell? Discuss different types of electrochemical cells.
- D. Give advantages and disadvantages of quinhydrone electrode.
- E. Write a note on i) phase and ii) number of components.

Q.2 A) Select the correct option and complete the following sentences. (any six)

06

- i) When the difference in the boiling point of the two liquid is less than 30 K then ----- distillation process called as
a) azeotropic b) fractional c) extractive
- ii) TLC is a separation based on

- a) adsorption b) partition c) absorption
- iii) In paper chromatography, stationary phase is a
a) solid b) liquid c) gas
- iv) If the solvent moves due to capillary action, the method is called ----- development.
a) descending b) ascending c) planar
- v) In the potentiometric titration, the electrode which is reversible to the ions getting titrated is called
a) reference electrode b) indicator electrode c) inert electrode
- vi) ----- is a most commonly used reference electrode.
a) glass electrode b) platinum electrode c) SCE
- vii) ----- is a major drawback of conductometric titration.
a) no use of indicator b) presence of foreign ions c) high cost
- viii) The overall shape of the normal error curve represents ----- of the given set of measurements.
a) uncertainty b) accuracy c) precision
- ix) Conductivity cell consists of -----.
a) two parallel Ag electrodes b) two parallel glass electrodes c) two parallel Pt electrodes
- x) ----- method is used to develop equation of best fitting straight line.
a) Q-test b) variance ratio test c) method of averages

B) Attempt the following. (any three)

09

- A. Explain fractional distillation with neat labelled diagram.
- B. Discuss the separation method electrophoresis with suitable diagram.
- C. What is reference electrode and explain their types.
- D. Write a note on construction and working of combined glass electrode.
- E. Describe Gaussian distribution curve with its salient features.