

B.Sc. Semester - 5 (Remedial) (CBCS) Examination
March/April-2023 (NEW COURSE)
Physical and Analytical Chemistry(Core)

Time: 2:30 Hours

Marks: 70

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate marks.

Q. 1 (a) Answer the following question. (04)

- (1) Derive the equation: $\Delta S_p = 2.303n C_p \log \frac{T_2}{T_1}$.

Q. 1 (b) Answer any two questions out of three. (10)

- (1) Derive the equation: $\Delta S_{mix} = -R \sum n_i \ln X_i$.
- (2) Derive Clausius – Clayperon equation for a different phase in equilibrium.
- (3) Explain physical importance of work function in detail.

Q. 2 (a) Answer the following question. (04)

- (1) Write a note on maximum critical solution temperature and minimum critical solution temperature.

Q. 2 (b) Answer any two questions out of three. (10)

- (1) Discuss in detail: Reversible and Irreversible cell.
- (2) Discuss: Conductometric titration curve for strong acid and strong base.
- (3)
 - (i) Give factors affecting on conductance.
 - (ii) Explain determination of equilibrium constant (K_c) by emf.

Q. 3 (a) Answer the following question. (04)

- (1) Explain spectrophotometric titration when lack of absorbance by product and titrant.

Q. 3 (b) Answer any two questions out of three. (10)

- (1) Explain in detail Fajan's absorption method.
- (2) Discuss neutralisation titration curve of weak acid and strong base, volumetrically.
- (3) Explain: Iodometry titration with two suitable examples.

Q. 4 (a) Answer the following question. (04)

- (1) Discuss about entropy change in reversible process.

Q. 4 (b) Answer any two questions out of three. (10)

- (1) Explain in detail: Carnot Cycle with operations.
- (2) Explain Weston standard cell in detail.
- (3) Write a note on EBT metal ion indicator.

Q. 5 (a) Answer the following question. (04)

- (1) Write a note on primary and secondary standard in volumetric analysis.

Q. 5 (b) Answer any two questions out of three. (10)

- (1) Discuss spectrophotometric estimation when lack of absorbance by product only.
- (2) Discuss the shape of precipitation titration curve of BaCl_2 by K_2SO_4 .
- (3) Derive the equation: $\Delta G^\circ = -RT \ln K$.
