

QP CODE: 19101388



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Reg No :

Name :

B.Sc DEGREE (CBCS) EXAMINATION, MAY 2019

Fourth Semester

Complementary Course - CH4CMT05 - CHEMISTRY - PHYSICAL CHEMISTRY - II

(Common for B.Sc Geology Model I, B.Sc Physics Model I, B.Sc Geology and Water Management Model III,)

2017 Admission onwards

26FE5EBB

Maximum Marks: 60

Time: 3 Hours

Part A

Answer any **ten** questions.

Each question carries **1** mark.

1. What are overtones in IR spectra?
2. What is meant by rigid rotator?
3. Define nano structured material?
4. What are reduction methods for nanoparticle synthesis?
5. Give any three factor that influence the rate of a reaction.
6. What are pseudo first order reactions ?
7. Define activation energy of a reaction.
8. What is fluorescence?
9. How many grams of silver are deposited by the electrolysis of silver nitrate solution with a current of 0.5 A for 40 min.?
(At.wt.of Ag = 108)
10. What is the shape of the curve obtained when a strong acid is titrated against a weak base conductometrically?
11. Define galvanic cell. Give an example.
12. Give the oxidation half cell reaction of hydrogen oxygen fuel cell.

(10×1=10)

Part B

Answer any **six** questions.

Each question carries **5** marks.

13. What is molar extinction coefficient? Give its importance.
14. Define carbon nanotube? What are the types of carbon nanotubes?
15. Deduce an equation for finding $t_{1/2}$ of a first order reaction.





16. An aqueous solution of an organic substance absorbs 25% of the incident radiation in a path length of 3 cm. The molar absorption coefficient of the substance is $1.2 \text{ L mol}^{-1} \text{ cm}^{-1}$. Calculate the concentration of the solution.
17. Explain photochemical equivalence and quantum efficiency.
18. What is meant by degree of dissociation of an electrolyte? If the molar conductance at infinite dilution for an electrolyte is $400 \text{ S cm}^2 \text{ mol}^{-1}$ and the molar conductance of a 0.02 M solution of it at the same temperature is $120 \text{ S cm}^2 \text{ mol}^{-1}$, calculate its degree of dissociation in 0.02M solution.
19. What is meant by molar conductivity at infinite dilution? How is it determined for a strong electrolyte?
20. Sketch the calomel electrode and give the electrode reaction.
21. Derive the Nernst equation for the emf of a cell.

(6×5=30)

Part C

Answer any **two** questions.

Each question carries **10** marks.

22. Write a notes on the interaction of matter with radiation
23. Discuss Bottom up approach of synthesis of Nanomaterial.
24. Explain activated complex theory.
25. Derive an expression connecting the emf of a galvanic cell to the equilibrium constant of the cell reaction.

(2×10=20)

