



QP CODE: 24018295



24018295

Reg No :

Name :

M Sc DEGREE (CSS) EXAMINATION, APRIL 2024

Fourth Semester

M Sc CHEMISTRY

Elective - CH800403 - ADVANCED PHYSICAL CHEMISTRY

2019 ADMISSION ONWARDS

E4D120DB

Time: 3 Hours

Weightage: 30

Part A (Short Answer Questions)

*Answer any **eight** questions.*

*Weight **1** each.*

1. What is meant by bioluminescence? Give an example.
2. Distinguish between E-type and P-type delayed fluorescence.
3. List out the different light sources and its features in fluorescent spectrometer.
4. Write a short note on neutron diffraction.
5. Explain the terms activity and activity coefficient.
6. Discuss the significance of Pourbaix diagrams.
7. What are the factors influencing oxygen over potential?
8. Write a short note on DME.
9. Discuss about the oxidation reduction titrations using coulometry.
10. ATP possess high-energy bonds. Explain.

(8×1=8 weightage)

Part B (Short Essay/Problems)

*Answer any **six** questions.*

*Weight **2** each.*

11. Discuss the salient features of amorphous silicon solar cells.
12. How is fluorescence sensing achieved by collisional quenching? Explain.



13. Briefly discuss the principle and applications of AAS.
14. Compare Helmholtz and Guoy –Chapman models for double layer.
15. Briefly describe the structure and functioning of solid oxide fuel cells.
16. Describe about the quantitative analysis of a multi component system using anodic stripping voltametry.
17. What are the advantage and limitations of dropping mercury electrode?
18. In an experiment to measure quantum efficiency of a photochemical reaction, the absorbing substance was exposed to 490nm light from a 100W source for 45 minutes. The intensity of transmitted light was 40% of the intensity of the incident light. As a result of irradiation, 0.344 mol of the absorbing substance decomposed. Determine the quantum efficiency.

(6×2=12 weightage)

Part C (Essay Type Questions)

*Answer any **two** questions.*

Weight 5 each.

19. Elaborate on the photochemistry of the environment and green house effect.
20. Explain in detail the principle, instrumentation and applications of FES.
21. Derive DHO equation. What are the main drawbacks of DHO?
22. Explain the principle, instrumentaion and application of amperometri titrations.

(2×5=10 weightage)