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Name : .....

Reg. No: .....

**FOURTH SEMESTER B.TECH DEGREE EXAMINATION, APRIL 2013**

**CH 09 404 – PHYSICAL AND ANALYTICAL CHEMISTRY  
(2009 Admission Scheme)**

**Time : Three Hours**

**Maximum : 70 Marks**

**PART – A**

**(Answer all questions)**

1. Differentiate between physisorption and chemisorption.
2. Define overvoltage and half wave potential.
3. What is retention factor in chromatography?
4. What is Beer Lambertz law?
5. What is Gold number?

(5 x 2 = 10 Marks)

**PART – B**

**(Answer any four questions)**

6. Explain the mechanism of acid, base catalysis with suitable examples.
7. Discuss the role of IR spectroscopy in the structural determination of organic substances.
8. Write on the principle and applications of paper chromatography.
9. Give a cumulative account on the formation and depletion of ozone layer.
10. What is a catalyst? Explain the catalytic activity in hydrogenation, cracking and reforming.
11. Illustrate the different types of conductometric titrations.

(4 x 5 = 20 Marks)

**PART – C**

**(Answer all questions)**

12. a. What is electrical double layer? How are colloids purified by ultrafiltration and dialysis.  
Or  
b. Discuss the optical and electrical properties of colloids.
13. a. With a neat block diagram, explain the construction, principle and applications of UV-VIS spectroscopy.  
Or  
b. Give the instrumentation details and applications of mass spectrometry.
14. a. Discuss the chemical toxicity identification through chromatography.  
Or  
b. Enumerate the features of thermogravimetric analysis.
15. a. Give an account on the photochemical reactions in nature. Write a short note on fluorescence and phosphorescence.  
Or  
b. Explain the role of sonochemical reactions in the synthesis of organometallics.

(4 x 10 = 40 Marks)

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