TDC (CBCS) Odd Semester Exam., 2021
held in March, 2022

CHEMISTRY

(5th Semester)

Course No. : CHMDSE–501

(Analytical Methods in Chemistry)

Full Marks : 50
Pass Marks : 20

Time : 3 hours

The figures in the margin indicate full marks for the questions

SECTION—A

Answer any *fifteen* from the following : 1×15=15

1. Define accuracy.

2. What is meant by sampling?

3. What do you mean by the term 'precision'?

4. What is relative error?

5. State Laporte selection rule.

6. What is meant by monochromator?

7. State Beer's law.

8. Mention a few sources of UV-light.

9. What is meant by atomization?

10. What do you mean by chemical interference?

11. What is background correction?

12. What is nebulizer?

13. What is TGA?

14. Define pH.

15. What is potentiometric titration?

16. Mention one use of TGA.

17. Define chromatography.

18. What is HPLC?

19. Define elution.

20. What is adsorbent?

SECTION—B

Answer any *five* from the following : 2×5=10

21. What is *Q*-test?

22. In an experiment, the concentration of zinc in a given sample was found to be 20·17 ppm. Taking the accepted value as 20·00 ppm, calculate the absolute error as well as the relative error.

23. Write Lambert's law and Beer-Lambert law along with mathematical expression.

24. What is meant by sampling technique in IR spectroscopy? What are different sources of IR?

25. Distinguish between flame emission and atomic absorption spectrometry.

26. Discuss the principle of flame emission spectroscopy.

27. Discuss the principle of pH metric titration.

28. How will you determine the equivalence point conductometric and potentiometric titration?

29. What is solvent extraction? Define chelation.

30. Explain briefly thin-layer chromatography including its principle.

SECTION—C

Answer any *five* from the following : 5×5=25

31. Define errors. Discuss various types of errors citing suitable examples. 1+4=5

32. What is *t*-test? In an analysis of an ore, the percentages of an element were found to be 65·55, 65·90, 67·85, 66·85, 69·90 and 65·00. The value 69·90 appears to be suspect. Ascertain whether this should be retained or rejected.The *Q* critical, for six observations at 90% confidence level, is 0·56. 2+3=5

33. Discuss the basic principle and instrumentation of IR spectroscopy.

34. What is the difference between single-beam and double-beam instrument? Explain the Job's method for the determination of composition of coloured metal complexes. 2+3=5

35. Discuss various sources of interferences in AAS. Explain the removal of such interferences.

36. Discuss the instrumentation of AAS. Mention some uses of AAS with respect to the detection of trace elements of metal ions from water sample. 2+3=5

37. Discuss the instrumentation and principle involved in TGA.

38. Discuss the basic principle of pH metric titration of—

(a) strong acid vs. strong base;

(b) weak acid vs. strong base;

(c) weak acid vs. weak base

with graphs.

39. Discuss briefly adsorption, partition and ion-exchange chromatography. What do you mean by batch, counter current and continuous extraction?

40. Explain the mechanism involved in HPLC. What is meant by development of chromatogram? 3+2=5

★ ★ ★

TDC (CBCS) Odd Semester Exam., 2021
held in March, 2022

CHEMISTRY

(5th Semester)

Course No. : CHMSEC-501T

(Cosmetics and Perfumes)

Full Marks : 50
Pass Marks : 20

Time : 3 hours

The figures in the margin indicate full marks for the questions

SECTION—A

Answer any *fifteen* questions as directed : 1×15=15

1. What are the two different types of hair colour?

2. Name the pigment present in hair.

3. What is the basic function of hair spray?

4. What is antiperspirant?

5. What is SPF?

6. Does shaving cream contain alcohol?

7. What is cold cream used for?

8. Why is vanishing cream so called?

9. Can vanishing cream lighten skin?

10. Name the base present in shaving cream.

11. What is the use of artificial flavour?

12. Mention the basic chemical of artificial flavour.

13. Draw the molecular structure of geraniol.

14. Give one example of essential oil.

15. Where from sandalwood oil is prepared?

16. What is the basic function of enamels?

17. What is the disadvantage of using hair remover?

18. Give one example of hair remover cream.

19. Mention one important ingredient of talcum powder.

20. What is eucalyptus oil used for?

21. What is muscone?

22. What is the basic reason of using shampoo?

23. Mention the solvent used in nail enamels.

24. Name the oxidising agent used in bleaching cream.

25. What is the basic component of nail polish remover?

26. Which face cream is best for dry skin?

27. Acetone is used in nail polish remover.

(State True or False)

28. Which of the following is not used in hair dye?

Hydrogen peroxide, Ammonia, Ethyl alcohol

29. The pH of hair dye is _____.

(Fill in the blank)

30. What is the full form of PEG?

SECTION—B

Answer any *five* from the following questions : 2×5=10

31. What do you mean by SPF-15?

32. What is semi-permanent hair dye?

33. What are the importances of essential oil?

34. Outline the composition of rose oil.

35. What is the difference between cold cream and vanishing cream?

36. Mention the basic formulation of talcum powder.

37. What are the basic ingredients of shampoo?

38. What is the role of solvent in perfumes?

39. How can you prepare hair remover in home?

40. What is the primary function of vanishing cream?

SECTION—C

Answer any *five* from the following questions : 5×5=25

41. Discuss in detail the classification of hair dye.

42. What is the role of chalk in face powder?

43. What is flavour? Describe briefly the role of flavour in cosmetic industry.

44. Taking suitable example, describe suitable method for extraction of essential oil from plant.

45. Describe the method of preparation of enamels.

46. What is rouge?

47. Describe in brief the method of synthesis of hair remover.

48. Describe the method of preparation of face cream.

49. Write the method of preparation of nail polish.

50. Describe advantages and disadvantages of use of cosmetics.

★★★