18U613 (Pages: 2) Name: ……..…….

Reg. No…….……

SIXTH SEMESTER B.Sc. DEGREE EXAMINATION, APRIL 2021

(CUCBCSS-UG)

(Regular/Supplementary/Improvement)

CC15U CHE6 B12 - ADVANCED AND APPLIED CHEMISTRY

(Chemistry - Core Course)

(2015 Admission onwards)

Time: Three Hours Maximum: 80 Marks

Section A (One word)

Answer ***all*** questions. Each question carries 1 mark.

1. Give the structure of BHC.
2. Name the major ingredient used as detergent in toothpaste.
3. Which is the main ore used in the sulphate method of TiO_2 preparation?
4. An example for Rocket propellant is ----------.
5. What does FACT stand for?
6. Give an example of an Antacid.
7. What is Tacticity?
8. What do you mean by global minimum in computational chemistry?
9. Give an example for software which is used in DFT.
10. Ketoconazole or selenium sulphide present in shampoo act as ----------.

(10 × 1 = 10 Marks)

Section B (Short Answers)

Answer any ***ten*** questions. Each question carries 2 marks.

11. What happens to the electrical properties when the the particle size of a material approaches to the nanoscale ranges?
12. Quantum dots are examples of zero dimensional nanomaterials. Explain.
13. What are the major uses of titanium dioxide?
14. What are Analgesics? Give an example.
15. Write a short note on graphene.
16. What are the advantages of microwave assisted organic synthesis?
17. What is Zeigler-Natta Catalyst? Name a polymerization where it is used as a catalyst.
18. Name two commonly used food preservatives.
19. What is the basic functional use of pasteurization?
20. What are the major components present in Potash fertilizer?

21. What do you mean by sunscreen protection factor (SPF)?
22. Explain the primary and secondary structure of proteins.

(10 × 2 = 20 Marks)

Section C (Paragraphs)

Answer any ***five*** questions. Each question carries 6 marks.

23. Discuss briefly about the optical properties of nanomaterials.
24. Distinguish between the "bottom-up" and "top-down" methods of nanoscale synthesis of materials.
25. Write briefly on Fullerenes with examples.
26. Explain the procedure adopted for manufacturing chlorine in TCC Ltd.
27. Write a short note on addition polymers. Name any two addition polymers.
28. Which are the main types of chemical rocket propellants? Give examples.
29. Briefly explain with examples on refractory materials.
30. How is Portland cement manufactured?

(5 × 6 = 30 Marks)

Section D (Essay)

Answer any ***two*** questions. Each question carries 10 marks.

31. (a) Discuss briefly the common food adulterants. How are they identified?
    (b) How soap is functionally and chemically different from detergent?
32. (a) What are the common methods of preservation of food?
    (b) Write short note on : (i) Endosulfan (ii) Nomex
33. (a) Explain any five principles of Green Chemistry.
    (b) Discuss the importance and advantages of Biodegradable polymers.
34. (a) Explain insecticides, herbicides, rodenticides and fungicides with suitable examples.
    (b) Write note on : (i) Plastic identification codes (ii) Programming Languages.

(2 × 10 = 20 Marks)

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