**17U613** (Pages: 2) Name: ……..…….

Reg. No……..……

**SIXTH SEMESTER B.Sc. DEGREE EXAMINATION, APRIL 2020**

(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. ---------- is an example of green solvents.
2. Give any one example of a one dimensional nanoparticle
3. ---------- is the hybridization of carbon atoms in grapheme.
4. ---------- is an example of an operating system
5. Give an example of an artificial sweetener.
6. Give any one example of skin bleaching agent.
7. The main hydrocarbon content in LPG is ----------
8. The pigment used for the manufacture of titanium dioxide by Travancore Titanium Products Ltd. is ----------
9. Draw the structure of PHBV.
10. ---------- is used for the manufacturing of bullet proof materials

**(10 x 1 = 10 Marks)**

**Section B** (Short Answers Type)

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

11. What is the significance of silica nanoparticles?
12. Briefly explain any one method of synthesis of quantum dots.
13. What is meant by atom economy in green chemistry?
14. Differentiate addition polymers and condensation polymers with examples.
15. Explain briefly the preparation method for ammonium sulphate in Fertilizers and Chemicals Travancore Ltd (FACT)
16. What is meant by annealing of glass?
17. Define Cetane number. What is its significance?
18. What is meant by prodrug? Give one example.
19. Define TFM. What is the significance of TFM value in the quality parameters of a soap?
20. Draw the structure of DDT and endosulfan.

21. What are the essential ingredients of a perfume?
22. What is meant by rodenticides? Give any two examples.

**(10 x 2 = 20 Marks)**

**Section C** (Paragraph Type)

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

23. Explain the classification of one dimensional, two dimensional and three dimensional nanoparticles with examples.
24. Explain the microwave and ultrasound assisted green synthesis in Diels-alder reaction and Williamson's ether synthesis.
25. Discuss the monomers structural formula and applications of a) Teflon b) Poly-acetylene and d) Neoprene.
26. Explain the raw materials and the chemistry involved in the cement manufacturing in Malabar Cements Ltd.
27. What are the main ingredients, functions and their health effects of anti-dandruff and anti-lice shampoos?
28. Discuss Common food adulterants and their identification in a) Milk, b) Vegetable oils,
29. Compare molecular mechanics and *ab initio* methods molecular in computational chemistry calculations
30. Explain the composition and health effects of chocolates and soft drinks.

**(5 x 6 = 30 Marks)**

**Section D** (Essay Type)

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

31. State and explain the twelve principles of green chemistry.
32. a) explain the synthesis and applications of zinc oxide and iron oxide nano-particles (5 marks)

    b) Explain various harmful effects of modern food habits. (5 marks)
33. a) What is meant by rocket propellant? Explain its classification with examples. (5 Marks)

    b) Discuss the advantages of Zeigler Natta polymerization. (5 Marks)
34. a) Explain the structure and applications of BHA, BHT and Ajinomoto. (5 marks)

    b) Discuss the composition and uses of nitrogenous, phosphatic and potash fertilizers (5 marks)

**(2 x 10 = 20 Marks)**

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