

18P408

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Name.....

Reg. No.....

FOURTH SEMESTER M.Sc. DEGREE EXAMINATION, APRIL 2020

(CUCSS - PG)

(Regular/Improvement/Supplementary)

CC15P CH4 C12 – ADVANCED TOPICS IN CHEMISTRY

(Chemistry)

(2015 Admission onwards)

Time: Three Hours

Maximum: 36 Weightage

Section A

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

1. What is meant by deconvolution in combinatorial synthesis?
2. Explain the term nanofiltration using suitable example.
3. What are the factors governing drug design?
4. What is meant by “*ab initio method*” in computational chemistry?
5. What are drugs and prodrugs?
6. What is meant by combinatorial library?
7. Explain the nomenclature of a basis set.
8. What is a co-receptor?
9. What is meant by ELISA test?
10. Write a note on supramolecular devices.
11. What are biosensors and chemosensors?
12. Explain the sol gel method in heterogeneous catalysis.

(12 x 1 = 12 Weightage)

Section B

Answer any *eight* questions. Each question carries 2 weightage.

13. Describe the different methods to find out the catalyst pore size and surface area.
14. Explain Furkas mix and split method in combinatorial synthesis.
15. Briefly discuss the methods involved in the synthesis of nanostructures.
16. What are the applications of phase transfer catalysis?
17. What is a Z-matrix? Construct the Z-matrix for NH₃ and formaldehyde.
18. Explain the principal of a) Solar cooker b) Solar water heater
19. Give the principle and applications of dye sensitized solar cells (DSSC).
20. Write a note on Hartree-Fock SCF method.
21. What is meant by Fisher-Tropsch process?

22. Discuss in detail the Haughton`s tea bag procedure.
23. Give an outline for the general principles involved in antigen-antibody interaction.
24. How do you perform green aldol condensation and green Cannizarro reaction?
Compare these with the classical reactions.

(8 x 2 = 16 Weightage)

Section C

Answer any *two* questions. Each question carries 4 weightage.

25. What are the 12 principles that formed the basis of green chemistry?
26. Write a note on
(a) Hapten inhibition test (b) Supramolecular photochemistry.
27. (a) Discuss the use of solar energy as non-conventional energy source.
(b) Write an account on the principle and advantages of photovoltaic generation.
28. Illustrate briefly the structure activity relationship (SAR) and its application in drug design.

(2 x 4 = 8 Weightage)
