MANIPAL UNIVERSITY

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Reg. No.										

DEPARTMENT OF SCIENCES, M.Sc (Chemistry)
IV SEMESTER END SEMESTER EXAMINATIONS, APRIL 2017

SUBJECT: Applied Organic Chemistry [CHM-706]

(REVISED CREDIT SYSTEM)

Time: 3 Hours | Date:24-04-2017 | MAX. MARKS: 50

Note: (i) **Answer any five full questions.**
(ii) Write diagrams, equations and examples wherever necessary.

1A. i) What is the advantage of doping an organic semiconductor? How is p-type doping achieved in these materials?
ii) Explain the working of an OLED. Write two advantages of OLED over LCD.

1B. Differentiate of the following:
i) Acid value and iodine number of an oil/fat.
ii) Soaps and Syndets.

1C. Write the mechanism involved in the Kolbe's electrolysis of sodium acetate.

(4+4+2)

2A. i) Explain how the fats become rancid. How can it be avoided?
ii) Explain the role of emulsifier and emollient in cosmetics. How does the surfactant remove dirt from hair?

2B. i) Mention any four techniques to grow organic thin films. Explain the vacuum evaporation technique of growing organic thin films.
ii) Differentiate direct and indirect oxidation reactions. Write the oxidation reaction of alkylbenzene.

2C. How does cholesteric liquid crystal respond to electric field and light during the working of numeric liquid crystal display.

(4+4+2)

3A. i) What is petroleum refining? Name two petrochemicals each obtained from gasoline and naptha.
ii) Why do oils have lower melting points than fats? What is a drying oil?

3B. i) Mention any three desirable properties of calamitic liquid crystals required for display applications. How are thermotropic liquid crystals characterized?

ii) How is linseed oil extracted? Which are the fatty acids present in linseed oil?

3C. i) How is a foldable OLED made?

ii) Mention the types of organic materials used in organic semiconductors with an example each.

(4+4+2)

4A. i)What is glass transition temperature? Discuss the factors affecting the glass transition temperature.

ii) Differentiate the following:

a. Addition and condensation polymers

b. Bulk and suspension polymerization techniques

4B. Describe the method of preparation, properties and uses of the followings:

i) Resole ii) Nylon 6,6

4C. Give reason of the following:

i) Thermosetting plastics are not reshaped or reused.

ii) Bakelite is hard and brittle; whereas PVC is soft and flexible.

(4+4+2)

5A. Describe the process of extrusion moulding with a neat sketch. How does it compare with injection moulding? Write two applications of each.

5B. Give the preparation and use of the following dye.

i)Magenta ii) Crystal Violet

5C. What is meant by diazotization? Write the synthetic route of Bismark Brown dye.

(4+4+2)

6A. Describe the determination of molecular weight of polymer by ultracentrifugation and light scattering method.

6B. i) What is polymer degradation? Explain the mechanical degradation of polymer with an example each.

ii)Explain the free radical polymerization mechanism of a vinyl chloride.

6C. Write the mechanism involved in the preparation of methyl orange

(4+4+2)

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