

<b>F-2122</b>
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<b>Sub. Code</b>
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<b>7PCH2C1</b>
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**M.Phil. DEGREE EXAMINATION, APRIL 2019**

**Second Semester**

**Chemistry**

**TOPIC OF RESEARCH**

**(CBCS – 2017 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**SECTION A**

(5 × 5 = 25)

Answer any **FIVE** questions.

1. Compare and contrast the ultrafiltration and nano filtration.
2. Write the properties and applications of synthetic biodegradable polymers.
3. With suitable examples, differential between cathodic and anodic protection of electrochemical corrosion.
4. Explain the Pourbaix diagram for iron – water system.
5. How is dissolved oxygen estimated in water sample?
6. Explain the principles of coagulation and sedimentation methods of water treatment.
7. Derive Gibbs adsorption isotherm.
8. Explain the different activation processes of a carbon adsorbent.

**SECTION B**

(5 × 10 = 50)

Answer **all** questions, choosing either (a) or (b).

9. (a) Discuss the principles, techniques and applications of reverse osmosis and micro – filtration.

Or

- (b) Explain the principles, techniques and uses of metal, ceramic and liquid membranes.

10. (a) Discuss the characteristics and applications of liquid crystalline polymers and polymer alloys.

Or

- (b) Explain the synthesis, electrochemistry and applications of conducting polymers.

11. (a) Explain the following:

- (i) Passivity
- (ii) Evans diagram

Or

- (b) How is corrosion rate measured by DC and AC methods? Explain.

12. (a) How are chlorine and alkalinity in water samples estimated?

Or

- (b) (i) What are the characteristics of municipal water?
- (ii) Describe the various stages involved in the purification of drinking water. (4 + 6)

13. (a) (i) Discuss the BET theory of adsorption.  
(ii) How are copper and lead removed from contaminated water by adsorption?

Or

- (b) Explain the environmental and medical applications of activated carbon.
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