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63/2 (SEM-2) CHM 206 (OP 1,3)

2022

CHEMISTRY

(Theory Paper)

Paper Code : CHM 206 (OP1)

(Renewable Energy)

Full Marks – 50

Time – Two hours

The figures in the margin indicate full marks for the questions.

Answer the following questions (any *ten*) : 5×10=50

1. Discuss about the factors causing energy crisis in India. 5

2. What is sustainable energy ? How sustainable is renewable energy ? 2+3=5

3. Explain geothermal energy. Where is geothermal found ? 4+1=5

4. Discuss about the environmental impact of geothermal energy. 5

5. Draw a schematic diagram of hydroelectric power generation. Write the advantages and disadvantages about hydroelectric energy. 2+3=5

6. Write the methods for hydroelectric power generation. Discuss briefly. 5

7. Discuss the components present in wind turbine system. Compare the differences between horizontal axis wind turbine and vertical axis wind turbine. 3+2=5

8. Give a brief description about wind creation. 5

9. Describe the various applications of solar technologies. 5

10. State the aims that should be achieved in order for solar energy to be economically feasible. 5

11. With regard to solar and infrared radiation, provide a brief description of the difference in reaction of these two forms of energy with atmospheric gases. 5

12. Will renewable energy sources stop global warming ? 5

13. Obtain the flowchart of various routes for producing bioenergy. 5

14. Mention two bioenergy conversion technologies. Describe the pyrolysis method of converting biomass into charcoal. 2+3=5

15. Write the principle underlying anaerobic digestion. Mention the factors affecting anaerobic digestion. 3+2=5

16. How biomass gets its energy ? Explain briefly. 5

17. Draw the flow diagram for the production of bioethanol by fermentation process. 5

(Theory Paper)

Paper Code : CHM 206 (OP3)

(Polymer and Environment)

Full Marks – 50

Time – Two hours

The figures in the margin indicate full marks for the questions.

1. Choose the correct answer : 1×5=5

(i) Which of the following is a biodegradable polymer ?

(a) Polypropylne (b) Nylon 6

(c) Poly (lactic acid) (c) None of these

(ii) The name of the plastic used in water and drinks bottles, as well as packaging for cooking oil is

(a) PET (b) HDPE

(c) PVC (d) LDPE

(iii) Which of the following is not an example of a natural biodegradable polymer ?

(a) Collagen (b) Polyvinyl alcohol

(c) Lignin (d) Natural rubber

(iv) Synthetic polymers are sometimes referred as

(a) Ceramics (b) Alloys

(c) Plastics (d) Jelly

(v) Which of the following is first synthetic plastic ?

(a) PP (b) PVC

(c) Bakelite (d) Nylon

2. Answer the following questions : 2×5=10

(a) What are the environmental pollution caused by synthetic polymers ?

(b) What are the essential features of biodegradation ?

(c) What do you mean by biodegradable polymer ? Give two examples.

(d) Write some applications of recycled polymer.

(e) Differentiate between thermoset and thermoplastic polymers.

3. Answer the following questions (any *five*) : 5×5=25

(a) Discuss the effect of polymeric waste on the environment.

(b) What do you mean by recycling of polymer? Explain Feedstock or chemical recycling.

(c) Write short notes on advantages and disadvantages of synthetic fibres.

(d) What is polymer degradation ? What are the two broad classes of polymer degradation ? Explain with example.

(e) What are major requirements for a biodegradable polymer ? Justify your answer.

(f) Discuss the advantages and disadvantages of biodegradable polymers.

(g) Write short notes on applications of recycled polymers.

4. Answer the following questions (any *one*) : 10×1=10

(a) (i) Write the reactions involved in the preparation of the following biodegradable polymers. 6

Mention the names of the monomers required for the processes. (any *three*)

PHBV, PGA, PLA, PCL, Nylon-2 Nylon-6.

(ii) Write some uses of biodegradable polymer. 4

(b) What do you mean by Plastic Identification Code ? Draw the different codes available. Discuss about the seven codes and write the applications of plastics under these codes. 1+3+6=10