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6 SEM TDC DSE CHM (CBCS) 2 (H)

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(May/June)

CHEMISTRY

(Discipline Specific Elective)

(For Honours)

Paper : DSE-6.2

(Industrial Chemicals and Environment)

Full Marks : 53

Pass Marks : 21

Time : 3 hours

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

1. Choose the correct answer from the following : 1×6=6

(a) The most powerful eye irritant present in the smog is

(i) NO

(ii) O₃

(iii) PAN

(iv) SO₂

(2)

- (b) Global warming is the effect of
- (i) water pollution
 - (ii) soil pollution
 - (iii) air pollution
 - (iv) radiation pollution
- (c) Water samples with BOD values of 4 ppm and 18 ppm, respectively, are
- (i) clean and highly polluted
 - (ii) highly polluted and highly polluted
 - (iii) highly polluted and clear
 - (iv) clear and clear
- (d) The major contributor of carbon monoxide is
- (i) stationary fuel combustion
 - (ii) industrial process
 - (iii) motor vehicle
 - (iv) plastic wastage

(3)

- (e) What does OTEC stand for?
- (i) Ocean Thermal Energy Cultivation
 - (ii) Ocean Thermal Energy Conservation
 - (iii) Ocean Techno Energy Conservation
 - (iv) Ocean Thermal Energy Consumption
- (f) The layer of atmosphere which is characterised by extreme low moisture and presence of ozone layer is
- (i) troposphere
 - (ii) thermosphere
 - (iii) mesosphere
 - (iv) stratosphere
2. Answer any six questions from the following : 2×6=12
- (a) Write two uses and two hazards caused by potassium permanganate.
 - (b) Briefly discuss about the sterilization of water by UV rays.
 - (c) What is ozone layer depletion? Write any two effects of it.

(4)

- (d) Explain how helium is produced from natural gas.
- (e) What is dechlorination? Explain briefly.
- (f) Discuss briefly particulate matter pollution.
- (g) Write a short note on 'syngas'.

UNIT—I

3. Answer any *two* questions from the following : $3\frac{1}{2} \times 2 = 7$

- (a) Describe any one method of production of sulphur dioxide. How is sulphur dioxide purified? Write one use of it. $2 + 1 + \frac{1}{2} = 3\frac{1}{2}$
- (b) Describe how hydrogen peroxide is prepared by electrolytic method. Write two uses of it. Mention one health hazard of hydrogen peroxide. $2 + 1 + \frac{1}{2} = 3\frac{1}{2}$
- (c) Describe the method of preparation of bleaching powder in industry. Mention some uses of bleaching powder. $2\frac{1}{2} + 1 = 3\frac{1}{2}$

(5)

UNIT—II

4. Answer any *one* question from the following : 4

- (a) What are ultrapure metals? Describe the extraction process of ultrapure silicon.
- (b) What is electrolytic reduction? Describe briefly aluminothermite reduction.

UNIT—III

5. Answer any *four* questions from the following : $4 \times 4 = 16$

- (a) What is an ecosystem? Describe nitrogen cycle. $1 + 3 = 4$
- (b) What are primary and secondary air pollutants? Give one example of each of the pollutants. $(1 + 1) + (1 + 1) = 4$
- (c) What is ecological pyramid? Describe briefly about the three components of an ecological pyramid. $1 + 3 = 4$

(6)

(d) Write short notes on any *two* of the following : $2 \times 2 = 4$

(i) Global warming

(ii) Characteristics of potable water

(iii) Ecological efficiency

(e) What is sewage disposal? Describe any two sewage disposal methods briefly. $1 + 3 = 4$

(f) Describe briefly ion-exchange method and chlorination method for purification of water. $2 + 2 = 4$

UNIT—IV

6. Answer any *one* question from the following : 4

(a) Explain why coal is called conventional non-renewable sources of energy. What are the advantages and disadvantages of solid coal? $2 + 2 = 4$

(b) What is nuclear pollution? Discuss the effects of radiation on human health. $2 + 2 = 4$

(7)

UNIT—V

7. Answer any *one* question from the following : 4

(a) What is a biocatalyst? Write the examples of two biocatalysts used in industry. Discuss the advantages of biocatalysts over conventional catalysts. $1 + 1 + 2 = 4$

(b) Explain how biocatalysis is a green process. 4
