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SEAT No. \_\_\_\_\_

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SARDAR PATEL UNIVERSITY

M. Sc 4<sup>th</sup> Semester (Surface Coating Technology) (CBCS) Examination

Tuesday, 26<sup>th</sup> March, 2019

PS04ESCT22: Environmental Management

Time: 2:00 pm to 5:00 pm

Marks: 70

N.B. 1) Marks allotted to the question are on its RHS

2) Illustrate your answer whereas necessary with the help of neat sketches and chemical equation

Q.1 Choose the correct Answer from the Followings.

[08]

- Green Chemistry is a tool for \_\_\_\_\_.  
a. Benign Chemistry    b. Sustainability    c. Applied Chemistry    d. Clean Chemistry
- In the case where carbon dioxide is used as a carbon-source building block, if the CO<sub>2</sub> were made from burning fossil fuels it would be considered as \_\_\_\_\_.  
a. depleting    b. renewable    c. both a & b    d. none of these
- Which of the following is NOT the principle of green chemistry?  
a. Maximizing atom economy    b. Increasing by-products  
c. Designing degradable chemical products    d. Using catalysts
- \_\_\_\_\_ is an environmentally benign solvent used in paint industry.  
a. Ethyl Lactate    b. MEK    c. Toluene    d. Xylene
- Which of the following reaction consider as 100 % atom economical?  
a. Addition    b. Substitution    c. Elimination    d. None of these
- The presence of which of the following gases in air checks the UV light from sunlight?  
a. SO<sub>2</sub>    b. CO<sub>2</sub>    c. NO    d. O<sub>3</sub>
- Acid rain caused due to \_\_\_\_\_.  
a. Ozone and dust    b. CO<sub>2</sub> and CO    c. SO<sub>3</sub> and CO    d. SO<sub>2</sub> and NO<sub>2</sub>
- BOD/COD ratio always be \_\_\_\_\_.  
a. equal to 1    b. more than 1    c. less than 1    d. none of these

Q.2 Answer any seven of the Followings:

[14]

- Define Green Chemistry and write its benefit.
- How atom economy is different from yield?
- What is a renewable and depleting feedstock? Give its example.
- What is supercritical fluid? Write advantages of using it as a solvent.
- Define solid waste and classify it.
- Enlist component of EMS.
- Define EMS according to ISO 14001 standards.
- Write environmental benefit of using reduce, reuse and recycle method for solid waste management
- Define air pollution and enlist major air pollutants.

①

(P.T.O)

**Q.3 (a)** Write a note on principles of Green Chemistry. [06]

**(b)** Describe in detail about the tools of green chemistry. [06]

**OR**

**(b)** Write a note on Green Solvent. [06]

**Q.4 (a)** Why should chemist pursue the goals of Green Chemistry? [06]

**(b)** Explain in detail real-time, in-process analysis beneficial to green chemistry. [06]

**OR**

**(b)** "Energy requirements should be recognized for their environmental and economic impacts and should be minimized". Explain. [06]

**Q.5 (a)** Explain in detail different air pollution control methods in detail. [06]

**(b)** Write a note on thermal treatment of solid waste management. [06]

**OR**

**(b)** Write a note on BOD and COD. [06]

**Q.6 (a)** Write advantages and disadvantages of ISO 14001 certification. [06]

**(b)** Discuss about waste minimization option for Paint manufacturer. [06]

**OR**

**(b)** Explain in brief drivers of EMS. [06]

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