

**B.SC. CHEMISTRY
FIFTH SEMESTER
INDUSTRIAL CHEMICALS & ENVIRONMENT
BSC – 507B [SPECIAL REPEAT]
[USE OMR FOR OBJECTIVE PART]**

**SET
'A'**

Duration: 3 hrs.

Full Marks: 70

Time: 30 min.

(Objective)

Marks: 20

Choose the correct answer from the following:

1×20=20

- Which one of the following is hazardous air pollutants
a. Oxides of Carbon, CO, CO₂
b. Oxides of Nitrogen, NO, NO₂
c. Oxides of Sulfur, SO₂, SO₃
d. Particulates less than 2.5 μm
- The Acid rain is caused by the presence of ----- in air.
a. Oxides of Nitrogen and Sulfur
b. Oxides of Carbon and Sulfur
c. Oxides of Nitrogen and Carbon
d. Nitrogen and Oxygen
- Ozone is present in the atmospheric layer-
a. Mesosphere
b. Troposphere
c. Stratosphere
d. Thermosphere
- In anaerobic treatment of waste water, the organic waste are ultimately decomposed to
a. Methane and CO₂
b. Methane and NO₂
c. Methane and SO₂
d. NO₂, CO₂ and SO₂
- Which water is safest for human consumption ?
a. Sea Water
b. Rain water
c. Ground water
d. Surface water-river, lakes
- Which of the following is a primary energy resource?
a. Petrol
b. Electric energy from combustion of coal.
c. Hydrogen by electrolysis of water.
d. Natural gas.
- Identify the Renewable Energy resource from the following.
a. Coal
b. Solar energy.
c. Petroleum.
d. None of the above
- Fossil fuels are
a. Available in fossils.
b. Accumulated in the bottom of the earth or on the shallow seas due to the decomposition of plants and animals.
c. Available in the atmosphere.
d. None of the above
- Manmade source of pollutant is
a. Cosmic radiation
b. Nuclear reactor for power generation .
c. Radioactive minerals.
d. None of the above.

10. Synrock is
 - a. Titanic ceramic material.
 - b. Natural mineral.
 - c. Occurs in the moon.
 - d. None of the above.
11. Which of the following industrial gas is paramagnetic in nature
 - a. O_2
 - b. N_2
 - c. H_2
 - d. None of these
12. Which of the following gas is used for cutting mild steel and for welding
 - a. Acetylene
 - b. Nitrogen
 - c. Oxygen
 - d. Carbon dioxide
13. The catalyst used in the contact process is
 - a. Co
 - b. Fe_2O_3
 - c. V_2O_5
 - d. Mn
14. Which of the following process is used for the manufacture of nitric acid
 - a. Haber's process
 - b. Contact process
 - c. Ostwald process
 - d. None of the above
15. Oxidizing reaction of dilute nitric acid produce
 - a. Nitric oxide
 - b. Nitrogen dioxide
 - c. Nitrate
 - d. Nitrous oxide
16. Detergent biocatalyst is
 - a. Bio 40
 - b. Biomax
 - c. Biodin
 - d. None of the above
17. Lyases is involved in
 - a. Isomerisation
 - b. Hydrolysis
 - c. Transfer of functional groups
 - d. Addition or removal of water, ammonia etc.
18. Which is non-ferrous metal
 - a. Stainless steel
 - b. Brass
 - c. Cast iron
 - d. None of the above
19. Urokinase is used to
 - a. To treat cancer
 - b. To treat inflammation
 - c. Remove blood clot
 - d. None of the above
20. Biomining is done by
 - a. Iron oxidizing bacteria
 - b. Sulphur oxidizing bacteria
 - c. Both of the above
 - d. None of the above

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(Descriptive)

Time : 2 hrs. 30 min.

Marks : 50

[Answer question no.1 & any four (4) from the rest]

1. a. What is photochemical smog? 3
b. What is photovoltaic cell? Discuss the mechanism of storage of solar energy in this cell. 2
c. Write the preparation and two chemical properties of sulphuric acid. 3
d. How zone refining is done for preparation of ultrapure metals. 2
2. a. Discuss what is Greenhouse effect? 5 +5=10
b. Discuss what are the causes of Ozone layer depletion and its impact on earth.
3. a. What are the types of Water Pollutants? 5 +5=10
b. Discuss how water is sterilized for drinking purposes.
4. a. What is Solar Energy Trough? 2
b. What is wind power? How is it harnessed? What are its limitations? 1+2+2=5
c. What is geothermal energy? How is it utilized for generation of power? 3
5. a. What is tidal power? How is it harnessed? 5
b. Write role of biocatalysts in food industry. 5
6. a. Write the one use of following industrial gases 5+5=10
 - i. Acetylene
 - ii. Hydrogen
 - iii. Nitrogen
 - iv. Carbon dioxide
 - v. Oxygen

- b. How hydrogen is manufactured by the electrolysis of water?
Explain with chemical reaction.
7. a. Write the chemical properties, uses, molecular structure and anomalous behavior of oxygen molecule. 5+5=10
b. Explain the chemical properties of nitric acid.
8. a. Write how green chemistry became alternative tool for reducing pollution. 5+5=10
b. Write the principles of green chemistry.

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