

**B.SC. CHEMISTRY  
FIFTH SEMESTER  
INDUSTRIAL CHEMICALS & ENVIRONMENT  
BSC – 507B**

**SET  
B**

[USE OMR FOR OBJECTIVE PART]

Duration: 3 hrs.

Full Marks: 70

Time: 30 min.

( Objective )

Marks: 20

*Choose the correct answer from the following:*

**1×20=20**

- Detergent biocatalyst is
  - Bio 40
  - Biomax
  - Biodin
  - None of the above
- Oxidizing reaction of dilute nitric acid produce
  - Nitric oxide
  - Nitrogen dioxide
  - Nitrate
  - Nitrous oxide
- Which of the following process is used for the manufacture of nitric acid
  - Haber's process
  - Contact process
  - Ostwald process
  - None of the above
- The catalyst used in the contact process is
  - Co
  - Fe<sub>2</sub>O<sub>3</sub>
  - V<sub>2</sub>O<sub>5</sub>
  - Mn
- Lyases is involved in
  - Isomerisation
  - Hydrolysis
  - Transfer of functional groups
  - Addition or removal of water, ammonia etc.
- Which is non-ferrous metal
  - Stainless steel
  - Brass
  - Cast iron
  - None of the above
- Urokinase is used to
  - To treat cancer
  - To treat inflammation
  - Remove blood clot
  - None of the above
- Biomining is done by
  - Iron oxidizing bacteria
  - Sulphur oxidizing bacteria
  - Both of the above
  - None of the above
- Which one of the following is hazardous air pollutants
  - Oxides of Carbon, CO, CO<sub>2</sub>
  - Oxides of Nitrogen, NO, NO<sub>2</sub>
  - Oxides of Sulfur, SO<sub>2</sub>, SO<sub>3</sub>
  - Particulates less than 2.5 μm

10. 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         |
11. Ozone is present in the atmospheric layer-
- |                 |                 |
|-----------------|-----------------|
| a. Mesosphere   | b. Troposphere  |
| c. Stratosphere | d. Thermosphere |
12. In anaerobic treatment of waste water, the organic waste are ultimately decomposed to
- |                                |  |
|--------------------------------|--|
| a. Methane and CO <sub>2</sub> | b. Methane and NO <sub>2</sub>                           |
| c. Methane and SO <sub>2</sub> | d. NO <sub>2</sub> , CO <sub>2</sub> and SO <sub>2</sub> |
13. Which water is safest for human consumption ?
- |                 |                               |
|-----------------|-------------------------------|
| a. Sea Water    | b. Rain water                 |
| c. Ground water | d. Surface water-river, lakes |
14. 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.                             |
15. Identify the Renewable Energy resource from the following.
- |               |                      |
|---------------|----------------------|
| a. Coal       | b. Solar energy.     |
| c. Petroleum. | d. None of the above |
16. Fossil fuels are
- Available in fossils.
  - Accumulated in the bottom of the earth or on the shallow seas due to the decomposition of plants and animals.
  - Available in the atmosphere.
  - None of the above
17. Manmade source of pollutant is
- |                          |   |
|--------------------------|---|
| a. Cosmic radiation      | b. Nuclear reactor for power generation . |
| c. Radioactive minerals. | d. None of the above.                     |
18. Synrock is
- |                              |                       |
|------------------------------|-----------------------|
| a. Titanic ceramic material. | b. Natural mineral.   |
| c. Occurs in the moon.       | d. None of the above. |
19. Which of the following industrial gas is paramagnetic in nature
- |                   |                   |
|-------------------|-------------------|
| a. O <sub>2</sub> | b. N <sub>2</sub> |
| c. H <sub>2</sub> | d. None of these  |
20. Which of the following gas is used for cutting mild steel and for welding
- |              |                   |
|--------------|-------------------|
| a. Acetylene | b. Nitrogen       |
| c. Oxygen    | d. Carbon dioxide |



**( 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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