

**R8364**

**Sub. Code**

**501501**

**M.Sc. DEGREE EXAMINATION, APRIL – 2023**

**Fourth Semester**

**Bio-Technology**

**Elective – ENVIRONMENTAL BIOTECHNOLOGY**

**(CBCS – 2020 onwards)**

Time : 3 Hours

Maximum : 75 Marks

**Part A**

(30 × 1 = 30)

Answer **all** the questions.

1. Which of the following is the main reason for producing the atmospheric greenhouse effect?
  - (a) Absorption and re-emission of ultraviolet radiations by the atmosphere
  - (b) Absorption and re-emission of infrared radiations by the atmosphere
  - (c) Absorption and re-emission of visible light by the atmosphere
  - (d) All of the above
  
2. Which of the following is the cause of soil pollution?
  - (a) Ozone
  - (b) Aerosol
  - (c) Acid rain
  - (d) Smog

3. Which of the following is the cause of Melanornia (skin cancer)?
- (a) Acid rain                      (b) Allergens  
(c) Ozone depletion      (d) Mercury poison
4. Which of the following gas is present in the air in maximum amount?
- (a) Nitrogen                      (b) Oxygen  
(c) Carbon dioxide      (d) Methane
5. Which of the following is a renewable source of energy?
- (a) Coal                              (b) Uranium  
(c) Wind                              (d) Petroleum
6. The pollutants that decomposable and manageable in nature are termed as
- (a) Renewable pollutants  
(b) Non-biodegradable pollutants  
(c) Biodegradable pollutants  
(d) Recalcitrant pollutants
7. CPCB stands for
- (a) Control pollution control board  
(b) Central pollution central board  
(c) Control pollution central board  
(d) Central pollution control board
8. CNG stands for
- (a) Common Natural gas  
(b) Compressed National gas  
(c) Compressed Natural gas  
(d) Certified National gas

9. Which among the following country is considered to have the world's first sustainable biofuels economy?
- (a) Mexico                      (b) Indonesia  
(c) Brazil                        (d) China
10. Ozone layer is found in which of the following?
- (a) Troposphere                (b) Stratosphere  
(c) Exosphere                  (d) Thermosphere
11. The smallest functional ecological unit is \_\_\_\_\_.
- (a) Population                 (b) Community  
(c) Ecosystem                 (d) Ecotype
12. What does the term "biocontrol" mean?
- (a) Use of biological methods for controlling plant diseases  
(b) Use of chemical methods for controlling plant diseases  
(c) Use of morphological methods by the plants to control the attack of pathogens  
(d) Use of physical methods by the plants to control the attack of pathogen
13. What is the organic farmer's method for pest control in agriculture?
- (a) Chemical fertilizers  
(b) Natural predation  
(c) Morphological method  
(d) Physiological method

14. How do you get *Bacillus thuringiensis* to spray on plants?
- (a) In the form powder
  - (b) In the form of log
  - (c) In the form of dried spores
  - (d) In the form of wet spores
15. In India, which of the following crops has been developed by genetic engineering?
- (a) Bt-potato                      (b) Bt-pomato
  - (c) Bt-cotton                      (d) Bt-jute
16. Baculoviruses are not good candidates for which of the following.
- (a) Species-specific applications
  - (b) Narrow spectrum applications
  - (c) Insecticidal applications
  - (d) Broad-spectrum applications
17. The nucleopolyhedro virus are widely used as biopesticides for the control of
- (a) *Culex* larvae                      (b) Boll worm
  - (c) Aphids                      (d) Citrus mites
18. Which one of the following helps in absorption of phosphates from the soil by plants?
- (a) *Glomus*                      (b) *Rhizobium*
  - (c) *Frankia*                      (d) *Anabaena*
19. Which one of the following is not a biofertilizer?
- (a) *Agrobacterium*                      (b) *Nostoc*
  - (c) *Mycorhiza*                      (d) *Rhizobium*

20. A biocontrol agent against plant diseases
- (a) Trichoderma
  - (b) Glomus
  - (c) Bacillus thuringiensis
  - (d) Baculo virus
21. The term biomass most commonly refers to
- (a) Inorganic matter
  - (b) Chemicals
  - (c) Ammonium compounds
  - (d) Organic matter
22. \_\_\_\_\_ is made from the aerobic decomposition of sewage.
- (a) Biomass
  - (b) Synthetic fuels
  - (c) Metal articles
  - (d) Bio fuels
23. Bio ethanol, often known as \_\_\_\_\_, is a denatured alcohol.
- (a) Ethylene
  - (b) Methylated spirit
  - (c) Ethylene glycol
  - (d) Methylene
24. The bio ethanol produced during the fermentation process has a purity of
- (a) 99%
  - (b) 99.7%
  - (c) 99.2%
  - (d) 99.4%
25. Bioaugmentation involves
- (a) Eliminating sludge
  - (b) Plants usage for bioremediation
  - (c) Addition of microbes to a cleanup site
  - (d) Bioventing

26. \_\_\_\_\_ bacterium can withstand the dosage of radiation, which are several times higher than what human cells can tolerate.
- (a) *Escherichia coil*
  - (b) *Conus magus*
  - (c) *Deinococcus radiodurans*
  - (d) *Staphylococcus aureus*
27. The bioremediation process involving the usage of plants to degrade pollutants is
- (a) Composting            (b) Biopile
  - (c) Phytoremediation (d) Land farming
28. Ananda Chakraborty received the first U.S. patent for a GM entity. The entity was
- (a) The GloFish
  - (b) A transgenic mouse expressing the growth hormone gene
  - (c) Cloned E.Coli
  - (d) Pseudomonas engineered to degrade petroleum
29. This cleanup approach includes removal of groundwater or soil from its natural setting to permit for bioremediation
- (a) Bioaugmentation
  - (b) In situ bioremediation
  - (c) Ex situ bioremediation
  - (d) Phytoremediation
30. To make transport fuel the bio ethanol is blended with \_\_\_\_\_.
- (a) Diesel                    (b) Petrol
  - (c) Oil                        (d) Kerosene

**Part B**

(10 × 2 = 20)

Answer any **ten** questions.

31. What are renewable and non renewable energy resources?
32. State the role and responsibility of an individual in the prevention of pollution.
33. What do you mean by hot spots of bio diversity?
34. What are the various sources of radioactive pollution or nuclear pollution?
35. What are the types of solid wastes?
36. What are the important causes of climate change?
37. Define phytovolatilization.
38. Name two organisms each which fix nitrogen asymbiotically or symbiotically.
39. Are biofuels the solution to the impending energy crisis?
40. List any four biocontrol agents.
41. Define bioplastics.
42. Expand and explain PGPR.

**Part C**

(5 × 5 = 25)

Answer any **five** questions.

43. Discuss the structure and functions of an ecosystem.
44. Narrate the role of Individuals in Pollution Prevention.
45. Discuss the need for public awareness about environment.

46. Write about the factors which are involved in threatening of Biodiversity.
  47. Explain the In situ and Ex situ bioremediation with their merits and limitation.
  48. What are “second-generation” biofuels?
  49. Elaborate the various strategies of bioplastics production and their merits over synthetic plastics.
  50. Discuss the biodegradation of chlorinated hydrocarbons.
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