

MODEL QUESTION PAPER-I (TERM-II) 2021-22  
CLASS-12<sup>th</sup> SUBJECT-BIOLOGY

Time : 2 Hrs

Max. Marks : 35

**General Instructions :**

1. All questions are compulsory.
2. The question paper has three sections and 13 questions.
3. Section - A has 6 questions of 2 marks; Section B has 6 questions of 3 marks each; Section-C has a case- based question of 5 marks.
4. There is no overall choice. However, internal choice have been provided in some questions. A student has to attempt only one of the alternatives in such questions.
5. Wherever necessary, neat and properly labeled diagram should be drawn.

**SECTION – A**

1. What would happen to immune system, if thymus gland is removed from the body of a person?  
[2 Marks]
2. A biotechnologist want to produced citric acid at small scale culture .He select a microbes (Figure-A) and culture them into a petridish (Figure-B). Which of the microbes used by biotechnologist for culturing ? Write the scientific name of used microbes. [2 Marks]

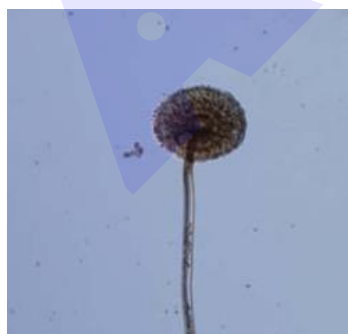


Figure-A

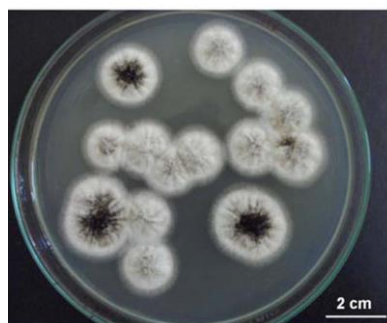


Figure-B

OR

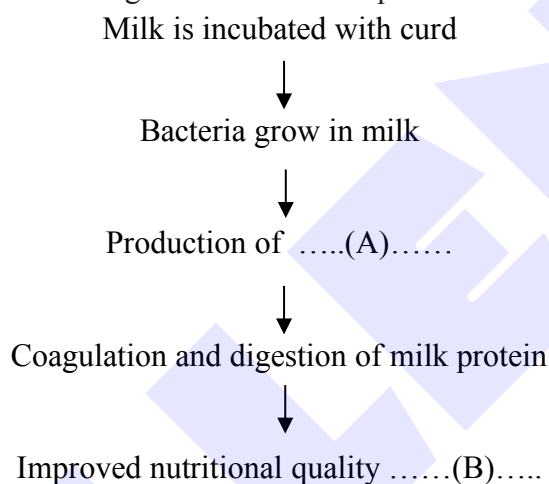
Describe how do 'flocs' and 'activated sludge' help in Sewage Treatment.

[2 Marks]

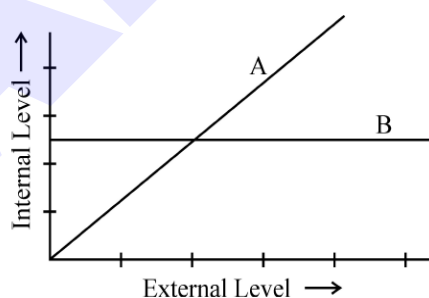
3. The given below are affected area of body by infection of a pathogen. Identify the disease and are write the name of pathogen and causes of transmissions of disease. [2 Marks]



4. Observe the given flow chart and give the answer of questions that follow. [2 Marks]



- (a) What does (A) and (B) signifies in the flow chart.  
 (b) Write the name of bacteria which for above process.
5. The graph given below represents the organisms response to temperature as an environmental condition. [2 Marks]



- (a) Which one of the lines represents conformers and why?  
 (b) What does the other line in the graph represent and why?
6. How do mammals living in colder regions and seal living in polar region able to reduce the loss of their body heat. [2 Marks]

**OR**

Besides acting as conduits' for energy transfer across trophic levels, predators play other important roles. Justify the statement. [2 Marks]

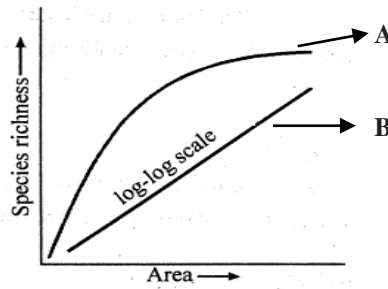
**SECTION-B**

7. A heavily bleeding bruised road accident victim was brought to a nursing home. The doctor immediately gave him an injection to protect him against a deadly disease? [3 Marks]
- (a) Write what did the doctor inject into the patient's body
  - (b) How do you think this injection would protect the patient against the disease?
  - (c) Name the disease against which this injection was given and the kind of immunity it provides.

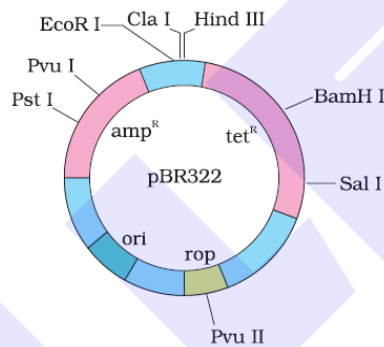
**OR**

- (a) It is generally observed that the children who had suffered from chicken - pox in their childhood may not contract the same disease in their adulthood. Explain giving reasons the basis of such an immunity in an individual.
  - (b) Name this kind of immunity developed during suffered form chicken- pox.
  - (c) What are interferons? Mention their role. [3 Marks]
8. A group of youth were having a 'rave party' in an isolated area and was raided by police. Packets of 'smack, and syringes with needles were found littered around. [3 Marks]
- (a) Why is taking 'smack; considered an abuse?
  - (b) Write the chemical name of 'smack' and the name of its source plant.
  - (c) Syringes and needles used by the youth for taking the drug could prove to be vary fatal.
9. (a) Describe the characteristics that a cloning vector must possess.
- (b) Why DNA cannot pass through the cell membrane? Explain. How is a bacterial cell made 'competent' to take up recombinant DNA from the medium. [3 Marks]
10. Since the origin of life on Earth there were five episodes of mass extinction of species? [3 Marks]
- (a) How is the 'Sixth Extinction', presently in progress, different from the previous episodes?
  - (b) Who is mainly responsible for the 'Sixth Extinction'?
  - (c) List any four points that can help to overcome this disaster.

11. The following graphs show the species-area relationship. Answer the following questions as directed. [3 Marks]



- (a) Name the naturalist who studied the kind of relationship shown in the graph. Write observation made by him.
- (b) Write the situations as discovered by the ecologists when the value of 'Z' (slope of the line) lies between (i) 0.1 and 0.2 (ii) 0.6 and 1.2. What does 'Z' stand for?
- (c) When would the slope of the line 'b' become steeper?
12. A cloning vector showing here. Study it and give the answer of question that follow. [3 Marks]



- (a) Name the organism in which the vector shown is inserted to get the copies of the desired genes.
- (b) Mention the area labeled in the vector responsible for controlling the copy numbers of the inserted gene.
- (c) Name and explain the role of a selectable marker in the vector shown.

### SECTION C

13. The plasmid have some genes encoding resistance to antibiotics considered as selectable marker for *E. coli* cloning vector. There are two cloning vector in pBR322 which helpful for selection of recombinant and elimination of non-recombinant. [5 Marks]
- (a) Why is it essential to have a 'selectable marker' in a cloning vector?
- (b) A gene N was introduced in *E. coli* cloning vector pBR322 at BamHI site. What will be its impact on the recombinant plasmid? Give a possible way by which you could differentiate non-recombinant to recombinant plasmid.
- (c) Why dose the 'insertional inactivation' method to detect recombinant DNA is preferred to 'antibiotic resistance' procedure?
- (d) How does  $\beta$  galactosidase coding sequence act as a selectable marker? Explain.

OR

There was a 4 year old girl who suffered from a disease which related to immune system. An enzyme which is crucial for functioning of immune system do not synthesized. She was administrated to a therapy by which a defected gene have been replaced.

Two girls, A and B aged 4 and 5 years respectively visited a hospital with a similar genetic disorder. The girl A was provided enzyme-replacement therapy and was advised to revisit periodically for further treatment. The girl, B was, however, given a therapy that did not require revisit for further treatment.

**[5 Marks]**

- (a) Name the ailments the two girls were suffering from?
- (b) Why did the treatment provided to girl A required repeated visits?
- (c) Write the causes of such type of disorder.
- (d) Why is the introduction of genetically engineered lymphocytes into this type of patient not a permanent cure? Suggest a possible permanent cure.