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| **PB1/BIQP/1223/B 23-NOV-2023** | | | | | | | |
| **PRE BOARD EXAMINATION – I (2023-24)** | | | | | | | |
| **Subject: BIOLOGY**  **Grade: XII** | | | Max. Marks:70Time: 3 Hrs | | | | |
| **Name:** | | | | | **Section:** | **Roll No:** | |
| ***General Instructions:***   * *This question paper consists of 5 printed pages.* * *All answers to be written in the answer sheet provided.* * All questions are compulsory. * The question paper has five sections: Section A, Section B, Section C , Section D and Section E. There are 33 questions in the question paper. * Section–A has 16 questions of 1 mark each. * Section–B has 5 questions of 2 marks each. * Section–C has 7 questions of 3 marks each. * Section D has 2 case study question of 4 marks each. * Section E has 3 Questions of 5 marks each. * Wherever necessary, neat and properly labeled diagrams should be drawn. | | | | | | | |
|  | **SECTION A** | | | | | | 1\*16 |
|  | An ideal contraceptive should have all the listed characteristics, except | | | | | | |
|  | **a.** | User friendly | | **b.** | Reversible | | |
|  | **c.** | Easily available | | **d.** | Decrease sex drive | | |
| **2.** | Consider the following statements.  a. ‘One child norm’ is a threat to population growth rate of India.  b. Statutory raising of marriageable age of males and females check the  population growth rate.  Select the correct option. | | | | | | |
|  | **a.** | a is true, b is false | | **b.** | Both a and b are true | | |
|  | **c.** | a is false, b is true | | **d.** | Both a and b are false | | |
| **3.** |  | | | | | | |
|  | **a.** | The given diagram is in presence of lactose | | **b.** | The given diagram is in absence of lactose | | |
|  | **c.** | The given diagram is of gene off | | **d.** | D and H is same process | | |
| **4.** | Choose the incorrect statement from the following. | | | | | | |
|  | **a.** | In severe cases of typhoid, intestinal perforation and death may occur. | | **b.** | Typhoid fever could be confirmed by  Widal test. | | |
|  | **c.** | Streptococcus pneumoniae infects  respiratory passage. | | **d.** | Dysentery and plague are bacterial  diseases. | | |
| **5.** | Which of the following is correctly matched for the product produced by them? | | | | | | |
|  | **a.** | Acetobacter aceti: Antibiotics | | **b.** | Methano bacterium: Lactic acid | | |
|  | **c.** | Penicillium notatum: Acetic acid | | **d.** | Saccharomyces cerevisiae: Ethanol | | |
| 6. | Which of the following statements is incorrect with respect to wastewater treatment? | | | | | | |
|  | **a.** | The primary effluent is passed into large aeration tanks where it is constantly agitated mechanically and air is pumped into it. This allows vigorous growth of useful aerobic  microbes into flocs. | | **b.** | Flocs are masses of bacteria associated  with fungal filaments to form mesh like  structures. | | |
|  | **c.** | While growing, microbes consume the  major part of the organic matter in the  effluent. This significantly elevates the  BOD (biochemical oxygen demand) of  the effluent. | | **d.** | BOD refers to the amount of the oxygen  that would be consumed if all the  organic matter in one liter of water were  oxidised by bacteria. | | |
| 7 | Bacteriophages | | | | | | |
|  | **a.** | replicate independent of other organisms | | **b.** | replicate inside bacterial cell, controlled by chromosomal DNA of bacteria. | | |
|  | **c.** | replicate inside bacterial cell autonomously | | **d.** | more than one option | | |
| 8 | The first transgenic cow, Rosie produced | | | | | | |
|  | **a.** | Human calcium enriched milk (2.4 g/l) | | **b.** | Human protein enriched milk (2.4 g/l) | | |
|  | **c.** | Human calcium enriched milk (2.6 g/l) | | **d.** | Human protein enriched milk (2.8 g/l) | | |
| 9 | The tiger census in our national parks and tiger reserves is after based on- | | | | | | |
|  | **a.** | Pug marks | | **b.** | Fecal pellets | | |
|  | **c.** | Counting no. of tigers | | **d.** | Both A and B | | |
| 10 | Read the following statements carefully and choose the option that correctly identifies the true statements.  (I) Many infectious diseases can be prevented and controlled by maintaining personal and public  hygiene  (II) Proper disposal of waste and excreta is particularly essential for the air borne diseases.  (III) Malaria can be prevented by eliminating its vector and their breeding places.  (IV) Chikungunya is a vector-borne disease. | | | | | | |
|  | **a.** | (I), (II) and (III) | | **b.** | (II), (III) and (IV) | | |
|  | **c.** | (IV), (II) and (I) | | **d.** | (I), (III) and (IV) | | |
| 11 | The mechanism of adaptive radiation was first explained by | | | | | | |
|  | **a.** | Darwin | | **b.** | Morgan | | |
|  | **c.** | Lamarck | | **d.** | Hugo de Vries | | |
| 12 | Select the incorrect statement among the following. | | | | | | |
|  | **a.** | Lamarck said that evolution of life forms had occurred but driven by use and disuse of organs | | **b.** | Lamarck gave the examples of Giraffes who in an attempt to forage leaves on tall trees had to adapt by elongation of their necks. | | |
|  | **c.** | Giraffes passed on this acquired character of elongated neck to succeeding generations, Giraffes, slowly, over the years, came to  acquire long necks. | | **d.** | Everybody believes Lamarck’s conjecture today. | | |
|  | Question No. 13 to 16 consists of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:  a) Both A and R are true, and R is the correct explanation of A.  b) Both A and R are true, and R is not the correct explanation of A.  c) A is true but R is false.  d) Both A and R are false. | | | | | |  |
| **13** | **Assertion:** Some fruits are seedless or contain non-viable seeds.  **Reason:** They are produced without fertilization | | | | | | 1 |
| **14** | **Assertion:** Polyploidy is multiplication of chromosome number.  **Reason:** Polyploidy increases the tolerance of plants towards climatic extremes. | | | | | | 1 |
| **15** | **Assertion:** Leguminous plants are best preferred in rotation of crops.  **Reason:** They have root nodules, which have nitrogen-fixing bacteria Clostridium. | | | | | | 1 |
| **16** | **Assertion:** Plant-animal interactions do not generally involve co-evolution of the mutualist  organisms.  **Reason:** Evolution of the plants and animals can never happen side by side. | | | | | | 1 |
|  | **SECTION B** | | | | | | 2\*5 |
| **17.** | Name any two parts of a fallopian tube and write the function of each part. | | | | | | 2 |
| **18.** | Mendel conducted artificial pollination/cross pollination experiments using several true-breeding pea lines. What do you mean by true breeding pea lines? How many true breeding pea plant varieties did Mendel select? | | | | | | 2 |
| **19** | Innate immunity consists of four types of barriers. Explain. | | | | | | 2 |
| **20** | Diagrammatically describe polymerase chain reaction. | | | | | | 2 |
| **21** | Evolution is not a directed process in the sense of determinism. It is a stochastic process.  based on chance events in nature and chance mutation in the organisms. Give examples to prove these statements. | | | | | | 2 |
|  | **SECTION -C** | | | | | | 3\*7 |
| **22.** | With the help of a diagram describe the structure of a mature pollen grain. | | | | | | 3 |
| **23.** | a. Expand and explain VD.  b. Name any two RTI  c. Write any two principles which can be followed to prevent Sexually transmitted diseases. | | | | | | 3 |
| **24.** | Based on his observations on monohybrid crosses Mendel proposed two general rules to consolidate his understanding of inheritance in monohybrid crosses. Name and define the laws. | | | | | | 3 |
| **25.** | Name and explain the phenomenon depicted by the following picture. Write one more example for the same. | | | | | | 3 |
| **26** | 1. Name the disease caused by *Haemophilus influenzae* 2. Name the organ infected and the effect of infection. 3. Write about the symptoms of the disease.   **OR**  Give a diagrammatic representation of the stages of life cycle of plasmodium. | | | | | | 3 |
| **27** | There are three basic steps in genetically modifying an organism. Which are they? | | | | | | 3 |
| **28** | Penicillin was the first antibiotic to be discovered, and it was a chance discovery.   1. Describe why it is called a chance discovery. 2. Who established the full potential of penicillin as an effective antibiotic? | | | | | | 3 |
|  | **SECTION -D** | | | | | | 4\*2 |
|  | Q. No. 29 and 30 are case-based questions which has 3 subparts with internal choice in one subpart. | | | | | |  |
| 29. | Based on the following three cases of a phenomenon answer the following questions.      CASE 1 CASE 2 CASE 3   1. Name and define the phenomenon depicted in the diagram.   b. Differentiate between any two of the three cases.  c. What do you mean by outbreeding devices?  **Or**   1. Write any two outbreeding devices found in plants. | | | | | | 4 |
| 30 | For human population, the age pyramids generally show age distribution of males and females in a diagram. The shape of the pyramids reflects the growth status of the population. Study the 3 representative figures of age pyramid relating to human population given below and answer the following questions:   1. Mention the names given to the 2 kinds of age profiles (i), and (ii). 2. Which one of these pyramids shows a declining population? Why? 3. Which one of these is ideal for a population?   **OR**  c. Define an age pyramid? | | | | | | 4 |
|  | **SECTION -E** | | | | | | 3\*5 |
| **31** | With the help of a labeled diagram describe the structure of mammary gland the characteristic of all female mammals.  **OR**  Draw and explain the structure of human sperm. Ensure to label at least six parts. | | | | | | 5 |
| **32** | Explain the packaging of DNA helix.   1. In Prokaryotes 2. In Eukaryotes   **OR**   1. A molecule that can act as a genetic material must fulfill certain criteria. Which are they? 2. The genetic material should be stable enough not to change with different stages of life cycle, age or with change in physiology of the organism. Comment on the stability of genetic material and prove that DNA is a better genetic material. 3. Which experiment is an additional proof for the stability of DNA. | | | | | | 5 |
| **33** | Plants, bacteria, fungi and animals whose genes have been altered by manipulation are called Genetically Modified Organisms (GMO). Mention the ways by which GM plants have been useful.  **OR**   1. Insulin used for diabetes was earlier extracted from pancreas of slaughtered cattle and pigs. What was the issue associated with this insulin? 2. How did we overcome this issue? Explain with supportive diagram. | | | | | | 5 |

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