**Social Baluni Public School**

**Preboard (Theory) - Biology (044)**

**Class XII (December, 2020)**

**Time allowed: 3 Hrs Maximum Marks: 70**

**General Instructions:**

1. All questions are compulsory.
2. The question paper has four sections: Section A, Section B, Section C and Section D. There are 33 questions in the question paper.
3. Section–A has 14 questions of 1 mark each and 02 case-based questions. Section–B has 9 questions of 2 marks each. Section–C has 5 questions of 3 marks each and Section–D has 3 questions of 5 marks each.
4. There is no overall choice. However, internal choices 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 diagrams should be drawn.

**SECTION –A**

1. Endosperm development precede embryo development. Justify

How does Gregor Johann Mendel conducted a cross to determine unknown genotype of a dominant phenotypic pea plant?

1. A snapdragon plant with violet flowers was crossed with another such plant with white flowers. The F1 progeny obtained had pink flowers. Explain, in brief, the inheritance pattern seen in offsprings of F1 generation?
2. S
3. S
4. S
5. S
6. S
7. S
8. S
9. S
10. **Assertion:** Primary transcripts in eukaryotes are nonfunctional.

**Reason:** Methyl guanosine triphosphate is attached to 5’ – end of hnRNA.

1. Both assertion and reason are true, and reason is the correct explanation of assertion.
2. Both assertion and reason are true, but reason is not the correct explanation of assertion.
3. Assertion is true but reason is false.
4. Both assertion and reason are false.

**OR**

**Assertion:** An organism with lethal mutation may not even develop beyond the zygote stage.

**Reason:** All types of gene mutations are lethal.

1. Both assertion and reason are true, and the reason is the correct  explanation of the assertion.
2. Both assertion and reason are true, but the reason is not the correct  explanation of the assertion.
3. Assertion is true but reason is false.
4. Both assertion and reason are false
5. **Assertion:**

**Reason:**

1. **Assertion:**

**Reason:**

1. **Assertion:**

**Reason:**

1. Read the following and answer any four questions from 15(i) to 15(v) given below:
2. Read the following and answer any four questions from 16(i) to 16(v) given below:

**SECTION –B**

1. What is amniocentesis. Why does amniocentesis is banned in India?
2. Karyotype of a child shows Trisomy of sex chromosome (XXY). Identify the disorder and state the symptoms which are likely to be exhibited in this case.

Why are the phenomena of linkage and crossing-over considered to be alternatives of each other?

1. Why viruses categorised under genus nucleopolyhedrovirus are considered good biocontrol agents?
2. Differentiate between pericarp and perisperm.

**OR**

During fertilization in human females, how is it ensured that only one sperm fertilizes the ovum?

1. Explain how advanced ex-situ conservation techniques assist in preserving threatened species of plants and animals.
2. State the Mendelian principle postulated after conducting dihybrid cross.
3. The Tropical regions are likely to have more biological diversity than the temperate ones. Give two reasons to justify the statement.
4. State the functions of Sertoli cells lined inside seminiferous tubule and Leydig cells in the interstitial spaces of seminiferous tubule found in testicular lobules of testes.

**SECTION –C**

1. How would you find out the genotype of a pea plant with violet flowers? Explain with the help of Punnets' square showing crosses.
2. A student mixed cow dung and water and the slurry is fed into the biogas plant for digestion by microbes. The student performing the process didn’t add inoculum into it, why? What is the role of the microbes at the source? Under which condition will they be most active and effective in efficient production of biogas?
3. List the two methodologies which were involved in human genome project. Mention how they were used.
4. Expand 'YAC' and mention what it was used for.
5. Explain the events during fertilization of an ovum in humans.
6. Why does DNA replication occur in replication forks and not in its entire length? 2Marks
7. Why is DNA replication continuous and discontinuous in a replication fork? 1Mark

**SECTION –D**

1. What is an operon? Explain the functioning of lac operon when in an open state i.e in presence of inducer.

**OR**

Explain three steps involved in polymerase chain reaction.

State any two uses of PCR.

1. Draw a diagrammatic sketch of a T.S of an anther of an angiosperm. Label its different walls and the tissue forming microspore mother cells.
2. Describe the process of microsporogenesis up to the formation of a microspore.

**OR**

1. Draw a well labelled diagram of 8-nucleated and 7-celled mature embryo sac.
2. Explain double fertilization in flowering plants.
3. Write comparative account between spermatogenesis and oogenesis.

OR

Explain the major events occurring in four phases of menstrual Cycle in human female.

Explain the importance of estrogen and progesterone in human female.

**\*\*\*ALL THE BEST\*\*\***