

CLASS XII (2019-20)**BIOLOGY (044)****SAMPLE PAPER-2****Time : 3 Hours****Maximum Marks : 70****General Instructions :**

- There are a total of 27 questions and five sections in the question paper. All questions are compulsory.
- Section A contains question numbers 1 to 5, multiple choice questions of one mark each.
- Section B contains question numbers 6 to 12, short answer type I questions of two marks each.
- Section C contains question numbers 13 to 21, short answer type II questions of three marks each.
- Section D contains question numbers 22 to 24, case-based short answer type questions of three marks each.
- Section E contains question numbers 25 to 27, long answer type questions of five marks each.
- There is no overall choice in the question paper. However, internal choices are provided in two questions of one mark, one question of two marks, two questions of three marks and all three questions of five marks. An examinee is to attempt any one of the questions out of the two given in the question paper with the same question number.

SECTION A

- Q1. Most common honeybee species in India. [1]
- (a) *Apis indica* (b) *Apis florea*
 (c) *Apis mellifera* (d) *Apis dorsata*

OR

HIV that causes Acquired Immuno Deficiency Syndrome (AIDS) reduces the number of

- (a) B-cells (b) cytotoxic T-cells
 (c) helper T-cells (d) All of these
- Q2. Name the labelled parts A, B and C in the following diagram of TS of a young anther. [1]
- (a) A - Tapetum; B - Connective; C - Endothecium
 (b) A - Endothecium; B - Connective; C - Tapetum
 (c) A - Connective; B - Endothecium; C - Tapetum
 (d) A - Connective; B - Tapetum; C - Endothecium
- Q3. While isolating DNA from bacteria, which of the following is not used? [1]
- (a) Lysozyme (b) Ribonuclease
 (c) Deoxyribonuclease (d) Protease

OR

Given below are few statements with regards to restriction enzyme.

- (i) It recognises a palindromic nucleotide sequence.
 (ii) It produces the same kind of sticky ends in different DNA molecules.
 (iii) It is isolated from viruses.
 (iv) It ligates all purine and pyrimidine bases.

Which of the above mentioned statements are true for restriction enzyme?

- (a) (i) and (iv) (b) (i) and (ii)
 (c) (ii) and (iv) (d) (ii) and (iii)
- Q4. What is common to the techniques (i) In vitro fertilisation, (ii) Cryopreservation and (iii) Tissue culture? [1]

- (a) All are in situ conservation methods
- (b) All are ex situ conservation methods
- (c) All require ultra modern equipments and large space
- (d) All are methods of conservation of extinct organisms

Q5. Which of the following is not required for a PCR reaction? [1]

- (a) Primers
- (b) ddNTPs
- (c) Template DNA
- (d) A thermostable DNA polymerase

SECTION B

Q6. There is a statutory warning on the packets of cigarettes which warns against smoking and says that it is injurious to health. Yet, smoking is prevalent in our society. Suggest a few points advising the importance of avoiding smoking. [2]

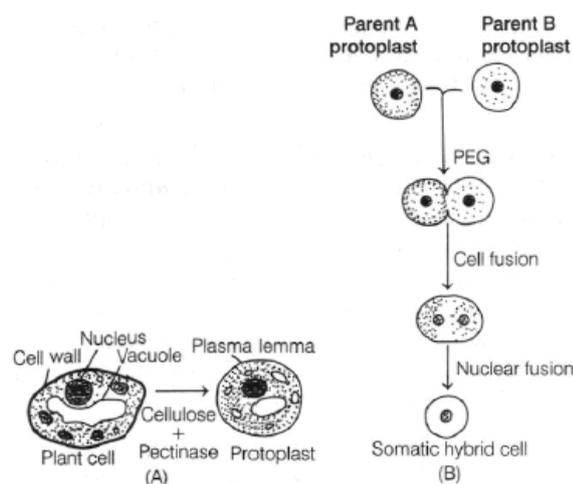
OR

Drugs like LSD, barbiturates, amphetamines, etc., are used as medicines to help patients with mental illness. However, their excessive doses and abusive usage are harmful. Enlist some major adverse effects of abuse of such drugs in people.

Q7. State the cause behind the discontinuous synthesis of DNA on one parental strand. What happens to the short stretches of DNA that are synthesised during this process? [2]

Q8. GM crops are tailor made plants used in many forms for human welfare. However, they are also known to have certain disadvantages which can make them unpopular as compared to their conventional forms. Provide atleast two evidences in support of the above mentioned claim and defend the progress of GMOs in present situation. [2]

Q9. Examine the two events A and B of somatic hybridisation given below. [2]



Describe the procedure of the technique somatic hybridisation.

Q10. What is the main idea behind 'Joint Forest Management Concept' introduced by the Government of India? [2]

Q11. A female in your locality does not menstruate even after puberty. Doctor has told that she lacks one X-chromosome (44 + XO). Suggest the name for this syndrome and state some other symptoms. [2]

Q12. Though each pollen grain has two male gametes, atleast 10 pollen grains (not 5) are required to fertilise 10 ovules present in particular carpel. Provide a suitable explanation for the above claim. [2]

SECTION C

Q13. Coextinction is one of the factors which results in the loss of biodiversity threatening the extinction of flora and related fauna. Substantiate this statement by giving examples. Also, mention other factors which together with coextinction form evil quartet responsible for the loss of biodiversity. [3]

Q14. Explain the hormonal control of spermatogenesis in humans regulated by hormones FSH and LH. [3]

OR

Name and explain the surgical methods advised to human males and females as a means of birth control. Mention its one advantage and one disadvantage.

Q15. Scientists believe that the evolution is gradual. But extinction as a part of evolutionary story, are 'sudden' and 'abrupt' and also group specific. Can you predict whether a natural disaster can be the cause for extinction of species? [3]

Q16. How do biocontrol agents control the target species? Explain by giving some important examples. [3]

OR

(i) What would happen if a large volume of untreated sewage is discharged into a river?

(ii) In what way anaerobic sludge digestion is important in the sewage treatment?

Q17. With the help of an example can you highlight how genetically modified plants can [3]

(i) reduce the usage of chemical pesticides?

(ii) enhance the nutritional value of food crops?

Q18. (i) For the expression of traits, genes provide only the potentiality and the environment provides the opportunity. Comment on the veracity of the statement.

(ii) In order to obtain the F_1 -generation, Mendel pollinated a pure breeding tall plant with a pure breeding dwarf plant. But for obtaining the F_2 -generation, he performed self-pollination of the tall F_1 -plants. Why ? [3]

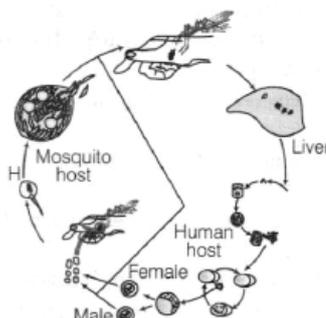
Q19. Plant breeding is the purposeful manipulation of plant species to create plants with desirable traits. However, the term desirable trait can indicate different things for different plants or the breeder. Analyse the possibilities that can be included within the term desirable traits with suitable examples. [3]

Q20. (i) Identify A, B and C in the table given below [3]

Pattern of Inheritance	Monohybrid F_1 Phenotypic Expression
Codominance	'A'
'B'	Progeny resembled only one of the parents
Incomplete dominance	C

(ii) You are given tall pea plant with yellow seeds, whose genotypes are unknown. How would you find the genotype of this plant? Explain with the help of cross.

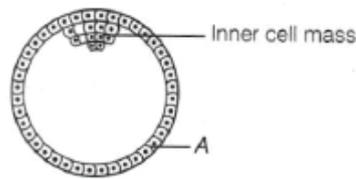
Q21. Refer to the diagram given below and answer the questions that follows. [3]



- (i) The sexual stages of parasite are referred to as? Where does the fertilisation and development of parasite take place in mosquito body?
- (ii) What are sporozoites?
- (iii) What is the cause of cycle of fever during malaria?

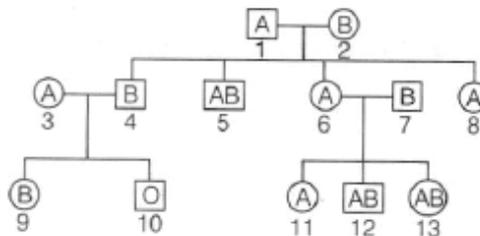
SECTION D

Q22. Study the figure given below and answer the questions that follows. [3]



- (i) Name the stage of human embryo the figure represents.
- (ii) Identify 'A' in the figure and mention its function.
- (iii) Mention the fate of the inner cell mass after implantation in the uterus.
- (iv) Where are the stem cells located in this embryo?

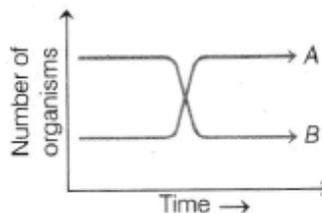
Q23.



Study the given pedigree chart showing the inheritance pattern of blood group in a family and answer the following questions. [3]

- (i) Give the possible genotypes of the individual 1 and 2.
- (ii) Which antigen(s) will be present on the plasma membranes of RBCs of individual 5 and 10?
- (iii) Give the genotype of the individuals 3 and 4.

Q24. Two types of aquatic organisms in a lake show specific growth patterns as shown below, in a brief period of time. The lake is adjacent to an agricultural land extensively supplied with fertilisers.



Answer the questions based on the facts given above. [3]

- (i) Name the organisms depicting patterns A and B.
- (ii) State the reason for the growth pattern seen in A.
- (iii) Write effects of growth patterns seen above.

SECTION E

- Q25. (i) Name the hormones involved in menstrual cycle.
- (ii) Name the ovarian phases of menstrual cycle during the following periods
- 5th-12th day of the cycle
 - 14th day of the cycle
 - 16th-25th day of the cycle

(iii) What influence do hormones LH and FSH have on different ovarian events stated in (ii) (a), (b) and (c)? [5]

OR

Male and female gametes in human beings differ from each other in terms of both structure and function. Enumerate some major differences between the two, along with their diagrams.

Q26. The genetic code is, for the most part, universal, with few exceptions. Explain it by giving the example of mitochondria, the powerhouse of cell. [5]

OR

Evidences from the studies of comparative anatomical and morphological features indicate the progress of evolution.

(i) Thorn of Bougainvillea differs from tendril of Cucurbita in its function; both are located at similar (axillary) position and have similar origin. These organs are considered homologous.

(ii) The wings of birds and butterfly look alike, they perform similar function of flying but are not anatomically or structurally similar. These organs are considered analogous.

Assess the above statements and explain how these evidences relate to the process of evolution.

Q27. (i) What does BOD stand for? Explain the term.

(ii) What is the relationship between dissolved oxygen and BOD?

(iii) Mention the effect of higher BOD value on aquatic life in the river. [5]

OR

(i) Draw a pyramid of numbers of a situation, where a large population of insects feed upon a very big tree. The insects in turn are eaten by small birds which in turn are fed upon by large birds.

(ii) Differentiate between the pyramid of biomass of the above situation and the pyramid of number that you have drawn.

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