APEEJAY SCHOOL, SHEIKH SARAI

FIRST TERMINAL EXAMINATION, 2019-20 SS-44

CLASS-XII

BIOLOGY

SET-A

Time allowed : 3 Hrs. M.M. : 70

General Instructions :

1. *All questions are compulsory.*
2. *The question paper consists of four sections A, B, C and D.*
3. *Internal choice is given in all the sections.*
   A student has to attempt only one of the alternatives in such questions.
4. *Section-A contains 5 questions of 1 mark each.*
5. *Section-B has 7 questions of 2 marks each.*
6. *Section-C is of 12 questions of 3 marks each.*
7. *Section-D has 3 questions of 5 marks each.*
8. *Wherever necessary, the diagrams drawn should be neat and properly labelled.*

SECTION–A

1. State the role of endothecium. (1)
2. How is polyspermy checked by the zona pellucida of the ovum? (1)
3. Why does a human male never pass the gene for haemophillia to his son? (1)

OR

If the genes are completely or fully linked, what are the chances of recombination?

(a) 65%

(b) 25%

(c) 0%

(d) 100%

4. Mention the site in the body where the B-cells and T-cells are formed. Give one difference between them. (1)
5. What is Biopiracy? (1)

OR

P.T.O.

How is a probe used in molecular diagnostics?

SECTION–B

6. Mention two differences and one similarity between a zoospore and conidium. (2)

OR

State the differences between ovipary and vivipary.

7. Justify the ban on aminocentesis in our country? (2)
8. What is placenta ? Mention its role during pregnancy. (2)
9. What is the reason for the discontinuous synthesis of DNA on one of the parental strands? (2)
10. State the differences between Oestrous and menstrual cycle. (2)
11. What do you understand by GMO? How is it different from a hybrid? (2)

OR

What is GEAC ? What are its main objectives?

12. What is the main objective of "Assisted Reproductive Technology" programme? Female gametes are transferred to the fallopian tube in the GIFT procedure. Is it possible to transfer the gametes to the uterus ? Give reason. (2)

SECTION–C

13. (a) When and where does spermatogenesis in a human being take place? What is the function of sertoli cells?
    (b) With the help of schematic labelled diagrams trace the development of mature spermatozoa in human male. (3)
14. How does a chasmogamous bisexual flower prevent self-pollination ? Write any three ways. (3)

OR

Write the changes that occur when an ovule matures into seed.

15. Describe the structure of the embryo sac of a mature angiosperm. Explain the role of synergids in it. (3)
16. Describe the individuals with the following chromosomal abnormalities : (3)
    (a) XXY
    (b) XO
17. A bacterium *Bacillus thruingiensis* produces a toxic protein named "cry" which is lethal to insects but not to bacterium (3)
    (a) Why this toxin does not kill the bacteria?

(b) What happens in the gut of insects after ingesting this protein?

(c) How has the cry protein been exploited by man for his benefit?

OR

Explain any two biotechnological applications in medicine.

18. Write the causative organism and symptoms of Ascariasis. How does a healthy person acquire this infection? (3)

19. How does a restriction nuclease function ? Explain. (3)

OR

Explain the process of amplification of gene of interest using PCR. Draw a well lebelled diagram.

20. Name and describe the technique that helps in separating the DNA fragments formed by the use of restriction endonuclease. (3)

21. Differentiate between analogy and homology. Give one example of each. (3)

22. Mention one application for each of the following : (3)

(a) Active immunization

(b) Colostrum

(c) Interferons

OR

What do you understand by autoimmunity ? Explain any auto-immune disease.

23. (a) What is the role of selectable marker in the cloning vector $_{P}$BR322? (3)

(b) Why is the coding sequence of an enzyme β galactosidase a preferred selectable marker? What is insertional inactivation?

24. The scientific understanding of the menstrual cycle of human females help as a contraceptive measure. Comment. (3)

SECTION–D

25. What is DNA fingerprinting ? What are the steps involved in DNA fingerprinting? What are its applications? (5)

OR

(a) Mention the functions of :

(1) Methylated guanosine cap

(2) poly-A tail

(3) Promoter

(4) tRNA

(5) Exons

(b) Following are the features of genetic code. What does each one indicate? Stop codon, Unambiguous codon, Initiator codon, Degenerate codon and Universal codon.

26. What is Hardy-Weinberg principle. What are the factors affecting the Hardy-Weinberg equilibrium ? What is genetic drift ? Explain. (5)

OR

(a) Creation and presence of variation are directionless, but natural selection is directional as it is in the context of adoptation. Comment.

(b) Explain the origin and evolution of man.

27. Explain the statements (any two) : (5)

(a) A test cross is back cross but back cross is not necessarily a test cross.

(b) Law of dominance is not universally applicable.

(c) Law of segregation is universally applicable.

OR

(a) A red flowered snapdragon plant crossed with white flowered one produce a pink flowered plant, name and explain the inheritance pattern with schematic representation till the F2 generation.

(b) Define Pleiotropy. Give an example of the same.

APEEJAY SCHOOL, SHEIKH SARAI

FIRST TERMINAL EXAMINATION, 2019-20 **SS-43**

CLASS-XII

BIOLOGY

SET-B

Time allowed : 3 Hrs. **M.M. : 70**

General Instructions :

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(b) Why is the coding sequence of an enzyme β galactosidase a preferred selectable marker? What is insertional inactivation?

SECTION–D

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(b) Define Pleiotropy. Give an example of the same.

20.01.20

APEEJAY SCHOOL PANCHSHEEL PARK

PRE-BOARD EXAMINATION

SESSION: 2019-2020

BIOLOGY

CLASS XII

MM: 70

TIME: 3HOURS

General Instructions:

1. All questions are compulsory.

2. The question paper consists of four sections A, B, C and D.

3. Internal choice is given in all the sections.

A student has to attempt only one of the alternatives in such questions.

4. Section–A contains 5 questions of 1 mark each.

5. Section–B has 7 questions of 2 marks each.

6. Section–C is of 12 questions of 3 marks each

7. Section–D has 3 questions of 5 marks each

8. Wherever necessary, the diagrams drawn should be neat and properly labelled.

Section- A

1. Name a photoperiod dependent process, one each in plants and in animals. **1**

2. Write the name of the enzyme which catalyzes the removal of nucleotides from the ends of DNA strands **1**

3. What is meant by gene cloning? **1**

   OR

   Mention the change that proinsulin undergoes, to be able to act as mature insulin.

4. Give two reasons why sanitary landfills are not found to be a solution for solid waste disposal in meterocities. **1**

5. What is the objective of Ramsar convention? **1**

   OR

The use of incinerators is crucial for the disposal of hospital waste. Why?

6. Distinguish between the roles of flocs and anaerobic sludge digesters in sewage treatment. 2

7. Mention any four methods of *ex situ* conservation. 2

OR

It was found that in lake, the water had 0.003 ppm of DDT and the fish had 2ppm. Why has the concentration of DDT increased in the body of fish? What term is given to the phenomenon?

8. What is mycorrhiza? Mention any two advantages, the mycorrhizae provide to plants 2

9. A woman with blood group O marries a man with blood group AB. Show the possible blood groups in their progeny. List the alleles involved in this inheritance. 2

OR

What is pleiotropy? Give an example.

10. Why is crossbreeding in animals practised? How is a breed *Hisardale* developed? 2

11. What is contact inhibition in normal cells of body? What would be the consequence of loss of this property by these cells? 2

12. Differentiate between gene flow and genetic drift. 2

13. a) Mention two conditions when AI is carried out as an ART. 3
b) What is GIFT?
c) Why is the period between 10^{th} and the 17^{th} days of menstrual cycle called fertile period?

14. a) How do organic farmers control pests? Give two examples. 3
b) State the difference in their approach from that of conventional pest control methods.

15. Show by diagrams the process of budding in yeast. Write one major difference between budding and fission. 3

16. Give three reasons as to why RNA is regarded as first genetic material. 3

17. Justify the importance of decomposers in an ecosystem. 3

OR

Coevolution is a spectacular example of mutualism between an animal and a plant. Describe coevolution with the help of an example.

18. Which of the two, ovum or sperm is responsible for sex determination in certain birds? Explain 3

OR

Why is thalassemia considered as Mendelian disorder?

19. Explain the principle, the equation $p^2+2pq+q^2=1$, represents. 3

20. How do organisms manage the stressful conditions prevailing in their habitat for short duration? Explain with the help of one example each. 3

21. Draw a well labelled diagram of L.S of an anatropous ovule of angiosperm. 3

22. How are the following used in biotechnology? 3

a) Plasmid DNA

b) Recognition sequence

c) Gel electrophoresis

OR

Expand the following and mention one application of each

a) PCR

b) ELISA

23. Explain any three causes of biodiversity losses. 3

24. a) List any two situations when a doctor would recommend injection of performed antibodies into the body of a patient. Name this kind of immunisation and mention its advantages. 3

b) What do you understand by autoimmunity? Write an example of autoimmune disease.

OR

Explain the advantages of inbreeding in cattle population. What effect does continuous inbreeding have on cattle population?

25. a) Draw a well labelled diagram of human male reproductive system. 5

b) Describe the events that take place in an ovary during follicular phase of menstrual cycle.

OR

a) Draw a diagram of sectional view of a seminiferous tubule and label any six parts in it.

b) Mention the functions of GnRH and FSH during spermatogenesis.

26. a) What is meant by RNA interference (RNAi)? Write in sequence the use of this phenomenon in producing nematode resistant tobacco. 5

b) What is gene therapy? Illustrate using the example of adenosine deaminase (ADA) deficiency?

OR

a) Draw a well labelled diagram of *E.coli* vector pBR322.

b) Describe the nomenclature of restriction endonucleases with an example.

27. Who showed experimentally that it is DNA and not the protein which is genetic material in bacteriophages? Describe the experiment. 5

OR

a) What is trisomy? Give an example from human genetics.

b) Linkage and crossing over of genes are two alternatives of each other. Justify with the help of an example.

ROLL NO.	
NAME	
CLASS & SECTION	

APEEJAY COMMON ANNUAL EXAMINATION, 2019-20 **09**

CLASS-XII

BIOLOGY (044)

Time allowed : 3 hrs. ***Maximum Marks : 70***

General Instructions :

1. ***There are a total of 27 questions and five sections in the question paper. All questions are compulsory.***
2. ***Section A contains question number 1 to 5, objective type questions of one mark each.***
3. ***Section B contains question number 6 to 12, Short Answer type I questions of two marks each.***
4. ***Section C contains question number 13 to 21, Short Answer type II questions of three marks each.***
5. ***Section D contains question number 22 to 24, case -based Short Answer type II questions of three marks each.***
6. ***Section E contains question number 25 to 27, Long Answer type questions of five marks each.***
7. ***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 options in the question paper with the same question number.***

SECTION–A

1. Higher energy level and shorter wavelength are features of (1)

(a) beta radiation (b) alpha radiation

(c) ultraviolet radiation (d) infrared radiation

OR

Which of the following area in India has the largest number of endemic plant species?

(a) Himalayan region (b) Malabar region

(c) Gangetic plains (d) Western Ghats

P.T.O.

14. (a) Name the selectable markers in the cloning vector pBR322? Mention the role they play. (3)

(b) Why is the coding sequence of an enzyme (β-galactosidase), a preferred selectable marker in comparison to the ones named above?

15. Continued self-pollination results in inbreeding depression. What are the out breeding devices developed in flowering plants to discourage self-pollination? Which type of pollination is seen in Papaya? (3)

16. Evolution is the change of gene frequencies in a population in response to changes in environment in the time scale of years and not centuries? Justify the statement with reference to DDT. How does the theory of Hugo de varies support this? (3)

OR

Explain convergent and divergent evolution with the help of one example each.

17. (a) How Oswald Avery, Colin Macleod and Maclyn MC Carty, while determining the biochemical nature of transforming principle in the Griffith's experiment proved that DNA is the heredity material? (3)

(b) How is the transforming principle explained by this experiment?

18. How does primary sludge differ from activated sludge? What changes the sludge undergo in an anaerobic sludge digester? (3)

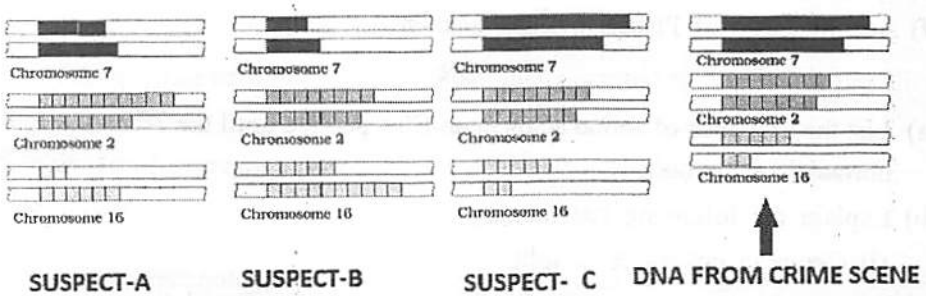
19. (a) How are the following animals adapted to their habitat : (3)

(i) whales (ii) kangaroo rat

(iii) polar bear (iv) Desert lizard.

(b) Why do cold regions not have small animals?

20. Tissue samples were collected from the victim's body as evidence from the crime scene and tissue samples from the suspects A, B and C were also collected by the forensic experts to find out the culprit. The results of DNA fingerprinting obtained are as follows : (3)



(a) Who according to the above DNA fingerprinting results is the culprit? And how was it possible to come to a conclusion, by the forensic experts.

(b) What forms the basis of DNA fingerprinting? Explain.

21. A vector is engineered with three features which facilitates its cloning within the host cell. List the three features and explain each one of them. (3)

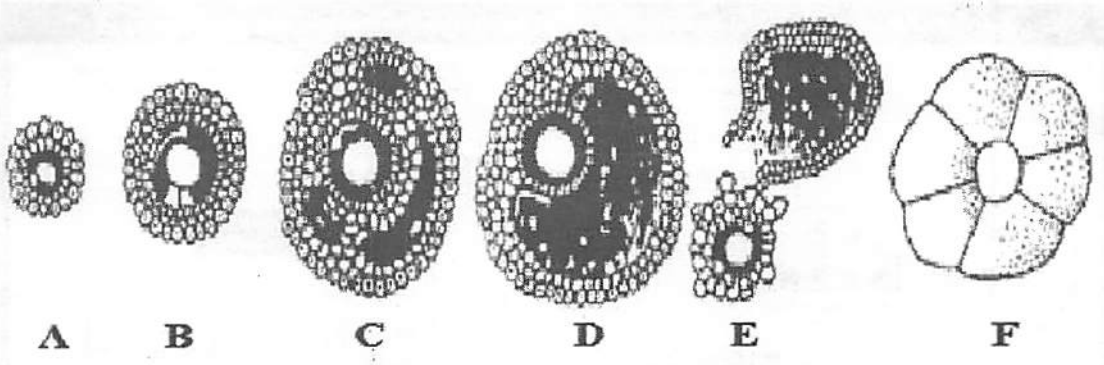
SECTION-D

22. Study the pictographic depiction which shows the development and maturation of ovarian follicle and answer the following questions : (3)

(a) Name the structure formed in the stage 'F'.

(b) Identify the stage in which ovulation occurs.

(c) Identify the stage 'B' and 'D' and distinguish between them.



23. When new and aggressive specie is introduced into an ecosystem, in absence of natural predators or controls, it breeds and spreads quickly, taking over an area. Native wildlife may not have evolved defenses against the new species, or they may not be able to compete with the species that has no natural predators in the food chain. (3)

There are direct as well as indirect threats created by such species. Such species can also modify the bio diversity of species in the native wildlife habitat.

Introduction of Lantana camara in India, whose Nativity is Trop. America was an invasive plant

(a) Why exotic species do not have predators?

(b) What could be the possible reasons for the reduction in the population of Native species?

(c) What had happened when

(i) Nile perch was introduced in Lake Victoria

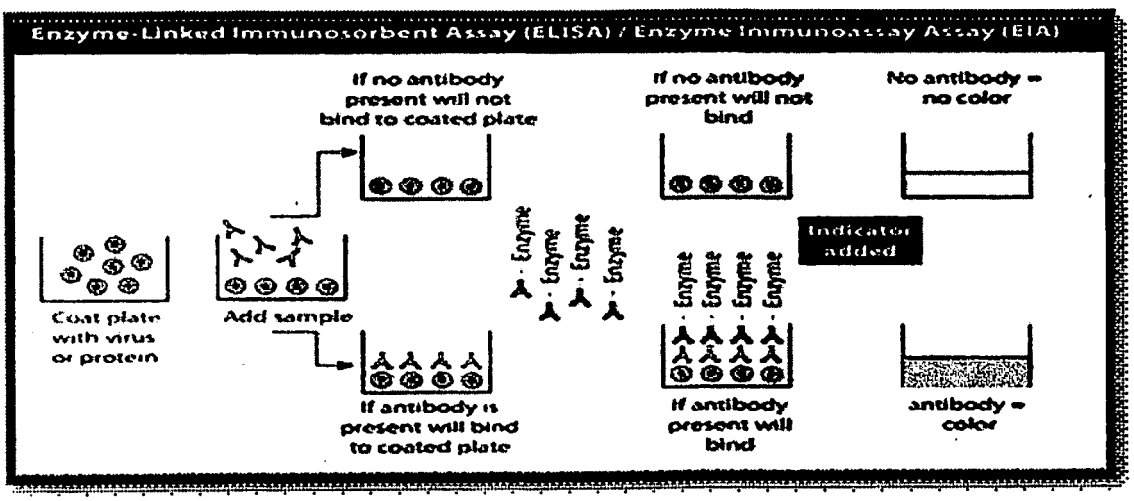
(ii) The African catfish was introduced in the inland water bodies.

24. ELISA is an abbreviation for "enzyme-linked immunosorbent assay." In 1974, P. Perlmann and E. Engvall developed the test as a substitute for certain radioimmunoassay tests. It uses components of the immune system (such as IgG or IgM antibodies) and chemicals for the detection of immune responses in the body to infectious microbes. (3)

The ELISA test involves

- An enzyme
- An antibody or antigen that may form an antigen-antibody reaction to confirm the test.

The test is based on a micro titer plate that has a solid phase substrate (target protein, antigen) at a known concentration fixed to the plate that when exposed to an antibody that has an indicator attached (dye for color change or enzyme-labeled antibody) that can produce a color change.



Medical professionals frequently use ELISA tests to detect antigens that may be present in the blood. The substances detected by ELISA tests can include hormones, allergens, viral and bacterial antigens and antibodies. They can also identify an infectious disease agent in patients.

(a) What is a primary antibody?

(i) the second antibody used to detect foreign particle

(ii) particle produced by the antigen

(iii) the first antibody used to detect foreign particle

(iv) second cell produced by the macrophage

(b) What is another name for antibodies?

(i) helper to cells (ii) hemoglobin

(iii) immunoglynocists (iv) immunoglobulins

(c) During an immune response, which of the following is the first cell responder to attack a pathogen's antigen? What happens later to it?

(i) B cell (ii) T cell

(iii) macrophage (iv) leukocyte

(d) Why the colour change in ELISA test is observed only in case of infected samples?

SECTION-E

25. (a) Explain the observations of Meselson and Stahl when (5)

(i) They cultured *E. coli* in a medium containing $^{15}NH_4Cl$ for a few generations and centrifuged the content.

(ii) They transferred one such bacterium to the normal medium of NH_4Cl.

(b) What does the above experiment prove?

(c) Which is the first genetic material identified?

OR

Inheritance pattern of flower colour in garden pea plant and snapdragon differs. Why do we observe such differences? Support your explanation by depicting it in Punnett squares.

26. (a) Explain the property that prevents normal cells from becoming cancerous. (5)

(b) All normal cells have inherent characteristic of becoming cancerous. Explain

(c) Explain any two alternative sources of food that prevent the occurrence of malnutrition diseases in humans.

OR

(a) How is innate immunity different from the immunity that you acquire through vaccines?

(b) Describe any two ways by which innate immunity can be accomplished.

(c) What is the composition of biogas? Name the category of microorganisms responsible for its production. Mention the advantages of having a biogas plant in the rural areas.

27. (a) Particulate and gaseous pollutants along with harmless gases are released from the thermal power plants. (5)

(i) Name any two harmless gases released.

(ii) Name the most widely used device of removing particulate pollutants from the air. Explain how the device is used.

(b) Name the type of food chains responsible for the flow of larger fraction of energy in an aquatic and a terrestrial ecosystem, respectively and distinguish between the two.

OR

(a) Explain, giving one example, how co-extinction is one of the cause leading to loss of biodiversity.

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

(c) Eutrophication is the natural aging of a lake. Explain.

BEST OF LUCK!