KENDRIYA VIDYALAYA SANGATHAN – CHENNAI REGION **SET-3**

CLASS XII COMMON PRE-BOARD EXAMINATION 2016 – 17

PRE-BOARD - I

Subject: Biology Time Allotted: 3 Hrs. M. Marks: 70

General Instructions:

(i) There are total of 26 questions and five sections in the question paper. All questions are compulsory.

(ii) Section A contains question number 1to 5; Very Short Answer type questions of one mark each.

(iii) Section B contains question number 6 to10; Short Answer type I questions of two marks each.

(iv) Section C contains question number 11 to 22; Short Answer type II questions of three marks each.

(v) Section D contains question number 23, Value Based question of four marks.

(vi) Section E contains question number 24 to 26, Long Answer type questions of five marks each.

(vii) There is no overall choice in the question paper; however, an internal choice is provided in **one** question of **two** marks, **one** question of **three** marks and all the **three** questions of **five** marks. In these an examinee is to attempt any one of the two given alternatives.

SECTION - A

1. RNA interference (RNAi) is the method of cellular defence in eukaryotes. Infer the possible sources of ds RNA for RNA interference in these cells.
2. Histones are positively charged proteins. Analyze the reason for their positive charge.
3. IUI has been carried out as an ART on a woman. Judge two situations when the doctor must have decided to carry out this.
4. There are traits/ phenotypes where two different dominant alleles of a gene express themselves simultaneously when they are together. Identify one such human trait and the genotype responsible for it.
5. Virus-free plants can be raised from a virus-infected plant. Can you explain with reason, how it is possible?

SECTION – B

6. Give one reason for a statutory ban on aminocentesis.
7. Explain giving four reasons why T.H. Morgan preferred to use Drosophila for his genetic experiments.
8. (a) Write the scientific name of the plant that yields cocaine.
   (b) Explain how it affects the human body.
9. Give reasons why certain regions of the earth are called biodiversity ‘hot spots’. Give two examples of such hot spots in India.
10. Name the source of Statin and state its action on human body.

SECTION C

11. (a) All papaya plants bear flowers, but fruits are produced only in some. Can you name another plant showing such a phenomenon? Give reason for this observation.
    (b) Why is fertilization in bryophytes considered as internal fertilization? Name another group of plants showing the same phenomenon.
12. Natural selection leads to origin of new species. Explain the three ways in which it operates to do so.
13. (a) Draw a diagram of a monocot seed and label the following parts in it.
        (i) Coleoptile
        (ii) Coleorhiza
        (iii) Scutellum and
        (iv) Plumule
    (b) Banana fruit do not have viable seeds. How would you explain this observation?
14. (a) Distinguish between polygenic inheritance and pleiotropy with an example for each.
    (b) Analyze the genotypes of the parents, if the progeny has the following phenotypic ratios:
        (i) 9:3 : 3: 1
        (ii) 1: 1: 1: 1
15. (a) What is Lamarks's theory of evolution known as? Illustrate with an example.
    (b) Mention two evolutionary features of mammals.
16. (a) Name the cells HIV attacks first when it gains entry into a human body.
    (b) Predict what would happen in the human body because of this viral entry.
17. (a) Mycorrhizae are fungal associations with roots of higher plants. Judge their effects on plants. Give four points.
    (b) Name the fungus that is:
        (i) used as biocontrol for plant diseases.
        (ii) the source of the first antibiotic discovered.
18. Explain the various steps in the formation of recombinant DNA by action of restriction endonucleus with the help of labeled diagram.
19. A patient suffering from abdominal pain was diagnosed to be suffering from amoebiasis.
    (a) What must have made the doctor conclude it as amoebiasis? Give three characteristic symptoms.
    (b) Write the scientific name of the organism causing this disease.
    (c) Name the part of the body affected in this disease.
20. You must have been reading or listening to the words stem cell therapy these days.
    (a) What are stem cells? Name any two sites in the human body from where they can be obtained.

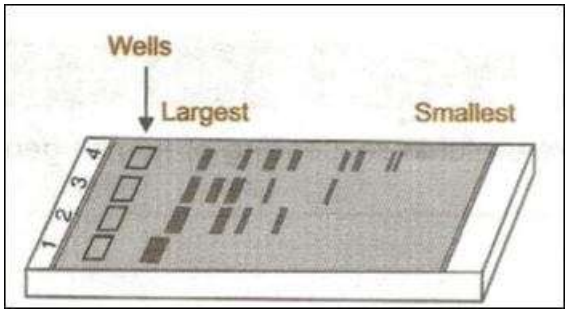
(b) Name the cry genes that control cotton bollworms.

(OR)

(a) Explain with an example, how restriction enzymes are named.

(b) What is the role of transposons in RNA interference in eukaryotes?

21.



(a) Can you infer what the 'largest' and the 'smallest' in the diagram represent?

(b) Explain why they have become separated like this.

(c) How can you visualize them?

22. (a) A population may be expanding (increasing in size) or declining (decreasing in size) or stable without any change. Construct an age pyramid for a declining population. Reason out why you consider it as declining.

(b) Write any two major biomes of India.

SECTION - D

23. New Delhi Municipal Corporation (NDMC) has kept two dustbins of two different colours in many places. But we see people dumping the wastes in any one of them as they like. More often wastes are thrown around the dustbins.

(a) What motive is there for keeping two dustbins of two different colours? Explain to the people of your locality.

(b) Can you differentiate between the two types of wastes that we generate?

(c) Analyze the need for separating them for effective disposal of them.

SECTION – E

24. (a) Egret birds and grazing cattle are found in close association in many rural areas. Can you give two more examples of this kind of interaction? Name and justify the type of population interaction seen in them.

(b) Explain why only unleaded petrol/diesel be used in vehicles that are fitted with catalytic converters.

(c) Mention the function of catalytic converters in the automobiles.

(OR)

(a) An ecological pyramid of biomass may be upright or inverted. Analyze the situations for these two types of pyramids and give an example of each.

(b) What measures, as an individual would you take to reduce the environmental pollution that is increasing day – by – day?

25. (a) Write the salient feature of genetic code.

(b) Draw a schematic diagram of lac operon in its 'switched off' position and label the following.

(i) The structural gene (ii) Repressor bound to its correct position

(iii) Promoter gene (iv) Regulator gene

(OR)

(a) Explain why tRNA is called an adapter?

(b) Explain 'BAC' and 'YAC'. Explain how they are useful in sequencing of human genome.

(c) Which of the chromosomes has?

(i) The largest number of genes.

(ii) The least number of genes.

26. (a) Trace the events in the formation of pollen grains from the pollen mother cell.

(b) Draw a labeled diagram of the sectional view of a mature pollen grain.

(c) It was found in a poly embryonic seed that some embryos were haploid and some were diploid. Analyze the possibilities for the formation of such embryos.

(OR)

(a) Distinguish between Leydig cells and Sertoli cells in a human testis, regarding their location and function.

(b) Draw a sectional view of human ovary and label the following parts in it. Ovarian follicles in four different stages of development, ovum and corpus luteum.

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