Roll No: _____

This question paper consists of 33 questions in 8 printed pages.

D.A.V. INSTITUTIONS, CHHATTISGARH

SAMPLE QUESTION PAPER – 2023-24

CLASS – XII

TIME: 03.00 Hrs. **SUBJECT – BIOLOGY** **M.M. : 70**

General Instructions:

- There are 33 questions in this question paper. All questions are compulsory.
- Section - A Consist of 16 questions of 1 mark each.
- Section - B Consist of 5 questions of 2 marks each.
- Section - C Consist of 7 questions of 3 marks each.
- Section - D Consist of 2 case based questions of 4 marks each
- Section - E Consist of 3 questions of 5 marks each
- There are no overall choices. However internal choice has been provided in some questions. Student has to attempt only one of the alternatives in such questions.

SECTION - A

1. A biologist studied the population of rats in a barn. He found that average natality was 250, average mortality 240, immigration 20 and emigration 30. The net increase in population is

a) 5 b) zero c) 10 d) 15

2. Identify the correct pair

a) chromosomal aberration- aneuploidy

b) Klinefelter's syndrome- extra 2 autosomes

c) Turner's syndrome- extra X chromosome in male

d) None of these

3. Cancer cell do not exhibit the property of

a) generating tumor

b) metastasis

c) contact inhibition

d) less number of mitochondrial cristae

4. Mendel's law of independent assortment does not hold true for the genes that are located on

a) same chromosome b) X chromosome c) autosomes d) non homologous chromosomes

5. Introduction of Nile Perch in lake Victoria result in

a) Excessive growth of water weeds

b) Excessive growth of cichlid fish

c) Elimination of cichlid fish

d) Elimination of water weed

6. The group in which Monascus belongs;

a) Bacteria b) Fungi c) Algae d) Virus

7. Match column I with II and select the correct option

I	II
A. Sporozoites	i) infectious form of Plasmodium
B. Filariasis	ii) Flavivirus
C. Typhoid	iii) Wuchereria
D. Common cold	iv) Widal test

a) A-iv, B-ii, C-I, D-iii

b) A-iii, B-iv, C-ii, D-i

c) A-ii, B-iii, C-I, D-iv

d) A-I, B-iii, C-iv, D-ii

8. Identify the disease that can affect both the male and female genitals

a) cholera b) pneumonia c) Gonorrhea d) amoebiasis

9. A foreign DNA and plasmid cut by same restriction enzyme can be joined by

a) Taq polymerase b) Ligase

c) Eco RI d) DNA polymerase III

10. Population growth curve is sigmoid, if the growth pattern is

a) logistic b) geometric c) exponential d) accretionary

11. Red list contain information on

a) marine non vertebrates b) economically important plants c) threatened species d) none of these

12. Identify the palindrome

a) GAATTC b) GGATTC c) CCTGG d) CGATA

CTTUUG CCTAGG GGACC GCTAA

For question numbers 13, 14, 15 and 16 two statements are given - one labeled Assertion (A) and the other labeled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below.

a. Both assertion and reason are true and the reason is the correct explanation of the assertion.

b. Both assertion and reason are true, but the reason is not the correct explanation of the assertion.

c. Assertion is true but reason is false.

d. Assertion is false but reason is true.

13. **Assertion** **:** Many endemic species are seen to flourish in sacred grooves

Reason: : Sacred forests are undisturbed forest patches and biodiversity rich areas

14. **Assertion** : In a monohybrid cross F1 generation indicate recessive characters.

Reason **:** Recessive characters expresses in heterozygous condition

15. **Assertion** **:** The plant biomass which serves as the food of herbivores and decomposers is said to result from the net primary productivity.

Reason **:** GPP is the rate of total production of biomass during photosynthesis. .

16. **Assertion** : Trophoblast is a cluster of dividing cell made by an unfertilized egg

Reason **:** Trophoblast implants in uterine wall and develop in to an embryo

SECTION – B

17. Mention four diagnostic features of Turner's syndrome.

18**.** Draw a diagram of human sperm and label end piece and nucleus.

19. What is the reason for making host cell competent in biotechnology? List the method suitable for plant cell.

20. Mention the application of antihistamine and cytokine barrier.

21. Why is Saheli considered an effective contraceptive for woman?

OR

List any two reasons other than physical and congenital disorders for causing infertility in couples.

SECTION- C

22. Differentiate between autogamy and xenogamy. Write the difference in characters of the progeny produced as a result of the two process.

23. a) What do you mean by Y in YAC? Mention its role in HGP.

b) Write the percentage of human genome that codes for protein and the percentage of discovered genes whose functions are unknown?

c) Expand SNPs identified in HGP.

OR

a) Differentiate between a template strand and a coding strand

b) Mention the contribution of genetic map in HGP

24. Why are transgenic animals called so? Explain their role with one example in

a) vaccine safety b) biological product

25. Explain the genetic basis of blood group in humans.

26. a) How many number of nuclei are present in a fully developed male gametophyte.

b) How many meiotic divisions are required for the formation of 600 pollen grains.

27. a) Name the two growth models that represent population growth.

b) State the basis for the difference in shape of these curves.

c) Which one of the curves represent the human population growth at present? Do you think such a curve is sustainable? Give reason in support of your answer.

28. a) Why there is a fear amongst the guardians that their adolescent wards may get trapped in drug/alcohol abuse.

b) Explain addiction and dependence in respect to drugs/alcohol abuse

SECTION D

Q no. 29 and 30 are case based questions. Each question has 3 sub parts. Choice is being given in one question.

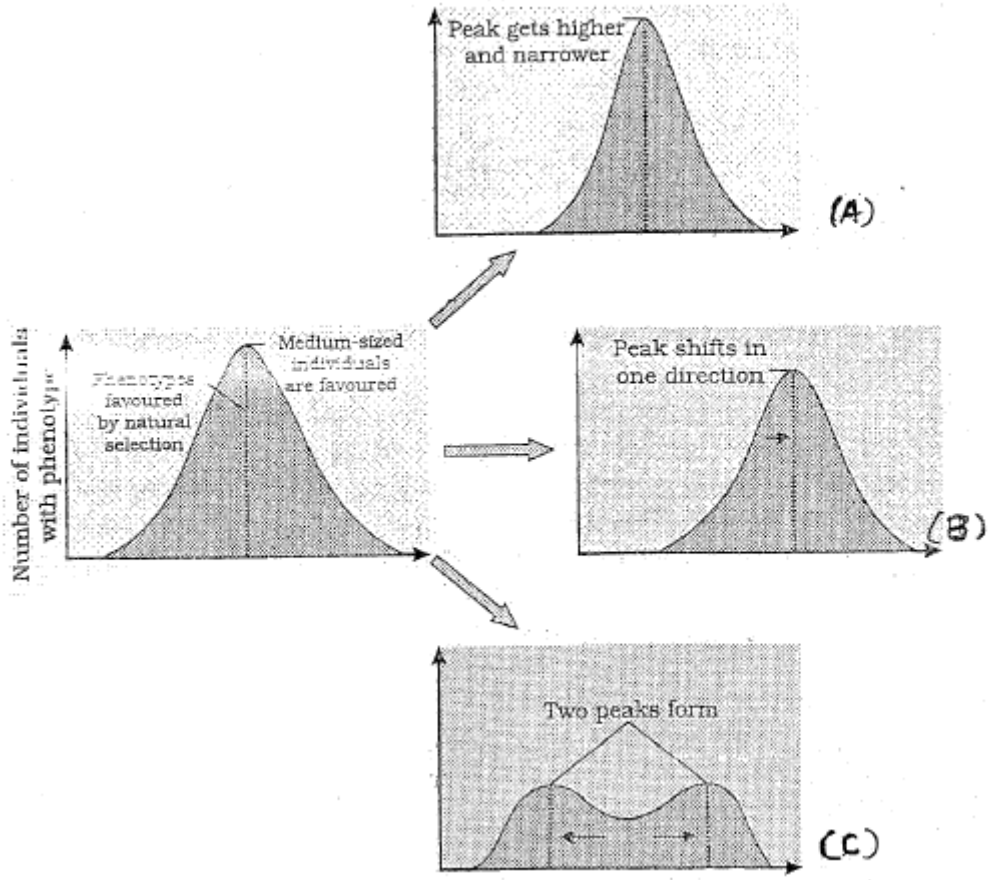
In a study to test a new vaccine against a viral disease, mouse model testing is done. In this process mice are vaccinated and their blood samples were tested. Mice developed mild symptoms. After few days those mice were again infected with the virus. This time they did not show any disease symptoms.

a) Which form of pathogen is used in vaccination?
b) Suggest the antibodies behind this.
c) Why mice did not show any disease symptoms during second exposure to the pathogen virus?

OR

Draw the structure of IgA

30.



a) On the basis of the given graphs what conclusion can you draw about A and B?

b) What is the significance of higher and narrow peak in case A?

c) What does graph in case B indicates? Give suitable example.

OR

What would happen if population is converted into case C?

SECTION – E

31. Describe the process of synthesis of fully processed mRNA in a eukaryotic cell.

OR

Describe the mechanism by which a gene is expressed in a cell

32. a) Why are certain cotton plants called Bt- cotton plants?

b) Why does Bt toxin not kill the bacterium that produces it but kill the insect that ingests it?

OR

a) What is biopiracy? Explain its significance with example.

b) State the initiative taken by Indian parliament against biopiracy.

33. a) Answer the following questions regarding origin of life.

b) Which compound was formed in miller's experiment?

c) Which compound was absent in primitive atmosphere?

d) Name two views of the modern theory of origin of life.

OR

a) How do the observations made during moth collection in pre and post industrialized era in England support evolution by natural selection?

b) Explain the phenomenon that is well represented by Darwin's finches other than natural selection.

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