

KENDRIYA VIDYALAYA SANGATHAN CHENNAI REGION

Model Question Paper -Half yearly 2015

Subject :Biology

Time Allotted: 3 hrs

Max .Marks : 70

General Instructions:

- (i) *All questions are compulsory.*
- (ii) *This question paper consists of four Sections A, B, C and D.
Section A contains 5 questions of one mark each,
Section B is of 5 questions of two marks each,
Section C is of 12 questions of 3 marks each and a VBQ of 4 mark,
Section D is of 3 questions of five marks each.*
- (iii) *There is no overall choice. However, an internal choice has been provided in one question of 2 marks, one question of 3 marks and all the three questions of 5 marks weightage. A student has to attempt only one of the alternatives in such questions.*
- (iv) *Wherever necessary, the diagrams drawn should be neat and properly labelled.*

- 1.What are the adaptations seen in water plants?(1)
- 2.How are transgenic animals used to study the normal physiology and development of humans?(1)
- 3.What is the significance of *ecological nichet*?(1)
- 4.How does *Thalassemia* affect an individual's health ?(1)
- 5.Yucca plant and a moth cannot complete their life cycle without the other. Why?(1)
- 6.Suggest a contraceptive device/technique that could be used i) as a terminal irreversible method by a male ii)to prevent STD's also iii)with least side effects by a female iv)emergency contraceptive for a female.(2)
- 7.i)How are plants created by artificial hybridisation?
- 8.Organic farming is a zero-waste procedure. Explain briefly with an example.(2)
- 9.How does gene flow and genetic drift affect a population? (2)

OR

- In the *lac operon* what is the role of i) structural genes ii) regulatory gene iii) lactose
iv) Promoter ?(2)

10. Parasites have adaptations to survive in their hosts. Justify the statement with suitable examples .(2)
11. Illustrate the sticky ends that E CoR1 would produce on a DNA .How does the stickiness help in the process of forming rDNA? Can this enzyme be used to insert genes at the tetracycline and ampicillin resistance genes in PBR322 vector? Why or Why not?(3)
12. Why are the Pioneer species in a Xerarch , usually lichens? What are the Pioneer species in a Hydrarch succession ?State any two factors that secondary succession depends on ?(3)
13. The process of decomposition depends on several specific steps . Explain three major steps leading to decomposition of organic ,matter in the ecosystem.(3)
14. Explain how *Agrobacterium* sp. and retroviruses are made useful for biotechnology ?(3)
15. How can isolation of DNA from bacterial cell be made possible for Biotechnological experiments? Ii)Mention two methods of vector less gene transfer into cells .(3)
16. How is DNA packed in a Eukaryotic cell ?(3)
17. How is colourblindness inherited? How does it differ from the inheritance of phenylketonuria?
18. Define Eutrophication? Explain how is it affected by human activities ?(3)
19. Describe the development of endosperm in coconut? What is its fate in a seed?(3)
20. Make a labelled diagram of the seminiferous tubule and explain the how FSH affect its target cells in the testis?(3)
21. With an example explain how anthropogenic action can be responsible for evolution? ii) How does evolution caused this way be differ from the naturally occurring process explained by Darwin ?(3)
22. What evidences do we have for biological evolution from i) Palaentology ii)embryology iii) Molecular biology .(3)

OR

Describe Alec Jeffreys method of DNA fingerprinting .(3)

SECTION D

23. i)With your understanding of the concepts of origin of life & evolution give three reasons why you would consider Air ,water and soil as precious? ii) How would you help in conserving it ?(4)

SECTION E

24. I. Make a diagram of an Anotropous ovule and label I)Nucellus ii) Micropyle
iii)Integument iv)embryo sac .II. Describe briefly the formation of the female gametophyte
formed from the Megaspore mother cell ?

OR

Describe the formation of a Graafian follicle from a Primary follicle in the human ovary.
Show schematically. ii) What are the changes that happen to the ovum from fertilisation to
implantation.(5)

25. How does sex determination in drosophila differ from that in honeybee. Explain ii)What
is the unique mode of reproduction in honey bees

OR

Describe a cloning vector and how it is used in generating a Biological product .(5)

26. I.How do the following phenomena differ from the Mendelian principles i)Pleiotropy ii)
Incomplete dominance iii)Polygenic traits? II.Give two reasons why DNA is a better
genetic material than RNA?

OR

DNA extracted from a culture of E Coli bacteria ,20 minutes after the transfer of the
bacteria from ^{15}N to ^{14}N containing medium , was found to have intermediate density. What
was the proportion of light and intermediate density DNA after 40 minutes and then after 80
minutes .Explain with suitable diagrams . What was the conclusion drawn from this famous
experiment done by Meselson & Stahl .
