KENDRIYA VIDYALAYA SANGATHAN , ERNAKULAM REGION

SAMPLE PAPER 2012-13

SUBJECT – BIOLOGY	**MAX MARKS – 70**
	TIME - 3 HRS

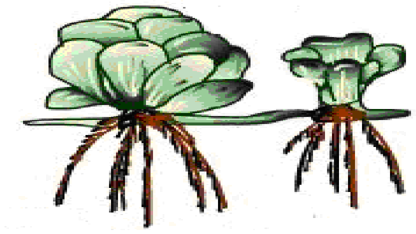
General Instructions:

1. All questions are compulsory.
2. This question paper consists of four Sections A, B, C and D. Section -A contains 8 questions of 1 mark each, Section -B is of 10 questions of 2 marks each, Section -C has 9 questions of 3 marks each and Section D is of 3 questions of 5 marks each.
3. 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 . Attempt only one of the choices in such questions.

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

Section A

1. Identify the vegetative propagule in the following –



1

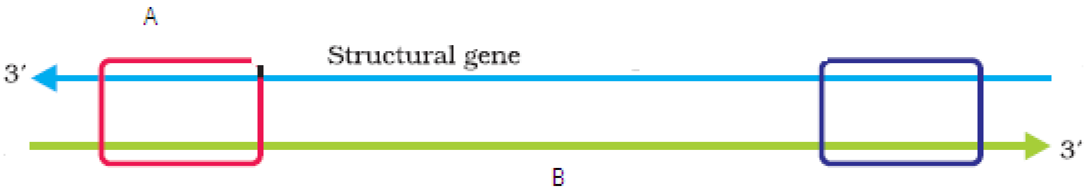
2. A child suffering from Down's syndrome shows trisomy of 21st chromosome. Mention the cause of this abnormality?

3. State the importance of biofortification. 1

4. Very small animals are rarely found in the polar regions. Give reason. 1

5. How is the action of exonuclease different from that of an endonuclease? 1

6. Name the parts ‘A’ and ‘B’ of the transcription unit given below-



1

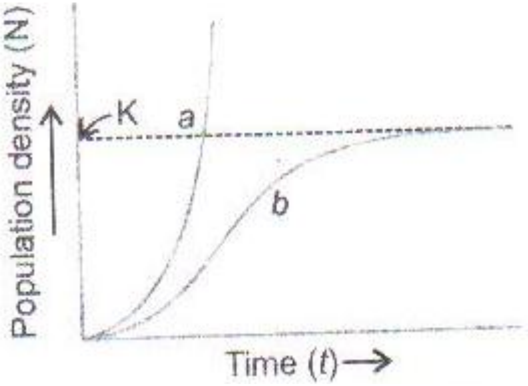
7. Pills are widely accepted as ideal methods of contraception by women. How does it effectively prevent pregnancy? 1

8. Why is it desirable to use unleaded petrol in vehicles fitted with catalytic converters? 1

Section B

9. Giving two reasons explain why there is more species diversity in the tropics than in the temperate latitudes. 2

10. A population 100 spotted deer were living without any carnivores in an enclosure of a few hectares of tropical forest land. The deer census was taken after a few years. Now study the graph given below and answer the questions that follow-



a) Identify the curve that represents the deer population.
b) What is this this type of population growth curve called as? What is ‘K’ in the graph? 2

11. A person shows a strong immunogenic reaction while exposed to certain substances. Name this condition and the common term for such substances. Mention the cell and the chemical which causes this condition. 2

12. How are somatic hybrids produced? 2

13. Complete the flow chart of Secondary treatment of effluents in an Effluent treatment

Primary effluent is passed through ---------a-------------------
↓
Pumping of air
↓
----b---
↓
Decrease in the BOD of the effluent
↓
Collection in settling tank
↓
----c---
↓
Pumping into anaerobic sludge digester
↓

----d-- 2

14.a) How do cancerous cells differ from normal cells?
b) What is the role of interferons in the treatment of cancer ?

15. How do mycorrhizae act as biofertilizer? Explain. Name the genus of the fungi that forms mycorrhizal associations with plants. 2

OR

Name the source of Streptokinase. What is the role of this bioactive molecule in the human body.

16. Name the type of interaction in each of the following-
a) Sucker fish attached to shark
b) wasp pollinating fig inflorescence
c) Smaller barnacles disappeared when Balanus dominated the coast of Scotland.
d) Ascaris lives in the intestine of man. 2

17. Mention any two strategies adopted by flowering plants to prevent self pollination. 2

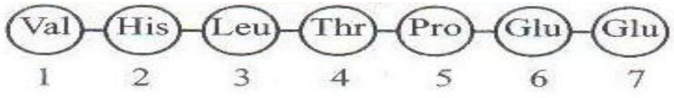
18. Explain the Zygote intra fallopian transfer.(ZIFT).How is intra-uterine transfer different from it ? 2

Section C

19.a. 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 big birds.
b) Differentiate giving reasons between the pyramid of energy of the above and the

pyramid of number that you have drawn. 3

20. The amino acid composition of a portion of the β chain of haemoglobin is shown below:



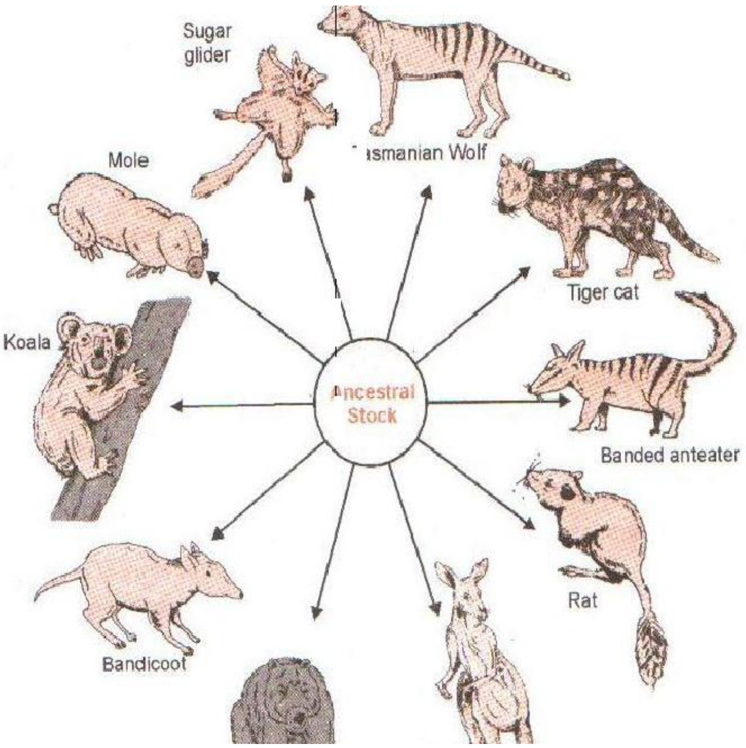
The codon for the sixth amino acid is GAG.The sixth codon GAG mutates to GAA as a result of mutation’A’ and to GUG as as a result of mutation ‘B”.Haemoglobin structure did not change as a result of mutation’A’ whereas it became sickle shaped as a result of mutation ‘B’ .Explain giving reasons how is this possible. 3

21.During the process of transcription in Eukaryotes, the primary transcript formed is very different from the mature RNA.

a) What is the primary transcript called as?
b) How is it different from the mature RNA ?
c) Explain the steps in the formation of mature RNA from the Primary transcript. 3

22. MOET is considered to be a successful programme in cattle breeding. Explain the steps involved in carrying out this programme in cows. 3

23. Name and explain the evolutionary concept represented in the illustration given below. What type of evolution does it show – Convergent / divergent. 3



24. A specific gene sample of interest needs to be amplified by PCR. What are the main steps that are involved ? What is the special feature of the DNA polymerase used in PCR ? Name the organism from which this enzyme is isolated ? 3

25. a) How did Eli Lilly Company go about preparing the human insulin?
b) How is the insulin produced different from that produced by the functional human insulin gene ? 3

26. Give the schematic representation of spermatogenesis inMan.

OR

Give the schematic representation of Oogenesis in a human female. 3

27.How does RNA interference help in developing resistance in tobacco plants against nematode infection? 3

Section D

28.a)Show diagrammatically the stages of embryonic development from zygote to implantation in humans.
b) Briefly explain the formation of chorionic villi and the placenta in embryonic development.

OR

a) Diagramatically show the stages in the development of megaspore mother cell to from a mature embryo sac in angiosperms.
b) Why is this type of embryo sac development called as monosporic? 5

29. a)A true breeding homozygous pea plant with green pods and axial flowers as dominant characters is crossed with a homozygous recessive pea plant with yellow pods and terminal flowers. Work out the cross upto F2 generation. Give the phenotypic ratio of the F2 .
b) Name the law that can be deduced from this cross and not from a monohybrid cross.

OR

How did Alfred Hershay and Martha Chase prove that DNA is the hereditary material? 5

30. a) Alien species are highly invasive and a threat to species diversity. Substantiate this statement with suitable examples from both plants and animals.
b) List two criteria to determine a hotspot of biodiversity.
c) Name two hotspots of biodiversity in India.

OR

a) What causes the depletion of Ozone in the stratosphere. Explain the role of UV rays and this chemical in its depletion.
b) How does this depletion affect human life ? 5
