INTERNATIONAL INDIAN SCHOOL-DAMMAM

PRELIMINARY EXAMINATION- 2012-2013

XII- BIOLOGY

Time- 3 Hours Max. Marks-70

SET-A

General Instructions:

I. All questions are compulsory.
II. The question paper consists of four sections A,B,C,&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 whereas Section D is of 3 questions of 5 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 labeled.

SECTION-A

1. What are proto-oncogenes or cellular oncogenes (c-onc)? 1

2. Evolution is due to a random directionless single step large mutation. Name the geneticist who proposed this mechanism of evolution. 1

3. Resistance to Yellow Mosaic Virus in Bhindi (Abelmochus esculentus) was transferred from a wild species through hybridization and selection that resulted in a new variety of A. esculentus. What is the name given to this new variety?
   (a) Himgiri
   (b) Pusa sawani
   (c) Parbhani kranti
   (d) Pusa gaurav 1

4. Identify and give comment on the following ecological pyramid. 1

5. The following table show interspecific interactions. The beneficial, detrimental and neutral interactions are depicted by +, -, and 0 respectively. Name the types of interactions X and Y. 1

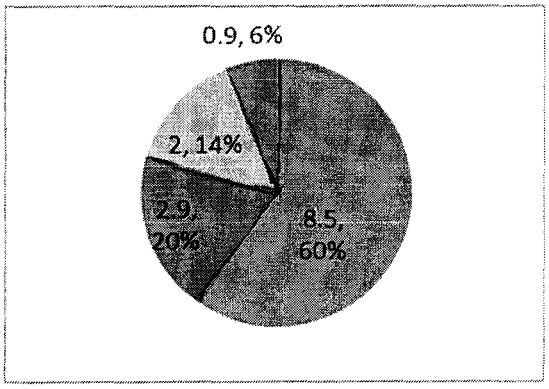
Species A	Species B	Type of interaction
-	-	X
-	0	Y

6. In pedigree analysis, what are these symbols represents? 1

(a) □-○ (b) □=○

7. A plant breeder is carrying out artificial hybridization to improve his bisexual crop plant. Which of the following are the correct steps involved in the process?
   a. Bagging→ Emasculation→ Dusting of pollens→ Rebagging
   b. Bagging→ Dusting of pollen→ Rebagging
   c. Emasculation→ Bagging→ Dusting of pollen→ Rebagging
   d. Dusting of pollen→ Bagging→ Emasculation→ Rebagging 1

8. In the given pie-chart if the 60% and 14% of Global Warming is caused by CO_2 and CFC_s respectively, then the remaining 20% and 6% of Global Warming is contributed by which greenhouse gases? 1



SECTION-B

9. Shanti has been blamed by her mother-in-law for giving birth of a baby girl consecutively for the second time. Shanti's husband convinced his mother that he has to be blamed for this.
   i. Which values has been exhibited by Shanti's husband?
   ii. Explain how Shanti's husband might have convinced his mother. 2

10. How do a Zoological Park different from a National Park? 2

11. Is there a way to minimize the use of synthetic chemical fertilizers to protect our environment from their harmful effects? Explain it with any one example. 2

12. A couple with normal vision was informed by the genetic counselor that there is a possibility of a color blind child being born to them. Draw a checker board and find out the percentage of possibility of such a child among the progeny. 2

13. What is Verhulst-Pearl Logistic growth of population of a species? Give its graphical representation. 2

14. Conventional hybridization used for crop improvement is inefficient, tedious and time consuming method. Name the fast and efficient method of obtaining a new hybrid plant without involving gametes. Also mention the two steps of this method. 2

15. Mention the role of microbes (Bacteria & Fungi) in operating Phosphorus cycle in the biosphere. 2

16. A male physical fitness enthusiast decided to take anabolic steroids to develop his muscles and stamina. As a physical fitness instructor mention any four side-effects to him caused by the anabolic steroids when misused/abused. 2

17. What is primary productivity? How it is expressed? Enlist any two factors that affect primary productivity. 2

18. Mention any four advantages of GM Crops over their wild/domesticated relatives.

OR

State the principle of DNA gel-electrophoresis. Mention its two applications in Biotechnology. 2

SECTION-C

19. How the placenta is formed in humans? Give any four functions of placenta. 3

20. In a garden Pea plant, majority of the plants produce violet flowers. Very few plants bear white flowers. No intermediate colors are observed. If you are given a plant bearing violet flowers, how would you ascertain that it is a pure breed for this trait? Explain. 3

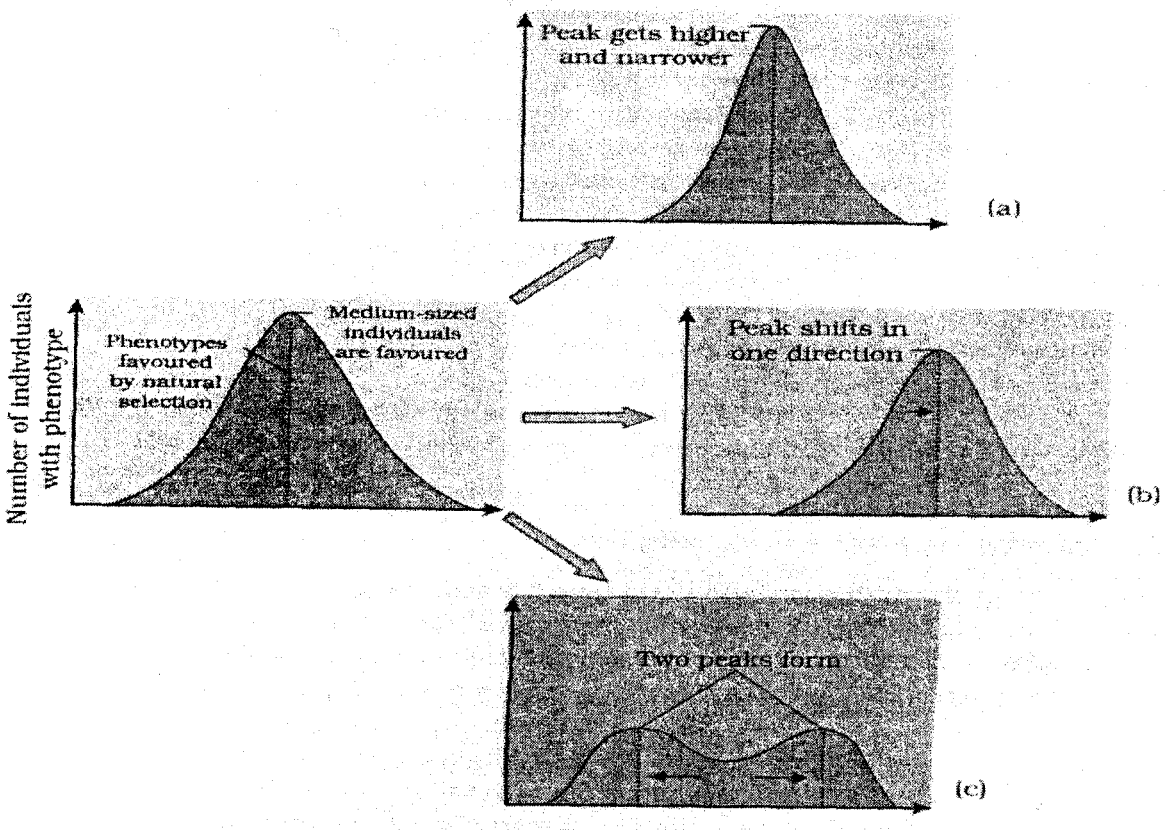
21. Draw a neat and labeled diagram of an antibody molecule.

    i. Name the cells which produce them.
    ii. Which antibodies provide passive immunity to the infant by mother's milk during initial days of lactation? 3

22. Ministry of Environment and Forests has initiated an action plan to save the major rivers of our country from pollution by building a number of sewage treatment plants. Explain the dual role of microbes in sewage treatment to obtain usable water and a fuel. 3

23. Observe and study the following graphs and give your comment on each. 3

Types of Natural Selection



24. A child has severe combined immunodeficiency syndrome due to deficiency of Adenosine deaminase caused by deletion in its gene. Being a doctor what possible therapeutic approaches do you have to cure the child? 3

25. Describe the structure of a monocot embryo with the help of a labeled diagram.

OR

Describe the series of events occurring in human zygote upto its implantation in uterus. 3

26. What is deforestation? Discuss the role of women and communities in the protection and conservation of forests in India. 3

27. A person was suffering from Typhoid. The doctor prescribed him Chloromycetin 250 mg antibiotic every 8 hr. Even after three days the infection did not subside so the doctor changed the antibiotic and Ciprofloxacin 250 mg given this time. After two days the person appears to be free from infection and later become normal.
    i. What values does the doctor exhibit in the treatment of the person?
    ii. Why the doctor did changed the antibiotic during the course of treatment. Explain it in the light of Darwin's theory of evolution. 3

SECTION-D

28. What is menstrual cycle? Describe the menstrual cycle and its hormonal regulation.

OR

What is spermatogenesis? Describe the process of spermatogenesis and its hormonal regulation. 5

29. rDNA technology and RNA_i helps us to produce pest resistant plants and decrease our dependency on synthetic eco-damaging pesticides. Explain this briefly by giving one example each. Mention the principle and procedure.

OR

What is Bio patent and Bio piracy? Explain this with any one example. 5

30. (a) Give the schematic structure of a transcription unit.
    (b) DNA----------→ hnRNA----------→ mRNA
    This equation represents the transcription of mRNA in eukaryotic cells. Describe the mechanism of conversion of hnRNA to mRNA.

OR

In a nursing home a newly born child is claimed by two couples as their own. To solve this paternity dispute, doctors initially carried out blood group matching. Which other procedure help them to determine the natural parents of the child. Explain its principle and procedure. 5