

INTERNATIONAL INDIAN SCHOOL DAMMAM
SECOND TERMINAL EXAMINATION - DECEMBER- 2015

XII - BIOLOGY

Time: 3 hrs.

Max. Marks: 70

SET A

General Instructions:

- i) All questions are compulsory.
- ii) The question paper consists of three sections A, B, C,D and E. Section A contains 5 questions of 1 mark each, Section B is of 5 questions of 2 marks each, Section C has 12 questions of 3 marks each, Section D has 1 question of 4marks whereas Section E 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

(1x 5 = 5)

- Q: 1 Mention the site where syngamy occurs in amphibians and reptiles respectively.
- Q: 2 Why is tubectomy considered a contraceptive method?
- Q: 3 What is the medical use of cyclosporin A?
- Q: 4 In a pond there were 200 frogs. 40 more were born in a year. Calculate the birth rate of the population.
- Q: 5 Why is the south Indian sugarcane preferred by agriculturalists?

SECTION B

(2x 5 =10)

- Q: 6 What is self- incompatibility? Why does self-pollination not lead to seed formation in self-incompatible species.
- Q: 7 Describe the initiation process of transcription in bacteria.
- Q: 8 A red-eyed heterozygous female fruit fly is crossed with a red-eyed male. Work out all possible genotypes and phenotypes of the progeny. Comment on the pattern of inheritance of eye colour in fruit flies.
- Q: 9 How do cellular barriers and cytokine barriers provide innate immunity in humans?



- Q: 10 a) Rearrange the following in an ascending order of evolutionary tree:
reptiles, salamanders, lobefins, frogs.
- b) Name the ancestors of progymnosperms.
- c) Name the ancestors of herbaceous and arborescent lycopod.

OR

Fill in the blanks with (i), (ii), (iii) and (iv) with name of the mammal of Austral

Placental mammal	Marsupial mammal
Anteater	(i)
(ii)	Spotted cuscus
Bob cat	(iii)
(iv)	Tasmanian wolf

SECTION C

(3x 12 = 36)

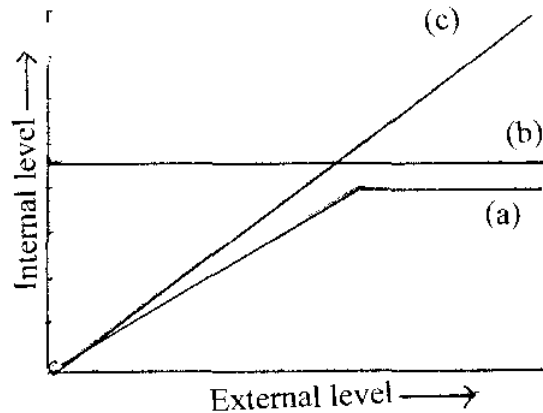
- Q: 11 Draw a longitudinal section of a post pollinated pistil showing entry of pollen tube into a mature embryo sac. Label filiform apparatus, chalazal end, hilum, antipodals male gametes and secondary nucleus.
- Q:12 Explain the sex determination mechanism in humans. How is it different in birds?
- Q:13 a) Name the plant source of the drug popularly called "smack".
- b) Name and explain giving reasons, the type of immunity provided to the newborn by the colostrum and vaccinations.
- Q:14 a) Name the semi-dwarf varieties of wheat which is high yielding and disease resistant.
- b) Describe the technology that has successfully increased the herd size of cattle in short time to meet increasing demands of growing human population.

OR

List any three out- breeding practices carried out to breed domestic animals. Explain the importance of each one listed.

- Q: 15 How did Eli Lilly synthesise human insulin? Mention one difference between this insulin and the one produced by human pancreas.
- Q: 16 Name the genetic disorder caused by trisomy of 21st chromosome in humans. Write the diagnostic features of the disorder.

- 17 The graph given shows the organismic response to abiotic environmental factors. Name the categories of animals which show pattern A, B and C respectively. Define each of them.



- Q: 18 Explain the three ways in which natural selection operates on different traits in nature.
- Q: 19 a) Tobacco plants are damaged severely when infested with *Meloidogyne incognita*. Name and explain the strategy that is adopted to stop this infestation.
b) Name the vector used for introducing the nematode specific gene in tobacco plant.
- Q:20 a) Name the category of microbes occurring naturally in sewage and making it less polluted during the treatment.
b) Explain the different steps involved in the secondary treatment of sewage.
- Q:21 a) A hypothetical mRNA, AUG CGC CUA AGG AGG codes for five aminoacids. What will happen if you delete the first C? Will five aminoacids still coded? Give reason.
b) Name the scientist who called tRNA an adapter molecule.
- Q:22 Explain the hormonal control of Spermatogenesis in humans.

SECTION D

(4 x 1 = 4)

- Q:23 A person in your group society has recently been diagnosed with AIDS. Many members of the society want him to leave the society as they are scared of the spread of the disease.
- a) Name the causative agent. Name the two cells that the causative agent subsequently attack.
- b) Mention the routes of transmission of the disease.
- c) Write your view on the situation.

SECTION E

(5 x 3 = 15)

- Q:24 a) What is a bioreactor? Draw a labeled diagram of a sparged - stirred bioreactor.
b) How is the amplification of a gene sample of interest carried out using Polymerase Chain Reaction.

OR

- a) Explain how 'ori', 'selectable marker', and 'cloning sites' facilitate cloning in a vector.
b) With the help of diagrammatic representation only, show the steps of recombinational DNA technology.

- Q:25 a) Explain primary productivity and the factors that influence it.
b) Draw the pyramids of biomass in a sea and in a forest. Explain giving reasons why the two pyramids are different.

OR

- a) Trace the succession of plants on a dry bare rock.
b) Explain carbon cycle with the help of a simplified model.

- Q: 26 a) Draw a labelled diagram of human female reproductive system. (2 + 3)
b) Write the specific location and the functions of the following cells in human males.
i) Leydig cells ii) Sertoli cells iii) Primary spermatocytes.

OR

- a) Describe the stages of oogenesis in human females. (3 + 2)
b) Draw a labeled diagram of human sperm.