

INTERNATIONAL INDIAN SCHOOL DAMMAM

MODEL EXAMINATION - JANUARY- 2018

XII

Subj: **BIOLOGY**

Time: 3 hrs.

Max. Marks: 70

SET A

General Instructions:

- i) All questions are compulsory.
- ii) The question paper consists of five 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 4 marks 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 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 Name the vegetative propagules in: a) Potato b) Pistia
- Q: 2 State the role of C-peptide in human insulin.
- Q: 3 Mention the product and its use produced by the microbe 'Streptococcus'.
- Q: 4 Name the socio- biologist who popularised the term 'biodiversity'
- Q: 5 What is 'saltation' according to de Vries?

SECTION B

(2x 5 =10)

- Q: 6 Draw a schematic representation of a transcription unit showing the polarity of both the strands. Label promoter, structural genes and terminator.
- Q: 7 Write the source and the effect on the human body of the following drugs.
- a) Morphine b) Cocaine
- Q: 8 How do copper and hormone releasing IUDs act as contraceptives? Explain.

OR

ICSI and GIFT are two assisted reproductive technologies. How is one different from other?

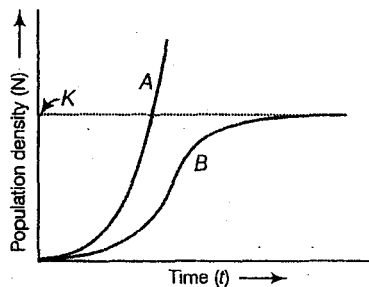
- Q: 9 State the function of a catalytic converter in an automobile.

Q:10 Differentiate between out-crossing and out-breeding.

SECTION C

(3x 12 = 36)

- Q: 11 a) How is placenta formed in human female?
 b) Name any two hormones which are secreted by placenta and are also present in a non-pregnant woman.
 c) Where are the stem cells located in the blastocyst stage of embryo?
- Q:12 Describe the Hershey and Chase's experiment. Write the conclusion drawn by the scientists after their experiment.
- Q:13 Give the scientific name of the parasite that causes malignant malaria in humans. At what stage does this parasite enter the human body? Trace its life cycle in human body.
- Q:14 How did the process of RNA interference help to control the nematode from infecting the roots of tobacco plants?
- Q: 15 Study the graph given below and answer the questions which follow



- The curve A is represented by the equation $\frac{dN}{dt} = rN$. What does 'r' represent in the equation and what is its importance.
- Which one of the two curves is considered a more realistic one and why?
- Which curve would depict the population of a species of deer if there are no predators in the habitat? Why is it so?

- Q: 16 A vector is engineered with three features, which facilitate its cloning within the host cell. List the three features and explain each of them.
- Q: 17 Draw the pyramids of biomass in a sea and in a forest. Explain giving reason, why the two pyramids different.
- Q: 18 Explain the action of the restriction endonuclease EcoRI.
- Q: 19 Angiosperm flowers may be monoecious, cleistogamous or show self incompatibility. Describe the characteristic features of each one of them and state which one of these flowers promotes in breeding and outbreeding respectively.
- Q:20 Draw a labelled sketch of a typical biogas plant.Explain the sequence of events occurring in a biogas plant.
- Q:21 What is 'biofortification'? Write its importance. Mention the contribution of IARI towards it with the help of an example.
- Q:22 The study of
- i) Fossils of dinosaurs
 - ii) Forelimbs of cheetah, bat, whale and human
 - iii) Thorns of Bougainvillea and tendrils of Cucurbita

Shows that evolution of life forms has indeed taken place on earth. Explain.

OR

- i) Rearrange the following in an ascending order of evolutionary tree
Reptiles, salamanders, lobefin, frogs
- ii) Name two reproductive characters that make reptiles more successful than amphibians

SECTION D

(4 x 1 = 4)

- Q:23 Mr. Iyer opposes his daughter willing to marry Rahul, since their family is known to inherit haemophilia. The daughter objected to her father's decision and scientifically explained the situation and convinced him.
- i) What values can be identified in Mr. Iyer's daughter?
 - ii) What explanation could have convinced Mr. Iyer?
 - iii) Is there any fear of haemophilia if Mr. Iyer's daughter marries Rahul?

SECTION E

(5 x 3 = 15)

Q:24 Carbon cycle in nature is a biogeochemical cycle. Explain

OR

- i) Name and explain any two ways that are responsible for the loss of biodiversity.
- ii) How is designation of certain areas as hot spots a step towards biodiversity conservation? Name any two hot spots in India.

Q:25 a) Explain the events that occur during pollen - pistil interaction.

b) Draw a diagram of a fertilised embryo sac of a dicot flower. Label all its cellular components

OR

- a) Explain the hormonal regulation of spermatogenesis in humans.
- b) Draw the diagram of human sperm. Label and write the functions of components of its head.
- c) Mention the difference between spermiogenesis and spermatogenesis.

Q: 26 Explain the process of translation.

OR

A true-breeding homozygous pea plant with green pods and axial flowers, as dominant characters, is crossed with a recessive homozygous pea plant with yellow pods and terminal flowers. Work out the cross up to F_2 generation, giving the phenotypic ratio of F_1 and F_2 respectively.

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- iv) Wherever necessary, the diagrams drawn should be neat and properly labeled.

SECTION A

(1x 5 = 5)

- Q: 1 In which two of the following organisms is the fertilization external:
Bony fishes, Ferns, Frogs, Birds
- Q: 2 What was the speciality of the milk produced by the transgenic cow Rosie?
- Q: 3 Why is genetic variation important in plant 'Rauwolfia vomitoria'.
- Q: 4 Mention the product and its use produced by the microbe 'Trichoderma polysporum'.
- Q: 5 What causes speciation according to Hugo de Vries?

SECTION B

(2x 5 =10)

- Q: 6 Draw a clover leaf structure of tRNA showing the following:
- i) Tyrosine attached to its aminoacid site.
 - ii) Anticodon for this aminoacid in its correct site.
- Q: 7 List any two outbreeding practices carried out to breed domestic animals.
- Q: 8 State the function of a catalytic converter in an automobile.

Q: 9 How do copper and hormone releasing IUDs act as contraceptives? Explain.

OR

ICSI and GIFT are two assisted reproductive technologies. How is one different from other.

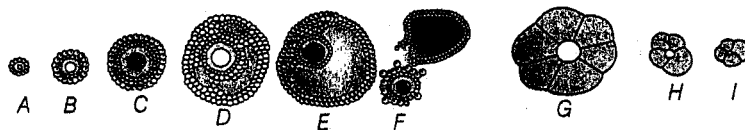
Q:10 Write the source and the effect on the human body of the following drugs.

- a) Marijuana b) Cocaine

SECTION C

(3x 12 = 36)

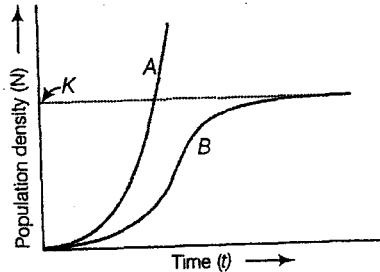
Q: 11 The following is the illustration of the sequene of ovarian events 'A' to 'I' in a human female.



- Identify the figure that illustrates corpus luteum and name the pituitary hormone that influences its formation.
 - Specify the endocrine function of corpus luteum. How does it influence the uterus? Why is it essential?
 - What is the difference between 'D' and 'E'?
- Q:12 Describe Meselson and Sthal's experiment and write the conclusion they arrived at.
- Q:13 a)Mention any four strategies adopted by flowering plants to prevent self pollination.
b) Why is geitonogamy also referred to as genetically autogamy?
- Q:14 A vector is engineered with three features, which facilitate its cloning within the host cell. List the three features and explain each of them.
- Q: 15 Draw the pyramids of biomass in a sea and in a forest. Explain giving reason, why the two pyramids are different.
- Q: 16 Give the scientific name of the parasite that causes malignant malaria in humans. At what stage does this parasite enter the human body? Trace its life cycle in human body.

- Q: 17 i) Why do farmers prefer biofertilisers to chemical fertilisers these days? Explain.
 ii) How do Anabaena and mycorrhiza act as biofertilisers?

Q: 18 Study the graph given below and answer the questions which follow



- i) The curve A is represented by the equation $\frac{dN}{dt} = rN$. What does 'r' represent in the equation and what is its importance.
 ii) Which one of the two curves is considered a more realistic one and why?
 iii) Which curve would depict the population of a species of deer if there are no predators in the habitat? Why is it so?
- Q: 19 What is 'biofortification'? Write its importance. Mention the contribution of IARI towards it with the help of an example.
- Q: 20 Expand the name of the enzyme ADA. Why is the enzyme essential in the human body? Suggest a gene therapy for its deficiency.
- Q: 21 The study of
- Fossils of dinosaurs
 - Forelimbs of cheetah, bat, whale and human
 - Thorns of Bougainvillea and tendrils of Cucurbita

Shows that evolution of life forms has indeed taken place on earth. Explain.

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- Rearrange the following in an ascending order of evolutionary tree
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- Name two reproductive characters that make reptiles more successful than amphibians

Q:22. Give a diagrammatic representation of recombinant DNA technology.

SECTION D

(4 x 1 = 4)

Q:23 Mr. Iyer opposes his daughter willing to marry Rahul, since their family is known to inherit haemophilia. The daughter objected to her father's decision and scientifically explained the situation and convinced him.

- i) What values can be identified in Mr. Iyer's daughter?
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