

INTERNATIONAL INDIAN SCHOOL – DAMMAM

FIRST TERM EXAMINATION - 2017

Biology

Class - XII

SET- B

Time : 3 hours

Max Marks: 70

General Instructions :

1. All questions are compulsory.
2. This question paper consists of five sections A, B, C, D and E. Section A has 5 questions of 1 mark each, Section B has 5 questions of 2 marks each, Section C has 12 questions of 3 marks each. Section D has 1 question of 4 marks and section E has 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 weightage. Attempt only one of the choices in such questions.
4. Where ever necessary, the diagrams drawn should be neat and properly labelled.

Section A

1. Segregate the following in to monoecious and dioecious . [1]
a) Chara b) Marchantia c) Papaya d) coconut
2. What stimulates the pituitary gland to release the hormone responsible for parturition . Name the hormone . [1]
3. Why are gametes said to be pure for a character ? [1]
4. Mention which human chromosome has [1]
a) the maximum number of genes . b) the one which has least number of genes .
5. How is the child affected if it has grown from the zygote formed by an XX – egg fertilized by a Y – carrying sperm. What do you call this abnormality ? [1]

Section B

6. a) Name the category of codon UGA belongs to . Mention another codon of the same category . [2]
b) Explain their role in protein synthesis .

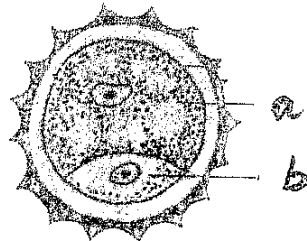
OR

Given below is a part of the template strand of a structural gene.

TAC CAT TAG GAT

- a) Write its transcribed mRNA strand with its polarity .
b) Mention the dual functions of deoxy ribonucleoside triphosphates .
7. A man with blood group A married a woman with B group .They have a son with AB group and a daughter with O blood group .Work out the cross and show the possibility of such inheritance . [2]
8. Explain any two methods of Assisted Reproductive Technology that have helped childless couples to bear children . [2]
9. Write the specific location and functions of the following cells in human males : [2]
a) Leydig cells b) Sertoli cells

10. In the sectional view of pollen grain given below identify (a) and (b) and mention their functions . [2]



Sectional View of Pollen Grain

Section C

11. Represent diagrammatically the mode of asexual reproduction in [3]
a) Chlamydomonas b) Hydra c) Penicillium
12. a) How artificial hybridization is considered as a crop improvement programme ? [3]
b) Explain the process of artificial hybridization if female parent bears bisexual flowers .
13. Explain the structure of human male gamete with labeled diagram . [3]
14. In an angiosperm , the embryo sac is haploid , zygote is diploid and endosperm is triploid . Justify giving reasons for each stage . [3]
15. Explain the development of an ovum from an oogonium in a human female . [3]
16. Name the category and the principle involved in the use of each of the following as contraceptives : a) Vasectomy b) LNG 20 c) Saheli [3]
17. Grasshopper is an example for male heterogamety and birds for female heterogamety . Explain [3]
18. State the aim and describe Messelson and Stahl experiment . [3]
- OR**
- How was bacterial transformation proved experimentally . Who has performed this experiment ?
19. F₂ phenotypic and genotypic ratios are same in a cross between red flowered Snapdragon and white flowered Snapdragon plants . Explain with the help of cross . [3]
20. a) Draw a clover - leaf secondary structure of t RNA carrying methionine at its amino acid acceptor end with its anticodon . [3]
b) How does charging of t RNA take place ?
21. a) What is pedigree analysis ? Suggest how such an analysis can be useful . [3]
b) What did Sturtevant use as the basis for mapping the chromosomes ?
22. Trace the development of the zygote up to its implantation in the uterus . [3]

Section D

23. Ratan was a known sportsman in his school. While returning home he found some unknown miscreants beating an young boy. He tried to drive them off but by that time the boy died of injury .The police arrested Ratan and he was put on trial . The judge being convinced by Ratan s plea , ordered for DNA finger printing reports . [4]
- a) Ratan s fingerprints on the dead body were sufficient to convict him but the judge asked for authentic proof . What values can be observed ?
 - b) What is the basis of DNA fingerprinting ?
 - c) Explain the steps in DNA fingerprinting .

Section E

24. a) Trace the development of embryo after syngamy in a dicot plant . [2+1+2]
b) Endosperm development precedes embryo development .Explain .
c) Draw the diagram of a mature dicot embryo and label cotyledons , plumule ,radicle and hypocotyl .

OR

Give reasons :

- a) Groundnut seeds are non - albuminous and castor seeds are albuminous . [1+1+1
+1+1]
 - b) Micropyle remains as a small pore in the seed coat of a seed .
 - c) Integuments of an ovule harden and the water content is highly reduced ,as the seed matures .
 - d) Pollengrains are well preserved as fossils .
 - e) Hybrid seeds have to be produced year after year .
25. a) Explain a monohybrid cross , taking seed colour as a trait in Pisum sativum .Work out the cross up to F₂ generation . [2+2+1]
b) State the laws of inheritance that can be derived from such a cross .
c) Name the scientists who rediscovered Mendels results on the inheritance of characters .

OR

- a) Write the symptoms of haemophilia and sickle cell anaemia in humans . [2+3]
 - b) Explain how the inheritance pattern of the two diseases differ from each other .
26. a) Who proposed the concept of lac operon ? [1+2+2]
b) Draw a labeled schematic representation of lac operon .
c) Explain how this operon gets switched on and off .

OR

- a) Explain the role of DNA dependant RNA polymerase in initiation , elongation and termination during transcription in bacterial cells . [3+2]
 - b) How is transcription a more complex process in eukaryotic cells . Explain
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