



ANANDALAYA
SUMMATIVE ASSESSMENT-1
Class XII

Subject: BIOLOGY
Date : 26/09/2016

M.M : 70
Time : 3 Hours

General Instructions:

1. All questions are compulsory.
2. This question paper consists of four Sections A, B, C and D. Section A contains 5 questions of 1 mark each. Section B contains 5 questions of 2 marks each. Section C contains 12 questions of 3 marks each and one value based question of 4 marks. Section D contains 3 questions of 5 marks.
3. There is no overall choice. However, an internal choice has been provided in two of the 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. Where is acrosome present in humans? Write its function. (1)
2. Identify the respective pattern of inheritance where F1 phenotype (1)
 - a) Does not resemble either of the two parents and is in between the two.
 - b) Resembles only one of the two parents.
3. State two different roles of spleen in the human body. (1)
4. Name the scientist who suggested that the genetic code should be made of a combination of three nucleotides. (1)
5. Why is banana considered a good example of parthenocarpy? (1)

SECTION B

6. Geitonogamous flowering plants are genetically autogamous but functionally cross-pollinated. Justify. (2)
7. When and where do chorionic villi appear in humans? State their function. (2)
8. Identify the examples of convergent evolution from the following: (1) (2)
 - (i) Flippers of penguins and dolphins
 - (ii) Eyes of octopus and mammals
 - (iii) Vertebrate brains
9. How does the gene 'I' control ABO blood groups in humans? Write the effect the gene has on the structure of red blood cells. (2)
10. Which are the two types of cells that act as 'cellular barriers' to provide innate immunity in humans? (2)

SECTION C

11. Draw a diagram of the microscopic structure of human sperm. Label the following parts in it and write their functions. (3)
 - (a) Acrosome
 - (b) Nucleus
 - (c) Middle piece
 - (d) Mitochondria
12. Trace the life-cycle of malarial parasite in the human body when bitten by an infected female *Anopheles*. (3)
13. Differentiate between inbreeding and outbreeding in cattle. State one advantage and one disadvantage for each one of them (3)
14. How are the structural genes activated in the *lac* operon in *E.coli* ? (3)
15. Why is tobacco smoking associated with rise in blood pressure and hysema (oxygen deficiency in the body)? Explain. (3)

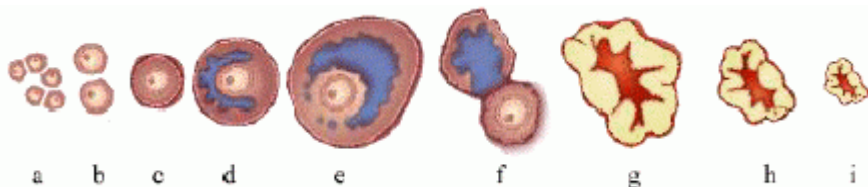
16. Given reasons for the following: (3)
- The human testis are located outside the abdominal cavity.
 - Some organisms like honey-bees are called parthenogenetic animals.
 - Algae and fungi shift to sexual mode of reproduction just before the onset of adverse conditions.
17. Write the types of sex-determination mechanisms the following crosses show. Give an example of each type. (3)
- Female XX with Male XO
 - Female ZW with Male ZZ
 - Female XX with Male XY
18. How does industrial melanism support Darwin's theory of Natural Selection? Explain. (3)
19. Explain the mechanism of divergent evolution with examples. (3)
20. Write the function of adenosine deaminase enzyme. State the cause of ADA deficiency in humans. Mention a possible cure for an ADA deficiency patient. (3)
21. A colour-blind child is born to a normal couple. Work out a cross to show how is it possible. Mention the sex of this child. (3)
22. Mendel published his work on inheritance of characters in 1865, but it remained unrecognised till 1900. Give three reasons for the delay in accepting his work. (3)
23. Women are often blamed for producing female children. Consequently, they are ill-treated and ostracised. How will you address this issue scientifically if you were to conduct an awareness programme to highlight the values involved? (4)

SECTION D

24. a) How is 'oogenesis' markedly different from 'spermatogenesis' with respect to the growth till puberty in the humans? (5)
- b) Which are the hormones that influence the gametogenesis in humans and how?

OR

The following is the illustration of the sequence 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"?
 - Draw a neat labelled sketch of Graffian follicle.
25. a) Explain the process of DNA replication with the help of a schematic diagram. (5)
- b) In which phase of the cell cycle does replication occur in Eukaryotes? What would happen if cell-division is not followed after DNA replication?

OR

Explain the protein translation with the help of diagrams

26. a) Cancer is one of the most dreaded diseases. Explain 'Contact inhibition' and 'Metastasis' with respect to the disease. (5)
- Name the group of genes that have been identified in normal cells that could lead to cancer. How do these genes cause cancer?
 - Name any two techniques that are useful in detecting cancers of internal organs.
 - Why are cancer patients often given α interferon as part of the treatment?