

Mock Test -3

Secondary Examination, 2023

Zoology

Time : 2¾ Hours

Max. Marks : 80

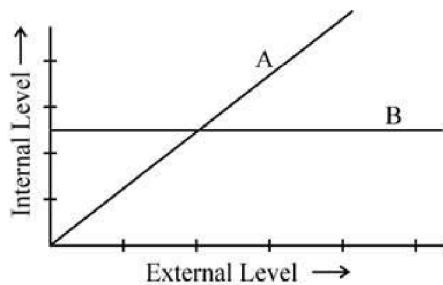
General Instructions to the Examinees:

- (1) Candidate must write first her/her Roll No. on the question paper compulsorily.
- (2) All the questions are compulsory.
- (3) Write the answer to each question in the given answer book only.
- (4) For question having more than one part the answers to those part are to be in continuity.
- (5) If there is any error/difference/contradiction in Hindi & English version of the questions paper, the question of the Hindi version should be treated valid.

Section – A

1. In majority of sexually reproducing organisms, the gamete are
 - (1) Isogametes
 - (2) Homogametes
 - (3) Hemigametes
 - (4) Heterogametes
2. Autogamy is defined as the
 - (1) Transfer of pollen grains from the anther to the stigma of the same flower.
 - (2) Transfer of pollen grains from the anther to the stigma of the different flower.
 - (3) Maturation of anther and stigma at different times
 - (4) Dehiscence of another and release of pollen grains
3. Activated sludge should have the ability to settle quickly so that it can
 - (1) be rapidly pumped back from sedimentation tank to aeration tank.
 - (2) be discarded and anaerobically digested
 - (3) absorb colloidal organic matter
 - (4) absorb pathogenic bacteria present in wastewater while sinking to the bottom of the settling tank.
4. AIDS is caused by HIV. Among the following which are the modes of transmission of HIV?
 - (i) Transfusion of contaminated blood
 - (ii) Shaking hands with infected people
 - (iii) Sexual contact with infected people
 - (iv) Sharing of food with infected peopleChoose the correct answer from the options given below:
 - (1) (ii) and (iv)
 - (2) (i) and (iii)
 - (3) (ii) and (iii)
 - (4) (i) and (ii)
5. A bacterial cell was transformed with a recombinant DNA that was generated using a human gene. However the transformed cell did not produce the desired protein. Reason could be
 - (1) Human protein is formed but degraded by bacteria.
 - (2) Human gene may have intron which bacteria cannot process.
 - (3) Amino acid codons for human and bacteria are different
 - (4) All of the above

6. Identify organisms A & B that are shown in the diagram of organismic response below.



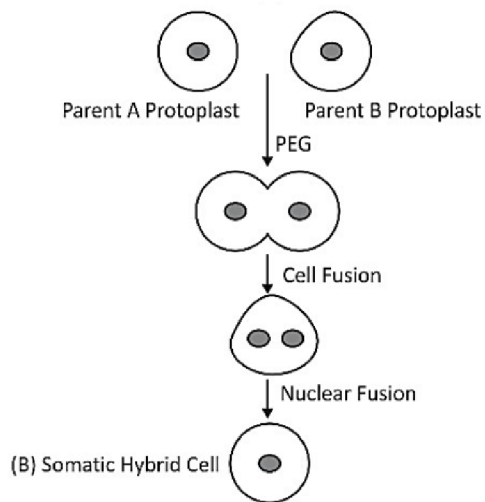
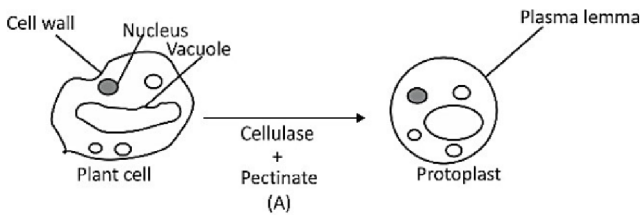
- (1) Organism A – Conformer ; Organism B – Regulator
 (2) Organism A – Regulator ; Organism B – Partial Regulator
 (3) Organism A – Conformer ; Organism B – Partial Regulator
 (4) Organism A – Partial Regulator ; Organism B – Conformer
7. An antibiotic resistance gene in a vector usually helps in the selection of
 (1) Recombinant cells
 (2) Competent cells
 (3) Transformed cells
 (4) None of these
8. Sea Anemone gets attached to the surface of the hermit crab. The kind of population interaction exhibited in this case is
 (1) amensalism (2) commensalism
 (3) mutualism (4) Parasitism
9. Interferons are most effective in making non-infected cells resistant against the spread of which of the following disease in humans?
 (1) ascaris (2) ring worm
 (3) amoebiasis (4) AIDS
10. An infertile couple was advised to undergo fertilization by the doctor. Out of the options given below, select the correct stage for transfer to the fallopian tube for successful results?
 (1) Zygote only
 (2) Zygote or early embryo upto 8 blastomeres
 (3) Embryo with more than 8 blastomeres
 (4) Blastocyst stage
11. Which of the following amino acid residues will constitute the histone Core?
 (1) Lysine & Arginine
 (2) Asparagine & Arginine
 (3) Glutamine & Lysine
 (4) Asparagine & Glutamine

12. Evolutionary Convergence is development of a
 (1) Common set of functions in group of different ancestry.
 (2) Dissimilar set of functions in closely related groups.
 (3) Common set of structures in closely related groups.
 (4) Dissimilar set of functions in can related groups.
13. Most Common honeybee species in India.
 (1) Apis Indica (2) Apis Florae
 (3) Apis Mellifera (4) Apis Dorsata
14. HIV that Causes Acquired Immuno Deficiency Syndrome (AIDS) reduce the no. of
 (1) B-Cells (2) Cytotoxic T-Cells
 (3) Helpers T-Cells (4) All of these
15. Name the labelled part A, B, C in the following diagram of T.S. of a young anther.
 (1) A – Tapetum B – Connective C – Endothecium
 (2) A – Endothecium B – Connective C – Tapetum
 (3) A – Connective B – Endothecium C – Tapetum
 (4) A – Connective B – Tapetum C – Endothecium
16. While isolating DNA from bacteria, which of the following is not used?
 (1) Lysozyme (2) Ribonuclease
 (3) Deoxyribonuclease (4) Protease

Section – B

17. There is statutory warning on the packets of cigarette which warns against smoking and says that it is injurious to health. Yet, smoking is prevalent in our society. Suggest a few points advising the importance of avoiding smoking.
18. Drugs like LSD, barbiturates, amphetamines etc., are used as medicines to help patients with mental illness. However, their excessive doses and abusive usage are harmful. Enlist some major adverse effects of abuse of such drugs in people.
19. State the cause behind the discontinuous synthesis of DNA on one parental strand. What happens to the short stretches of DNA that are synthesised during this process?
20. GM crops are tailor made plants used in many forms for human welfare. However they are also known to have certain disadvantages which can make them unpopular as compared to their conventional forms. Provide at least two evidences in support of the above mentioned claim and defend the progress of GMOs in present situation.

21. Examine the two events A and B somatic hybridization given below.



Section – C

14. Coextinction is one of the factors which results in the loss of biodiversity threatening the extinction of flora and related fauna. Substantiate this statement by giving examples Also, mention other factors which together with coextinction form evil quartet responsible for the loss of biodiversity.
15. Scientists believe that the evolution is gradual. But extinction as a part of evolutionary story are 'sudden' and 'abrupt' and also group specific. Can you predict whether a natural disaster can be cause for extinction of species.
17. With the help of an example can you highlight how genetically modified plants can
- reduce the usage of chemical pesticides?
 - enhance the nutritional value of food crops?
18. (i) For the expression of traits, genes provide only the potentiality and the environment provides the opportunity. Comment on the veracity of the Statement.

(ii) In order to obtain the F_1 -generation, Mendel pollinated a pure breeding tall plant with a pure breeding dwarf plant. But for obtaining the F_2 -generation, he performed self pollination of the tall F_1 plants. Why?

19. Plant breeding is the purposeful manipulation of plant species to create plants with desirable traits. However, the term desirable trait can indicate different things for different plants or the breeder. Analyse the possibilities that can be included within the term desirable traits with suitable examples.
20. Identify A B & C in the table given below –

Pattern of Inheritance	Monohybrid F_1 Phenotypic Expression
Codominance	"A"
B	Progeny resembled only one of the parents.
Incomplete dominance	C

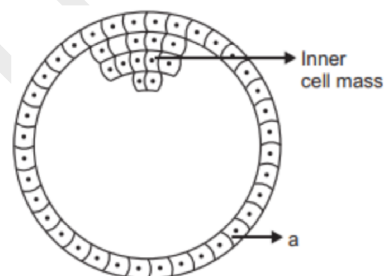
You are given tall pea plant with yellow seeds. Whose genotypes are unknown.

How would you find the genotype of this plants? Explain with the help of cross.

21. Refer to the diagram given below and answer the questions that follows.
- The Sexual Stages of parasite are referred to as? Where does the fertilisation and development of parasite take place in mosquito body?
 - What are sporozoites?
 - What is the cause of cycle of fever during malaria?

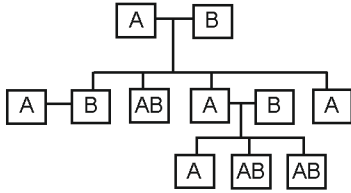
Section - D

22. Study the figure given below and answer the questions that follow.

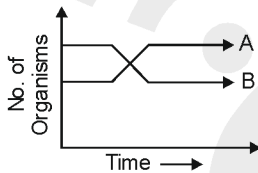


- Name the stage of human embryo the figure represents
- Identify 'A' in the figure and mention its function.
- Mention the fate of the inner cell mass after implantation in the uterus.
- Where are the Stem Cells located in this embryo.

23. Study the given pedigree chart showing the inheritance pattern of blood group in a family answer the following questions.



- Give the possible genotypes of the individual 1 & 2
 - Which antigens will be present on the plasma membranes of RBCs of individual 5 & 10?
 - Give the genotype of the individuals 3 & 4
24. Two types of aquatic organisms in a lake show specific growth patterns as shown below in a brief period of time. The lake is adjacent to an agricultural land extensively supplied with fertilisers.



Answer the questions based on the facts given below.

- Name the organisms depicting patterns A & B.
- State the reason for the growth pattern seen in A
- Write effects of growth patterns seen above.

Section-E

25. (i) Name the hormones involved in menstrual cycle
 (ii) Name the ovarian phases of menstrual cycle during the following periods.
 (a) 5th-12th day of the cycle.
 (b) 14th day of the cycle
 (c) 16th - 25th day of the cycle
 (iii) What influence do hormones LH & FSH have on different ovarian events stated in (ii) (a), (b), (c) ?

Or

Male & Female gamete in human beings differs from each other in terms of both structure and function. Enumerate Some major differences b/w the two, along with their diagram.

26. The genetic code is for the most part, universal, with few exceptions. Explain it by giving the example of mitochondria the power house of cell.

Or

Mutation occurs when there is a change in the sequence of triplet codons which may alter the phenotype of an organism. One such mutation is substitution whereby one base gets substituted with another. Using an example explain how this substitution of one base in DNA alter the phenotype of an organism.

27. (i) In an aquarium, two herbivorous species of fish are living together and feeding on phyto planktons. As per the gause's principle, one of the species into be eliminated in due course of time, but both are surviving well in the aquarium. Analyse the above situation and provide valid reason for the continued co-existence.
 (ii) Do you agree that the plants inhabiting a desert are not found in mangrove?
 Present your opinion with proper reasons.