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Register No.

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CHENNAI SCIENCE FORUM

PREPARATORY EXAMINATION

PART - III - BIOLOGY

Time Allowed: 3.00 Hours]

[Maximum Marks : 70

- Instructions :** (1) Check the question paper for fairness of printing. If there is any lack of fairness, inform the Hall Supervisor immediately.
- (2) Use Black or Blue ink to write and pencil to draw diagrams.

Note : Candidate should answer **PART-I** (Bio-Botany) and **PART-II** (Bio-Zoology) in separate answer-books.

PART - I BIO-BOTANY

(Marks : 35)

SECTION - 1

- Note :** 1. Answer all the questions: 8 x 1 = 8
2. Choose the most appropriate answer from the given four alternatives and write the option code and the corresponding answer.

1. Which of the following are not regulating services of Ecosystem services?

- (i) Genetic resources
- (ii) Recreation and aesthetic values
- (iii) Invasion resistance
- (iv) Climatic regulation

- (a) (i) and (iii)
- (c) (i) and (ii)

- (b) (i) and (iv)
- (d) (ii) and (iv)

2. Assertion : Vegetables are important part of healthy eating.

Reason : Vegetables are succulent structures of plants with pleasant aroma and flavours.

(a) Assertion is correct, Reason is wrong.

(b) Assertion is wrong, Reason is correct.

(c) Both are correct and reason is the correct explanation for assertion

(d) Both are correct and reason is not the correct explanation for assertion.

3. Identify the incorrect pair :
- (a) Sporopollenin - Exine of pollen grain
 - (b) Tapetum - Nutritive tissue for developing microspores
 - (c) Nucellus - Nutritive tissue for developing embryo
 - (d) obturator - Directs the pollen tube into micropyle
4. One of the chief reasons among the following for the depletion in the number of species making endangered is :
- (a) Over hunting and poaching
 - (b) Green house effect
 - (c) Competition and predation
 - (d) Habitat destruction
5. Pick out the odd pair :
- (a) Mass selection - Morphological characters
 - (b) Pure line selection - Repeated self pollination
 - (c) Clonal selection - Sexually propagated
 - (d) Natural selection - Involves nature
6. How many map units separate two alleles A and B if the recombination frequency is 0.09 ?
- (a) 900 cM
 - (b) 90 cM
 - (c) 9 cM
 - (d) 0.9 cM
7. Pedogenesis refers to :
- (a) Fossils
 - (b) Water
 - (c) Population
 - (d) Soil
8. Solidifying agent used in plant tissue culture is :
- (a) Nicotinic Acid
 - (b) Cobaltous Chloride
 - (c) EDTA
 - (d) Agar

SECTION - 2

Answer any four from the following questions:

4 x 2 = 8

- 9. What is Mellitophily ?
- 10. Write any differences between Autopolyploidy and Allopolyploidy.
- 11. How will you identify the Vectors ?
- 12. What is Vivipary ? Name a plant group while exhibits vivipary.
- 13. What is Pseudo-cereal ? write an example.
- 14. Write a note on "Acclimatization".

SECTION - 3

Answer any three of the following questions.

3 x 3 = 9

Question No.19 is Compulsory.

- 15. Suggest a solution to water crisis and explain its advantages.
- 16. How sex is determined in monoecious plants ?
- 17. What are the materials used to grow micro-organism like Spirulina ?
- 18. "Sandy soil is not suitable for cultivation" - explain why ?
- 19. Generally human activities are against to the ecosystem, whereas a student, how will you help to protect ecosystem.

SECTION - 4

Answer all the questions:

2 x 5 = 10

20. (a) What are the conventional methods of Propagation ? - explain.

OR

(b) Describe Dominant Epistasis with an example.

21. (a) Mention the applications of Bio-technology.

OR

(b) Give an account of active principle and medicinal values of any two plants you have studied.

PART- II BIO-ZOOLOGY

(Marks : 35)

SECTION - 1

Note : 1. Answer all the questions:

8 x 1 = 8

2. Choose the most appropriate answer from the given four alternatives and write the option code and the corresponding answer.

1. Hershey and Chase experiment with Bacteriophage showed that :

(a) Protein gets into the bacterial cells

(b) DNA is the genetic material

(c) Viruses undergo transformation

(d) DNA contains radioactive sulphur

2. In the E-waste generated by the Mobile Phones, which among the following metal is most abundant ?

(a) Silver (b) Palladium (c) Copper (d) Gold

3. The wings of birds and butterflies is an example of :

(a) Adaptive radiation (b) Divergent evolution

(c) Convergent evolution (d) Variation

4. A contraceptive pill prevents ovulation by :

(a) Blocking Fallopian tube

(b) Inhibiting release of FSH and LH

(c) Stimulating release of FSH and LH

(d) Causing immediate degeneration of released ovum

5. Which of the following is an r-species :

(a) Rhinoceros

(b) Whale

(c) Insects

(d) Human

6. If the child's blood group is 'O' and father's blood group is 'A' and mother's blood group is 'B' the genotype of the parents will be :

(a) $I^A I^A$ and $I^B I^o$

(b) $I^A I^o$ and $I^o I^o$

(c) $I^A I^o$ and $I^B I^o$

(d) $I^o I^o$ and $I^B I^B$

7. Choose the correctly match pair :

- (a) Amphetamines - Stimulant
 (b) LSD - Narcotic
 (c) Benzodiazepine - Pain killer
 (d) Heroin - Psychotropic

8. The milk secreted by the mammary glands soon after child birth is called :

- (a) Lactose (b) Sucrose
 (c) Mucous (d) Colostrum

SECTION - 2

Answer any four from the following questions:

4 x 2 = 8

9. The unicellular organisms which reproduce by binary fission are considered immortal - justify.
 10. Differentiate - Foeticide and Infanticide.
 11. Genetic Code is Universal - Give reason.
 12. What are DNA Vaccines ?
 13. Amazon Forest is considered to be the Lungs of the Planet- Justify
 14. What effect can fertilizer runoff have on Aquatic Ecosystem ?

SECTION - 3

Answer any three of the following questions.

3 x 3 = 9

Question No.19 is Compulsory

15. How does Neanderthal Man differ from the Modern Man in appearance ?
 16. List the advantages of Bio-Gas Plants in Rural Areas.
 17. How is milk converted into curd? Explain the process of curd formation?
 18. ELISA is a technique based on the principles of antigen-antibody reactions. Can this technique be used in the molecular diagnosis of a genetic disorder such as Phenylketonuria ?
 19. What are Applications of Karyotyping ?

SECTION - 4

Answer all the questions:

2 x 5 = 10

20. (a) Describe the structure of the Human Ovum with a neat labelled diagram.
 OR
 (b) Explain the structure of Immunoglobulin with suitable diagram.
 21. (a) How does Mutation theory of De Vries differ from Lamarck and Darwin's view in the origin of new species.

OR

- (b) List the adaptations seen in Terrestrial Animals.