2022/07

B.Sc. ZOOLOGY
SIXTH SEMESTER
EVOLUTIONARY BIOLOGY
BSZ – 602

(Use Separate Answer Scripts for Objective & Descriptive)

Duration : 3 hrs. **Full Marks : 70**

(PART-A: Objective)

Time : 20 min. **Marks : 20**

Choose the correct answer from the following: ***1X20=20***

1. Organelles that arose from symbiosis as explained by Lynn Margulis are
   a. Endoplasmic reticulum & Golgi body b Lysosome and mitochondria
   c. Chloroplast and endoplasmic reticulum d Mitochondria and chloroplast

2. The theory of evolution by natural selection was independently developed by
   a. Lyell & Darwin b. Darwin & Wallace
   c. Darwin & Malthus d. Lamark & Darwin

3. This type of fossil is formed by hardening of material surrounding the buried organism. Their bodies disintegrate, leaving hollow cavities. This forms the
   a. Petrified fossil b. Cast fossil
   c. Mold fossil d. Trace fossil

4. The first three toed grazer was
   a. Parahippus b. Hipparion
   c. Pliohippus d. Merychippus

5. Which of the following is also known as Sewall Wright effect?
   a. Genetic drift b. Mutation
   c. Natural selection d. None of these

6. Which of the following is the correct sequence
   a. Miocene: Pliocene: Oligocene b. Permian:Carboniferous: Devonian
   c. Oligocene: Paleocene: Eocene d. Cambrian: Ordovician: Silurian

7. "Speciation is not due to selection of advantageous genotypes but elimination of deleterious alleles and random selection of neutral alleles." This statement was proposed by
   a. Sewall Wright b. Motoo Kimura
   c. Charles Darwin d. Alfred Wallace

8. What was the basic principle of Lamarkism?
   a. Inheritance of acquired characters b. Variation
   c. Natural selection d. Survival of the fittest

9. This domain is characterised by ancient bacteria that live in extreme conditions.
   a. Archaea b. Bacteria
   c. Eukarya d. Prokarya

10. Archeopteryx is a connecting link between
    a. Reptiles and birds
    b. Birds and mammals
    c. Amphibians and birds
    d. None of these

11. 360 out of 1000 individuals in a population have a genotype of AA while 480 have Aa genotype. The rest 160 belong to aa. Frequency of allele A in this population is
    a. 0.7
    b. 0.6
    c. 0.5
    d. 0.4

12. What does p^2 in the below mentioned Hardy-Weinberg equation indicate? $(p+q)^2 = p^2 + 2pq + q^2$
    a. individuals that are heterozygous dominant
    b. individuals having a lethal allele
    c. individuals that are homozygous dominant
    d. individuals that are homozygous recessive

13. What stops a new chromosome variant appearing as a unique mutation from increasing in frequency?
    a. It is because polyploidy is a rare process
    b. it will interbreed with majority form causing heterozygotes to be inferior
    c. allopatric speciation does not necessitate reinforcement
    d. all of these

14. This type of speciation enables production of hybrids between two species
    a. allopatric speciation
    b. bottleneck
    c. sympatric
    d. parapatric speciation

15. The reproductive isolating factor occurring when a sperm and an egg are incompatible is
    a. temporal isolation
    b. ecological isolation
    c. gametic isolation
    d. behavioural isolation

16. What is an example of animal that went through the bottleneck effect in recent times?
    a. Northern elephant seals
    b. Cheetahs
    c. Humans
    d. Cockroaches

17. Quick change in phenotypes in a small band of colonizers is known as ____
    a. Founder Effect
    b. Bottleneck Effect
    c. Genetic Drift
    d. Gene flow

18. Primates originated during which era?
    a. Mesozoic
    b. Cenozoic
    c. Paleozoic
    d. Azoic

19. The tailless primate is
    a. Lemur
    b. Spider monkey
    c. African baboon
    d. Loris

20. What is a mass extinction?

a. When all the species in a particular area on earth suddenly go extinct
b. When multiple species from all over the earth suddenly go extinct
c. When one species goes extinct due to habitat changes
d. When all life on earth is wiped out

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PART-B : Descriptive

Time : 2 hrs. 40 min. **Marks : 50**

[Answer question no.1 & any four (4) from the rest]

1. Define chemogeny. Elaborate the concept of chemogeny in supporting the idea of origin of life. **2+8=10**

2. Write short note on: **5+5=10**
   a. Three domains of life
   b. Lamarkism

3. What are fossils. Mention different types of fossils. Why study of fossils is important in evolution? **2+6+2 =10**

4. What is Darwinism. Explain the five basic postulates of Darwinism. **2+8=10**

5. In a population that is in Hardy-Weinberg equilibrium, 38 % of the individuals are recessive homozygotes for a certain trait. In a population of 14,500, calculate the percentage of homozygous dominant individuals and heterozygous individuals. **10**

6. Explain elaborately the different types of Isolating Mechanisms. **10**

7. Write a note on the evolution of Hominid. **10**

8. What is speciation? Explain with example the different types of speciation with diagram. **2+8=10**

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