College: S. S. College, Jehanabad

Department: Zoology

Class: M.Sc. Semester I

Subject: Zoology / Assignment

Topic: Population Genetics, Animal Systematics & Evolution (Paper – 3)

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Last date of assignment submission: 16.05.2020

Mode of submission: E-mail or WhatsApp or Google Classroom

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Note: Students must submit their detail viz. Name, Class, and College Roll Number during the course of assignment submission. Students can access by going to link https://docs.google.com/forms/d/12vNXOKqUqfXaSejOUJbd9wiOHUdJBDCXrAU_l5hnMTU/prefill or joining Google Classroom with code rasmv3a.

To join Department's group, students can use following link
https://chat.whatsapp.com/EHuHNfQzoAzJBMFNJvsjQx
or scan QR Code

दिव्यते ज्ञान ज्योतिसा जगत

S.S.COLLEGE, JEHANABAD

(NAAC Accredited- Grade 'B')

Department's Internal Assessment

Name:	Class:
Class Roll No.:	Total Marks: 40
Assignment: May 15, 2020	Submission: May 16, 2020

M.Sc. Zoology Paper - 3 Assignment

This assignment is for evaluation of students with respect to online classes and e-contents. It has a total of 40 questions and a total of 40 marks. Each question carries 1 mark. There is no minus marking.

1. The collection of individuals which belongs to the same species when live together in a region is known as _____

   (A) keystone species (B) community

   (C) Guild (D) population

2. Name the term which defines the study of the characteristics and parameters of the population.

   (A) Demography (B) Population ecology

   (C) Population density (D) Mortality

3. Which of the following term defines the ability of the individual in the population to produce new individuals?

   (A) Dispersion (B) Mortality

   (C) Natality (D) Population dispersal

4. Which of the following survivorship curve is suitable for the organisms who breeds several times during the course of their life span?

   (A) Type IV (B) Type III

   (C) Type II (D) Type I

5. Name those organisms who can breed only once in their lifetime?

   (A) Dispersed (B) Clumped

   (C) Iteroparous (D) Semelparous

6. What is the most important factor for the success of animal population?

   (A) Natality (B) Adaptibility

   (C) Unlimited food (D) Inter-species activity

7. The formula for J-shaped population growth curve is _____

   (A) dN/dt = rN (B) dt/dN = rN

   (C) dN/rN = dt (D) rN/dN = dt

8. The concept that 'population tends to increase geometrically while food supply increases arithmetically' was put forwarded by _____

   (A) Adam Smith (B) Charles Darwin

   (C) Thomas Malthus (D) Stuart Mill

9. In a population, unrestricted reproductive capacity is called as _____

   (A) carrying capacity (B) biotic potential

   (C) birth rate (D) fertility rate

10. The carrying capacity of a population is determined by its _____

    (A) population growth rate (B) natality

    (C) mortality (D) limiting resources

11. If 16% of the persons in a population show a recessive trait, what is the allelic frequency for the dominant allele?

    (A) 16% (B) 84%

    (C) 96% (D) 99%

12. In the following population, what would be the allelic frequency for the dominant allele? 20 homozygous recessives; 320 homozyous dominants; 160 heterozygotes

    (A) 20% (B) 40%

    (C) 80% (D) 92%

13. If there is only one allele for a gene in a population, that gene is referred to as _____

    (A) monoallelic (B) fixed

    (C) monocistronic (D) common

14. Which of the following would cause deviation from the Hardy-Weinberg equilibrium?

    (A) small population (B) isolated

    (C) random mating (D) no mutations

15. The total aggregate of alleles in a population is referred to as _____

(A) the gene pool (B) the allelic frequency

(C) the genotypic frequency (D) the genetic structure

16. Which of the following formulas lets you predict the genotypic frequency of the next generation?

(A) p + q = 1 (B) X2 = sum [(o - e)2 / e]

(C) p2 + 2pq + q2 = 1 (D) e = mc2

17. A species inhabiting different geographical areas in known as _____

(A) sympatric (B) allopatric

(C) sibling (D) biospecies

18. In summarized view, mutation can be best defined as _____

(A) continuous genetic variation (B) phynotypic changes

(C) discontinuous genetic variation (D) change due to hybridization

19. The evolution of a species is based upon sum total of adaptive changes preserved by _____

(A) natural selection (B) isolation

(C) speciation (D) conservation

20. The theory of use and disuse was given by _____

(A) Stebbins (B) Lamarck

(C) Aristotle (D) Vavilox

21. According to Neo-Darwinism, natural selection operates through _____

(A) fighting between organisms (B) differential reproduction

(C) killing weaker organisms (D) variations

22. Quick changes in phenotypes in a small band of colonisers is called _____

(A) Founder effect (B) genetic bottleneck

(C) genetic drift (D) genetic flow

23. Genetic drift is found in _____

(A) small population with or without mutated genes
(B) large population with random mating
(C) only occurs in small organisms and plants
(D) None of these

24. In which condition, gene ration remains constant in a species _____

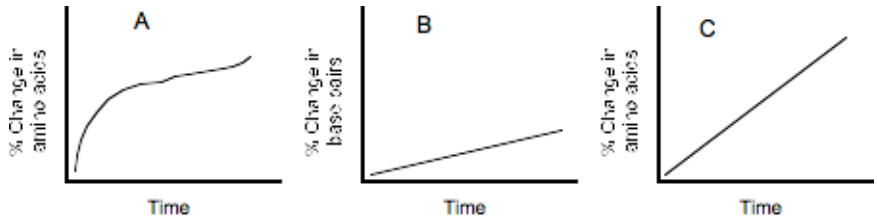
(A) sexual selection
(B) random mating
(C) mutation
(D) gene flow

25. Darwin's primary contribution to biological theory was the idea that _____

(A) an important mechanism of biological evolution is natural selection
(B) new alleles arise through mutation
(C) evolution is the change in gene frequencies over time
(D) characteristics acquired during an individual's lifetime can be passed to its offspring

26. Which of the following does not tend to promote speciation?

(A) Founder effect
(B) reproductive isolation
(C) natural selection
(D) gene flow

27. 

These graphs show percentage change in three different molecular sequences plotted against time. Which of these would make a good candidate for a molecular clock?

(A) graph A, because the curve levels off over time
(B) graph B, because DNA is more important to organisms and therefore will give a more accurate picture of divergence
(C) graph B or C, because they are straight lines
(D) graph A or C, because amino acid changes in are more likely to be neutral DNA changes in DNA

28. The ultimate source of new genetic variation in a species is _____

(A) mutation
(B) the combination of parental chromosomes during sexual reproduction
(C) the Hardy-Weinberg equation
(D) None of theses

29. Which of the following statements is true about mutations?

(A) They can produce new alleles of existing genes.
(B) They can be inherited if they are in somatic cells.
(C) They are never as simple as an error in a single codon in a DNA molecule.
(D) Both (a) & (b)

30. In order for a mutation to be selected for or against by natural selection, ordinarily it must _____

(A) be a gross chromosomal rearrangement or an irregular number of chromosomes
(B) occur in the genotype
(C) be expressed in the phenotype
(D) All of the above

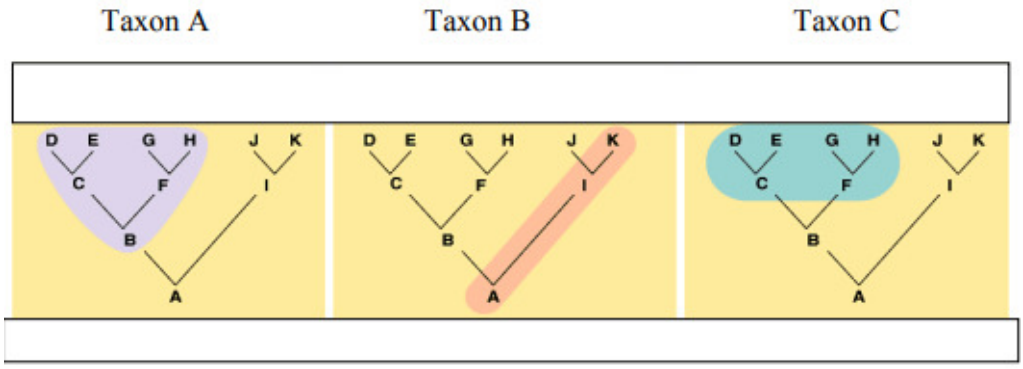
31. Which theory proposes that the number of species at a site is determined by the balancing of rates of immigration of species to that site with the local extinction of species already present?

(A) Stability-Time hypothesis
(B) Pleistocene Forest Refugia hypothesis
(C) Equilibrium Theory of Island Biogeography
(D) Periodic Extinction hypothesis

32. Arrange the following taxonomic categories in their hierarchical order from highest to lowest (left to right): Genus, Family, Class, Order, Phylum.

(A) Phylum, Order, Class, Genus, Family
(B) Class, Phylum, Order, Family, Genus
(C) Order, Phylum, Class, Family, Genus
(D) Phylum, Class, Order, Family, Genus

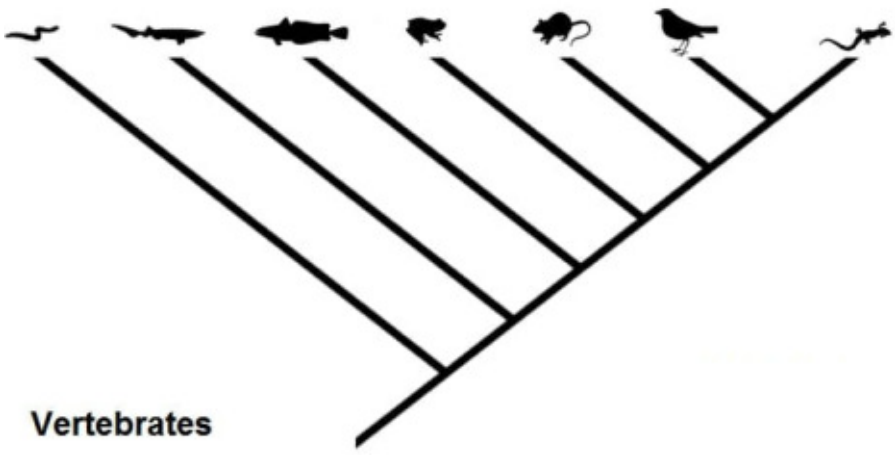
33.



Among the following diagrams which taxon represented by the shaded region represents a monophyletic group?

(A) Taxon A only
(B) Taxon B only
(C) Taxon A and B
(D) Taxon B and C

34.



A cladogram or phylogenetic tree _____

(A) is an hypothesis about the evolutionary relationships among a group of animal taxa.
(B) is a diagram in which the sequence of branching illustrates the historical chronology of evolutionary event.
(C) reflects the hierarchical classification of taxonomic groups nested within more inclusive groups.
(D) All of the above

35. Data from which of the following sources are used for constructing phylogenetic trees _____

(A) fossils
(B) morphological data
(C) molecular data
(D) All of the above

36. In animal cells, DNA is found in which locations _____

(A) mitochrondria
(B) nucleus
(C) ribosomes
(D) (a) & (b)

37. The biological species concept defines species as _____

(A) populations that can and do freely interbreed, and are reproductively isolated from other such populations.
(B) populations that form the smallest cluster or group that form a monophyletic grouping.
(C) Both (a) & (b)
(D) None of these

38. Which of the following is an example (or are examples) of postzygotic reproductive barrier?

(A) Zygote inviability
(B) Hybrid disadvantage
(C) Hybrid sterility
(D) All of the above

39. Which of the following is an example (or are examples) of intrasexual competition?

(A) female widow birds choosing to mate with males with long tails
(B) male elephant seals fighting for control of a female harem
(C) female jungle fowl ejecting the sperm of a subdominant male
(D) None of these

40. All of the following are parts of the allopatric speciation by natural selection model, except _____

(A) Geographically isolated populations evolve or change in response to novel environments
(B) Reproductive isolation evolves as a by-product of changes in other traits associated with adapting to new resources or environments
(C) Selection against hybridization leads to exaggeration of signals to facilitate recognizing conspecifics (individuals of the same species)
(D) Changes among or between populations occur while populations are geographically separated.

Name: ***Class:***

Saturday, May 16, 2020 ***Total Marks: 40***

M.Sc. Zoology Paper - 3 Assignment Answer Sheet

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Department's Internal Assessment

_1	1. (A) (B) (C) (D)	_1	19. (A) (B) (C) (D)	_1	37. (A) (B) (C) (D)
_1	2. (A) (B) (C) (D)	_1	20. (A) (B) (C) (D)	_1	38. (A) (B) (C) (D)
_1	3. (A) (B) (C) (D)	_1	21. (A) (B) (C) (D)	_1	39. (A) (B) (C) (D)
_1	4. (A) (B) (C) (D)	_1	22. (A) (B) (C) (D)	_1	40. (A) (B) (C) (D)
_1	5. (A) (B) (C) (D)	_1	23. (A) (B) (C) (D)		
_1	6. (A) (B) (C) (D)	_1	24. (A) (B) (C) (D)		
_1	7. (A) (B) (C) (D)	_1	25. (A) (B) (C) (D)		
_1	8. (A) (B) (C) (D)	_1	26. (A) (B) (C) (D)		
_1	9. (A) (B) (C) (D)	_1	27. (A) (B) (C) (D)		
_1	10. (A) (B) (C) (D)	_1	28. (A) (B) (C) (D)		
_1	11. (A) (B) (C) (D)	_1	29. (A) (B) (C) (D)		
_1	12. (A) (B) (C) (D)	_1	30. (A) (B) (C) (D)		
_1	13. (A) (B) (C) (D)	_1	31. (A) (B) (C) (D)		
_1	14. (A) (B) (C) (D)	_1	32. (A) (B) (C) (D)		
_1	15. (A) (B) (C) (D)	_1	33. (A) (B) (C) (D)		
_1	16. (A) (B) (C) (D)	_1	34. (A) (B) (C) (D)		
_1	17. (A) (B) (C) (D)	_1	35. (A) (B) (C) (D)		
_1	18. (A) (B) (C) (D)	_1	36. (A) (B) (C) (D)		

Name of the faculty member: Praveen Deepak, Assistant Professor of Zoology