



বিদ্যাসাগর বিশ্ববিদ্যালয়
VIDYASAGAR UNIVERSITY

Question Paper

B.Sc. Honours Examinations 2020

(Under CBCS Pattern)

Semester - VI

Subject: ZOOLOGY

Paper: CC - 14 (T + P) (Evolutionary Biology – Theory + Practical)

Full Marks: 40 (Theory) + 20 (Practical) = 60

Time: 4 Hours

Candidates are required to give their answer in their own words as far as practicable.

Questions are of equal value.

Answer any **one question** [within 250 words] from each Part.

Part A: Evolutionary Biology (Theory)

1. Explain Darwinism in the light of modern synthetic theory.
2. Write down in brief about the origin and evolution of human.
3. Write a brief note on speciation in evolution.
4. (i) In the formula for determining a population's genotype frequencies, why is the 2 in the term $2pq$ necessary?
(ii) Brown hair (B) is dominant to blond hair (b). If there are 168 brown-haired people in a population of 200. What is the predicted frequency of heterozygote, homozygous dominant and homozygous recessive?



- (iii) In a given population, only the A and B allele is present in the ABO system. There are no individuals with type O blood or with O alleles in this particular population. If 200 people have type A blood, 75 have type AB blood, 25 have type B blood. What are the allelic frequency of this population?
- (iv) What allelic frequency will generate twice as many recessive homozygotes as heterozygote?
5. Briefly describe the major geological events of Paleozoic era. Draw and describe the evolution of horse using different fossils. What is neutral theory of evolution?
6. Describe the Chemical basis of origin of life with suitable reactions. Comment on the sources of variation in the population and their role in evolution. What is convergent and divergent evolution?

Part B: Evolutionary Biology (Practical)

1. Write down the critical evolutionary significance on the following model specimen provided:



2. Write homology and analogy of the specimens provided:





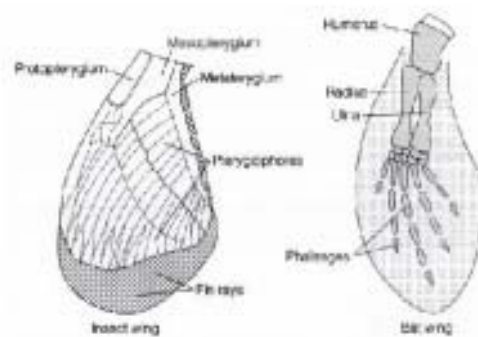
3. Graphically represent the frequency distributions of body weights [kg] of 80 people in the following dataset:

Body weight:	51-53	54-56	57-59	60-62	63-65	66-68	69-71
Number of people:	5	7	14	28	15	8	3

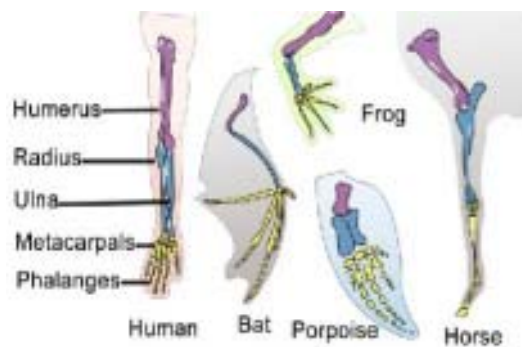
4. Write down the procedure and significance of chi-square test in evolutionary biology.

5. Study the homology and analogy from the provided organs below:

A.



B.





6. In rabbits, gray fur is dominant to white and black eyes are dominant to red. When a gray furred (heterozygous), red eyed rabbit is mated a number of times with a white furred, Black eyed (heterozygous) rabbit the offspring results are: 20 Gray/ Red. 25 Gray/Black , 32 White / Black, 23 White/ Red. Conduct a chi square test on these results and explain what those result means? Calculate using 0.05 level of significance.

Vidyasagar University