2021
ZOOLOGY
[HONOURS]
Paper : VII

Full Marks : 80 Time : 4 Hours

The figures in the right-hand margin indicate marks.
Candidates are required to give their answers in their own words as far as practicable.

Answer all the questions.

1. Answer any **seven** from the following: 1×7=7

   a) With an example, explain the difference between monosex culture and monospecies culture.

   b) Name the causative agent of anchor-worm disease.

   c) What is lac?

   d) What is a blog?

   e) When is mean equal to median?

   f) Define adaptive radiation.

   g) Name two economically important brackishwater fishes.

   h) Differentiate between a dependent and an independent variable.

   i) What is mineralization?

   j) Name two breeds of Indian poultry.

2. Answer any **six** from the following: 2×6=12

   a) Point out any two morphological and anatomical adaptations of a desert mammel.

   b) Write down the commands for making a new directory and navigating to another directory in DOS. How can you access the context menu in windows (R)?

   c) Explain what is meant by level of significance.

   d) Name two indigenous and two exotic breeds of dairy cattle used in India.

   e) Write down the expression for determination of χ^2. When is Yates' correction used?

   f) Differentiate website and browser.

   g) Name the scientific names of four exotic fish used in polyculture.

   h) Differentiate between the two strains of lac cultured in India on the basis of host plants and seasons of culture.

3. Answer any **three** questions: 7×3=21

a) i) Differentiate between allele frequency and genotype frequency.

ii) Within a population of butterflies, the melanistic form (M) is dominant over the black(m). In a random sample, 40% were found to be black. Calculate the PERCENTAGE of heterozygous butterflies and the FREQUENCY of the homozygous dominant individuals. 2+5

b) i) The mean Hb content was found to be 12.4 g/dl and 10.3g/dl for two groups of 12 and 15 subjects respectively. Calculate the mean Hb content for all 27 subjects.

ii) When is a distribution said to be multimodal? How is standard deviation related to variance? 5+1+1

c) i) What is the function of an operating system? What is GUI?

ii) Write down the keyboard shortcuts for making a new file and opening a file in windows (R)?

iii) What is a server? Explain what is meant by protocol and domain name in an URL. (1+1)+(1+1)+(1+1+1)

d) i) Distinguish a cow and a heifer. What is the difference between milch and draught animals? Name one breed for each.

ii) Name two species of shrimps cultured in India. Write one morphological difference between penacid and non-penacid prawns. 1+2+1+2+1

e) i) What is nacre? What are the major areas of pearl fishery in India?

ii) Name two species of pearl oysters. Explain diagrammatically the formation of a pearl. 1+1+2+3

4. Answer any **four**: 10×4=40

a) i) Explain the difference between broilers and layers. Differentiate among the rearing systems of poultry in India.

ii) Explain the deep.litter system of poultry rearing.

iii) Write down the causal organism and most commonly seen symptoms of any protozoan infection in chickens.

(1+1)+5+(1+2)

b) Crossing of a grey-bodied scarlet eye *Drosophila* with a black–bodied. red-eyed from yields the following result: 10

Phenotype	Frequency
Grey, Red	339
Black, Red	128
Grey, Scarlet	110
Black, Scarlet	042

Find whether the F2 generation obeys the Mendelian ratio of 9:3:3:1. The critical value of the test statistic at α =0.05 and df=3 is 7.82.

c) i) What is Swarming? Explain what is meant by hiring a swarm.

ii) What are the principal products from a beehive? Explain the uses of any three.

iii) What is shellac? Describe the main types of shellac and mention their uses.

(1+1)+(1+3)+(1+3)

d) i) What are the assumptions of a t-test?

ii) The mean and SD of weights of fish from 16 ponds fertilized with superphosphate and from 16 ponds without fertilizers are given below:

Superphosphate added 40.3 ± 8.15g

Without fertilizer 37.5 ± 6.35g

Carry out an appropriate statistical test to determine if there is significant difference between means of the two treatments. Critical value of the test statistic at 5% level of significance with 30 degrees of freedom is 2.042.

2+8=10

e) i) What are anthropoids? Differentiate between anthropoids and hominids.

ii) Describe Miller-Urey's experiment on the origin of life. 1+1+8

f) i) Define speciation. What is meant by a 'good' species?

ii) Define and differentiate between allopatric and sympatric speciation.

iii) Explain what is meant by hybrid zones and reinforcement. (1+1)+6+(1+1)

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