

2007

ZOOLOGY

PAPER-RI(Group-A)

Full Marks :50

Time : 2 hours

Answer four questions taking *two* from each Unit

The figures in the tight-hand margin indicate marks

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

Illustrate the answers wherever necessary

**Write the answers to Questions of each Unit
in separate books**

UNIT-I

.[Marks:25]

(Ecology)

- 1. Explain a , P and y diversity. With reference to various species diversity hypotheses explain why some areas have more species diversity as compared to others.**

4 $\frac{1}{2}$ +8

(Turn Over)

2. • Differentiate between exploitative and interference type of competition. Deduce Lotka-Volterra equation for competition. What would be the type of competition if a c i ?

$3+8+1\frac{-}{2}$

3. State law of toleration and explain zones of tolerance. Discuss in brief effect of temperature on structure and function of animals. What is ecotype?

$4+6+2\frac{1}{2}$

4. (a) Write notes on any two :

4+4

(i) Ecological equivalents

(ii) Edge /Area ratio

(iii) Factor compensation

(iv) Multidimensional niche.

(b) Explain Gaia hypothesis.

$4\frac{1}{2}$

Or

Distinguish between connectedness food web and energy flow food web.

UNIT II

[Marks :25]

(*Ethology*)

5. What is an Evolutionarily stable strategy ? With the help of "Hawk-Dove game model" explain hawk and dove strategies of attack. Deduce the average pay-off matrix to the attackers playing hawk and dove. Under what situation the opponents playing hawk and dove strategies in a population will become an ESS. What is **Bourgeois** strategy?

$$2 + 2 \frac{1}{2} + 3 + 4 + 1$$

6. Explain social dominance. Briefly describe different types of dominance hierarchy found in vertebrates. Enlist factors associated with social dominance. What is **ensocial organization**? Give **a mammalian** example of **ensociality**.

$$1 \frac{1+4+3+3+1}{2}$$

7. What is **altruism** ? Discuss **kin selection** in the light of **Hamilton's rule**. Calculate the **co-efficient of relationship** between **half siblings** and between **full siblings**. What is **reciprocal altruism**?

$$2 \frac{1}{2} + 4 + 4 + 2$$

8. What are the different female and male strategies adopted for selection of mates as proposed by Richard Dawkins? Deduce the average pay off matrix for the same. Under what condition it would be a domestic bliss situation? Does the female has *any* role in the outcome of male rivalry ? $4+5+1$ $1+2$
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