



‘সমানো মন্ত্র: সমিতি: সমানী’

UNIVERSITY OF NORTH BENGAL

B.Sc. Honours Part-III Examination, 2022

ZOOLOGY

PAPER-IX

ECOLOGY, ENVIRONMENTAL BIOLOGY AND TOXICOLOGY, ANIMAL BEHAVIOUR

NEW SYLLABUS (SYLLABUS 2015)

Time Allotted: 4 Hours

Full Marks: 80

The figures in the margin indicate full marks.

GROUP-A

(ECOLOGY)

1. Answer any *six* from the following as directed: 1×6 = 6
- (a) ‘K’ selected species have high biotic potential. [Write true or false]
- (b) The rate of succession is faster in _____ community.
(i) primary (ii) secondary (iii) both (i) & (ii) (iv) none of these .
[Choose the correct answer]
- (c) The concept of ecological pyramid was proposed by _____. [Fill in the blank]
- (d) A population having more individuals of post-reproductive stage shows reduced birth rate. [Write true or false]
- (e) The pyramid of energy in an ecosystem is—
(i) always upright (ii) may be upright or inverted (iii) always inverted (iv) none.
[Choose the correct answer]
- (f) The final stable community in an ecological succession is
(i) climax (ii) sere (iii) pioneer (iv) carnivore. [Choose the correct answer]
- (g) A high density of elephant population in an area can cause
(i) mutualism (ii) predation
(iii) interspecific competition (iv) intraspecific competition
[Choose the correct answer]
- (h) Which one of the following is not a characteristic of population?
(i) sex ratio (ii) natality (iii) mortality (iv) stratification
[Choose the correct answer]
- (i) Oxidation of nitrites to nitrates is done by —
(i) *Nitrobacter* (ii) *Nitrosomonas* (iii) *Pseudomonas* (iv) *Clostridium*
[Choose the correct answer]
- (j) Increase of productivity in crops is the increase of —
(i) gross primary productivity (ii) net primary productivity
(iii) metabolic rate (iv) all of these
[Choose the correct answer]

2. Answer any **three** questions from the following: 3×3 = 9
- (a) Explain Liebig's law of minimum with an example.
 - (b) Comment on the role of abiotic factors in maintaining population density.
 - (c) Comment on the role of different bacteria in N₂ cycle.
 - (d) Explain the concept of mortality and natality with examples.
 - (e) Explain in brief, horizontal and vertical stratification of a community.
3. Answer any **one** question from the following: 10×1 = 10
- (a) Define carrying capacity. Describe nitrogen cycle in brief. Write the role of leguminous plants in nitrogen cycle. 2+6+2
 - (b) Describe in brief, the universal energy flow model with suitable diagram. What do you mean by 10% law? 7+3

GROUP-B

(ENVIRONMENTAL BIOLOGY AND TOXICOLOGY)

4. Answer any **eight** from the following as directed: 1×8 = 8
- (a) CNG is a —
(i) polluted fuel (ii) harmful fuel (iii) clean fuel (iv) none of these
[Choose the correct answer]
 - (b) *Chlorella* sp. is used to remove heavy metals. [Write true or false]
 - (c) The most hazardous metal pollutant in automobile exhaust is _____.
[Fill in the blank]
 - (d) Which of the following toxicity occur due to a single exposure?
(i) acute (ii) sub acute (iii) sub chronic (iv) chronic
[Choose the correct answer]
 - (e) Green house gases trap outgoing terrestrial UV radiation. [Write true or false]
 - (f) The most common target organ for toxicity is _____. [Fill in the blank]
 - (g) Toxicology is a field that studies —
(i) adverse effects on human and chemicals
(ii) adverse effects of chemicals on living organisms
(iii) adverse effects of chemicals and microorganisms
(iv) risk benefit balance of chemicals for living organisms
[Choose the correct answer]
 - (h) The Taj Mahal is being affected by —
(i) air pollution (ii) water pollution (iii) soil pollution (iv) noise pollution
[Choose the correct answer]
 - (i) Chlorofluoro carbon is used in —
(i) refrigeration (ii) air conditioners (iii) both (i) & (ii) (iv) none of these
[Choose the correct answer]

- (j) Expand UNCED.
- (k) Kyoto Protocol is associated with building common food stock to save human from any natural disaster. [Write true or false]
- (l) Which of the following is an indicator of air pollution ?
- (i) Lichen (ii) Cycas (iii) Bryophytes (iv) Algae

[Choose the correct answer]

5. Answer any **four** questions from the following: 3×4 = 12

- (a) Write a short note on ozone hole.
- (b) Write a note on sustainable development.
- (c) Differentiate between acute and chronic toxicity.
- (d) Distinguish between primary and secondary pollutants.
- (e) Write a note on arsenic contaminants of ground water.
- (f) Write a note on lead poisoning in human.
- (g) What are the methods taken to conserve wetlands?

6. Answer any **one** question from the following: 10×1 = 10

- (a) Write down the causes of air pollution and the measures to reduce it. Add a note on how soil pollution affects plant and animal life. 4+3+3
- (b) What do you mean by habitat destruction? Write down the causes and consequences of habitat destruction. Write a short note on river encroachment. 1+3+3+3

GROUP-C

(ANIMAL BEHAVIOUR)

7. Answer any **six** from the following as directed: 1×6 = 6

- (a) Expand FAP.
- (b) Trial and error learning is also called _____. [Fill in the blank]
- (c) A faster waggle indicates —
- (i) food is far away (ii) food is nearer
- (iii) food is much in amount (iv) food is less in amount

[Choose the correct answer]

(d) Instincts are flexible and learnt. [Write true or false]

(e) Circadian rhythm lasts for —

- (i) 1 min. (ii) 1 day (iii) 1 month (iv) 1 year

[Choose the correct answer]

(f) Orientation of animal in relation to light source is called _____. [Fill in the blank]

(g) The stimulus that triggers innate behaviour is called _____. [Fill in the blank]

(h) The behaviour in which one animal is aggressive and attacks another animal and the other animal responds by returning the aggression is known as hierarchy.

[Write true or false]

(i) Reflex action is processed by cerebrum of the brain. [Write true or false]

(j) There is a sensitive period, only during which imprinting is possible.

[Write true or false]

8. Answer any **three** questions from the following:

3×3 = 9

(a) Write a note on reflex using suitable example.

(b) Explain Hamilton's theory of kin selection.

(c) Differentiate between round and waggle dance.

(d) Explain communication in ants by the use of pheromones.

(e) Write a short note on photoperiod.

9. Answer any **one** question from the following:

10×1 = 10

(a) Differentiate between instinctive and learning behaviour. Explain operant behaviour with the help of examples. Differentiate between classical and operant conditioning.

$2\frac{1}{2}+5+2\frac{1}{2}$

(b) Describe the role of pheromone in animal communication. Write a short note on biological clock.

6+4

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