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**3 (Sem-4/CBCS) ZOO SEC**

**2021**

**ZOOLOGY**

(Skill Enhancement Course)

Full Marks : 50

Time : Two hours

***The figures in the margin indicate  
full marks for the questions.***

Paper : ZOO-SE-4014

**( Non-Mulberry Sericulture )**

Answer **either** in English **or** in Assamese.

**GROUP-A**

1. Write answers of the following : 1×6=6

তলত দিয়া সমূহৰ উত্তৰ লিখা :

(i) What is the common name of *Attacus ricini* ?

এটাকাছ্ বিছিনি-ৰ সাধাৰণ নামটো কি ?

Contd.

(ii) Silk gland is modified gland of \_\_\_\_\_.  
(Fill in the blank)

ৰেচম গ্ৰন্থি ————— গ্ৰন্থিৰ ৰূপান্তৰ।

(iii) What is the scientific name of Tasar silkworm ?

তচৰ ৰেচমকীটৰ বৈজ্ঞানিক নাম কি ?

(iv) Name the silk produced by *Antheraea assama*.

এছেৰেয়া আচামাই উৎপন্নকাৰী ৰেচম-ৰ নাম লিখা।

(v) Write the scientific name of semi-domesticated silkworm.

অৰ্দ্ধঘৰচীয়া ৰেচমকীটৰ বৈজ্ঞানিক নাম লিখা।

(vi) Write the full form of CSB.

CSB-ৰ সম্পূৰ্ণ ৰূপটো লিখা।

2. Write in short : 2×5=10

চমুকৈ লিখা :

(i) What is silk ?

ৰেচম কি?

(ii) Mention *two* diseases of silkworm.

ৰেচমকীটৰ দুবিধ ৰোগৰ নাম উল্লেখ কৰা।

(iii) Write about the economic importance of silk.

ৰেচমৰ অৰ্থনৈতিক গুৰুত্বৰ বিষয়ে লিখা।

(iv) What is stifling ?

স্টিফলিং কি ?

(v) Write about the role of women in sericulture industry.

ৰেচম উদ্যোগত মহিলাৰ ভূমিকা সম্বন্ধে লিখা।

3. Write briefly on : **(any two)** 5×2=10

যিকোনো দুটাৰ বিষয়ে চমুকৈ লিখা :

(i) Write about the life cycle of Eri silkworm.

এৰী ৰেচমপলুৰ জীৱন চক্ৰৰ বিষয়ে চমুকৈ লিখা।

(ii) Briefly describe about the structure and function of silk gland.

ৰেচম গ্ৰন্থিৰ গঠন আৰু কাৰ্য্য চমুকৈ বৰ্ণনা কৰা।

(iii) Write about the food plants of Eri silkworm.

এৰী ৰেচমপলুৰ পোষক উদ্ভিদৰ বিষয়ে লিখা।

(iv) Write about the food plants of Muga silkworm.

মুগা ৰেচমপলুৰ পোষক উদ্ভিদৰ বিষয়ে লিখা।

### GROUP-B

4. Answer **any three** questions from the following :  $8 \times 3 = 24$

তলত দিয়াসমূহৰ যিকোনো তিনিটা প্ৰশ্নৰ উত্তৰ লিখা :

(i) Write a note on rearing of Muga silkworm.

মুগা ৰেচমপলুৰ পালনৰ ওপৰত এটি টোকা লিখা।

(ii) What are the major silkworm diseases ? Describe their symptoms and preventive measures.

ৰেচমপলুৰ প্ৰধান ৰোগসমূহ কি ? এই ৰোগসমূহৰ লক্ষণ আৰু প্ৰতিৰোধবিষয়ক সাৱধানতাৰ বিষয়ে বৰ্ণনা কৰা।

(iii) Describe the role of environmental conditions in silkworm rearing.

ৰেচমকীটৰ পালনত পৰিৱেশৰ ভূমিকা বৰ্ণনা কৰা।

- (iv) Write different spinning and reeling appliances of Eri and Muga silkworm cocoons.

এৰী আৰু মুগা লেটাৰ স্পিনিং আৰু ৰিলিঙত ব্যৱহৃত  
সঁজুলিৰ বিষয়ে লিখা।

- (v) Discuss various problems and prospects of non-mulberry sericulture industry in N.E.

উত্তৰ-পূব ভাৰতৰ অ-নুনী ৰেচম শিল্প উদ্যোগৰ বিভিন্ন  
সমস্যা আৰু সম্ভাৱনাৰ বিষয়ে আলোচনা কৰা।

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Paper : ZOO-SE-4024

**( Wildlife Photography and Ecotourism )**

1. Answer the following 1×6=6

(i) To create a sense of motion on rivers \_\_\_\_\_ shutter speed is used.

- (a) Slow
- (b) High
- (c) 1/2000 second
- (d) 2000 seconds

(ii) To freeze motion of flying bird \_\_\_\_\_ shutter speed is used

- (a) Slow
- (b) High
- (c) 30 seconds
- (d) 2000 seconds

(iii) On a sunny day \_\_\_\_\_ shutter speed is used to avoid the photo from overexposure

- (a) Slow
- (b) High
- (c) more than 1 second
- (d) 8000 seconds

- (iv) If the ISO of camera is increased, the photos will progressively become —
- (a) Darker
  - (b) Brighter
  - (c) Noisy
  - (d) Brighter and noisy
- (v) Lower f/stops gives more exposure because they represent the —
- (a) Smaller aperture
  - (b) Larger aperture
  - (c) ISO
  - (d) Macro
- (vi) The higher the f/stop, the smaller the opening in the lenses – the greater the depth of the field =
- (a) The sharper the background
  - (b) The blurrier the background
  - (c) the more in the noise
  - (d) None of these

2. Answer the following : 2×5=10

- (a) What is the *two* opposite effects of shutter speed in photography ?
- (b) State the differences between still and video photography.

- (c) What do you mean by the term “Noise” in photography ?
- (d) Mention the *two* opposite effects of f/stop in photography.
- (e) State *two* significances of Infrared light in Wildlife Photography.
3. Write short notes : **(any two)** 2×5=10
- (i) Time-lapse in photography
- (ii) Macro-lenses in photography
- (iii) ISO in photography
- (iv) Aperture in photography.
4. Answer **any three** of the following : 8×3=24
- (a) Write about the scope of eco-tourism in N.E. India.
- (b) Mention the problems of eco-tourism in N.E. India.
- (c) What do you mean by eco-tourism ? Describe it with its characteristics.
- (d) Suggest some innovative ideas of Eco-restoration.
- (e) Describe in details eco-tourism management and hospitality.
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Paper : ZOO-SE-4034

**(Research Methodology)**

**GROUP-A**

**All questions are compulsory.**

1. Answer the following questions :  $1 \times 6 = 6$ 
  - (a) Define IPR.
  - (b) What do you mean by research ?
  - (c) What is research hypothesis ?
  - (d) What are primary data ?
  - (e) What do you mean by an experimental unit ?
  - (f) What is a patent ?
  
2. Distinguish between : **(any two)**  $2 \times 2 = 4$ 
  - (a) Analytical and descriptive research
  - (b) Research methods and research methodology
  - (c) Cluster and area sampling.
  
3. Explain the significance of a research design.  
2

4. What are the qualities of a good scientific research ? 2
5. Mention the importance of acknowledgement in a research report. 2
6. Write short notes on **any two** of the following :  
5×2=10
- (a) Copyright
  - (b) Development of a research plan
  - (c) Interview as a technique of data collection
  - (d) Bibliography and its importance in context of research report.

### **GROUP-B**

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

7. Enumerate the different methods of collecting data. What are the factors to be considered by a researcher for judicious selection of appropriate method of data collection for his research ? 4+4=8
8. “Data Processing implies editing, coding, classification and tabulation.” Briefly describe these four procedures pointing out the significance of each in context of research study. 8

9. Narrate the various steps involved in writing a research report. Explain the significance of such a report. 6+2=8
  
  10. Assume a research topic of your choice and prepare a brief format of its report. 8
  
  11. What do you mean by a sample design ? While developing a sampling design, which points would you like to consider as a researcher ? Mention two characteristics of a good sample design. 1+5+2=8
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Paper : ZOO-SE-4044

**( Apiculture )**

Answer **either** in English **or** in Assamese.

1. Answer the following multiple choice questions : 1×6=6

তলৰ একাধিক বিকল্প প্ৰশ্নৰ উত্তৰ দিয়া :

(i) Which one is not a bee product ?

কোনটো মৌমাখিৰ উৎপাদন নহয় ?

(a) Nectar (অমৃত)

(b) Bee wax (মৌমাখিৰ মম)

(c) Bee venom (মৌমাখিৰ বিষ)

(d) Honey (মৌ)

(ii) What is maximum life-span of a Queen bee ?

ৰাণী মৌমাখিৰ সৰ্বাধিক জীৱন কাল কিমান ?

(a) 5 years

৫ বছৰ

(b) 2 years

২ বছৰ

(c) 9 months

৯ মাহ

(d) None of the above.

ওপৰৰ এটাও নহয়।

(iii) How long does the development of a Queen bee take ?

ৰাণী মৌমাখিৰ বিকাশৰ সময় কিমান দীঘল ?

(a) 10 days

১০ দিন

(b) 16 days

১৬ দিন

(c) 24 days

২৪ দিন

(d) None of the above.

ওপৰৰ এটাও নহয়।

(iv) Which of the following is the largest bee ?

তলৰ কোনটো মৌমাখি সকলতকৈ ডাঙৰ ?

(a) *Apis dorsata*

(b) *Apis florea*

(c) *Apis indica*

(d) *Apis mellifera*.

(v) In Queen Excluder, space in between individual wire is

ৰাণী মৌমাখি পৃথককাৰী তাঁৰৰ মাজৰ দূৰত্ব

(a) 0.375 cm

(b) 1.00 cm

(c) 1.50 cm

(d) 2.00 cm.

(vi) A well developed queen bee is \_\_\_\_\_  
larger than worker bee.

কৰ্মী মৌমাখিতকৈ ভালকৈ বিকশিত হোৱা ৰাণী মৌমাখি  
\_\_\_\_\_ ডাঙৰ হয়।

(a) 2-3 times

২-৩ গুণ

(b) 4 times

৪ গুণ

(c) 4-5 times

৪-৫ গুণ

(d) 5 times.

৫ গুণ।

2. Write briefly on the following : 2×5=10

তলৰ বিষয়বোৰৰ ওপৰত সংক্ষেপে লিখা :

(a) Uses of bee wax

মৌমাখিৰ মমৰ ব্যৱহাৰ

(b) Composition of Royal jelly

ৰাজকীয় ৰসৰ উপাদান

(c) Nuptial flight

বৈবাহিক উৰণ

(d) Queen excluder

ৰাণী পৃথককাৰী

(e) Brood chamber.

‘ব্ৰড’ কক্ষ।

3. Write short notes on **any two** of the following :  $5 \times 2 = 10$

চমু টোকা লিখা : (যিকোনো দুটা)

- (a) Indigenous methods of bee keeping  
মৌমাখি ৰখাৰ থলুৱা পদ্ধতি
- (b) Uses of honey as medicine  
ঔষধ হিচাপে মৌৰ ব্যৱহাৰ
- (c) Swarming of bees  
মৌমাখিৰ গোট গঠন
- (d) Morphological structure of drone.  
মতা মৌমাখিৰ বাহ্যিক গঠন।

4. Answer the following questions : **(any three)**

তলৰ প্ৰশ্নবোৰৰ উত্তৰ দিয়া : (যিকোনো তিনিটা)

$8 \times 3 = 24$

- (a) What is Longstroth frame hive ? Write detail about the chambers of Longstroth Frame hive.  $2 + 6 = 8$   
“Longstroth frame hive” কি? “Longstroth frame hive”ৰ কক্ষ সমূহৰ বিষয়ে বিৱৰণ লিখা।
- (b) Write detail on products of bee keeping except honey. 8  
মৌৰ বাহিৰে মৌমাখি পালনৰ বাকীবোৰ উৎপাদনৰ বিষয়ে বিৱৰণ দিয়া।

- (c) What are the appliances of bee keeping? Write how these appliances are used during culture of honey bees.

3+5=8

মৌমাখি পালনৰ সঁজুলিসমূহ কি? মৌমাখি পালনত এই সঁজুলিবোৰৰ ব্যৱহাৰৰ বিষয়ে লিখা।

- (d) What do you mean by language of worker bees? Write how the worker bees communicate with the help of this language.

2+6=8

কৰ্মী মৌমাখিৰ ভাষা বুলিলে কি বুজা? কৰ্মী মৌমাখিবোৰে এই ভাষাৰে কেনেকৈ যোগাযোগ কৰে লিখা।

- (e) What are the castes found in a honey bee colony? Write on caste distinction of honey bees during their development.

2+6=8

মৌমাখি সংঘৰ জাতিসমূহ কি? বিকাশৰ সময়ত ইহঁতৰ কেনেকৈ জাতি ভিন্ন হয় লিখা।