

SH-V/ZOO-501/C-11/PRI/19

B.Sc. 5th Semester (Honours) Practical Examination, 2019-20

ZOOLOGY

Course ID : 52621

Course Code : SH/ZOO-501/C-11

Course Title: Molecular Biology Lab

Instructions to the Examiners

1. Necessary arrangements may please be made before the date of commencement of practical examinations.
2. For Question No. 1, two micrographs/photographs (A & B specimens) are to be selected from item 1 of the syllabus.
[photographs identifications (1 marks), characters (1½ marks)].
For Question No 1, separate loose sheets should be supplied to the candidates in the identification Hall and should be collected within schedule time.
3. For Questions No 2, specimens are to be supplied to the examinee as per item 2 of the syllabus. Examinees have to prepare, draw and label the diagram of the dissection.
[Preparation-6, Drawing-1, Labelling-1]
4. During assessment of laboratory notebook (syllabus covered by the candidates and signature of teachers may please be checked so that distinction can be offered to the deserving candidates.
5. Only the examiner(s) and laboratory personnel's should be allowed to enter the laboratory during examination.
6. Full name and signature together with address of the examiners should be enclosed with the answer scripts.
7. After completion of examination the answer scripts should be enclosed in a sealed packet containing top sheet. Award list should be separately submitted.

SH-V/ZOO-501/C-12/19

B.Sc. 5th Semester (Honours) Examination, 2019-20**ZOOLOGY****Course ID : 52612****Course Code : SH/ZOO-502/C-12**

Course Title: Principles of Genetics

Time: 1 Hour 15 Minutes**Full Marks: 25***The figures in the right hand side margin indicate marks.**Candidates are required to give their answers in their own words as far as practicable.*

1. Answer *any five* questions: 1×5=5
 - (a) Define Pleiotropy.
 - (b) Explain the term 'LINE'.
 - (c) What do you mean by complete linkage?
 - (d) Define reciprocal translocation.
 - (e) What is Testis Determining Factor (TDF)?
 - (f) Explain the term 'Episome'.
 - (g) What is Polygenic Inheritance?
 - (h) What do you mean by Male-Specific-Lethal (MSL) complex?

 2. Answer *any two* questions: 5×2=10
 - (a) Give an account of extrachromosomal inheritance in *Paramoecium* with suitable illustration. 3+2=5
 - (b) Mention the key structural components of the dosage compensation complex of *Drosophila melanogaster* and briefly explain its role in the dosage compensation. 2+3=5
 - (c) What is coefficient of coincidence? With the help of a suitable diagram, explain the molecular basis of crossing over in eukaryotes. 1+4=5
 - (d) Give an account of different types of transposable genetic elements in prokaryotes. 5

 3. Answer *any one* of the following: 10×1=10
 - (a) 'Sex lethal (Sxl) is the master regulator gene for somatic sex determination in *Drosophila melanogaster*' — Explain the statement. Explain the concept of multiple alleles by taking suitable examples. 6+4=10
 - (b) Explain the role of Sry and other genes in the mammalian sex determination pathway. Briefly describe different types of chromosomal aberrations with one suitable example of each. 6+4=10
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SH/V/ZOO/502/C-12(PR)/19

B.Sc. 5th Semester (Honours) Practical Examination, 2019-20**ZOOLOGY****Course ID : 52622****Course Code : SH/ZOO/502/C-12****Course Title: Principles of Genetics Lab****Time: 2 Hours****Full Marks: 15***The figures in the margin indicate full marks.**Candidates are required to give their answers in their own words
as far as practicable.**Answer all questions.*

1. Identify the specimens provided (A to B) with reasons.

(Identification: 1 mark. Reason: 1½ marks)

2½×2=5

2. Solve any one problem provided in the Card Combination Booklet.

Analyze the pedigree and deduce the most likely mode of inheritance. Give your reasons.

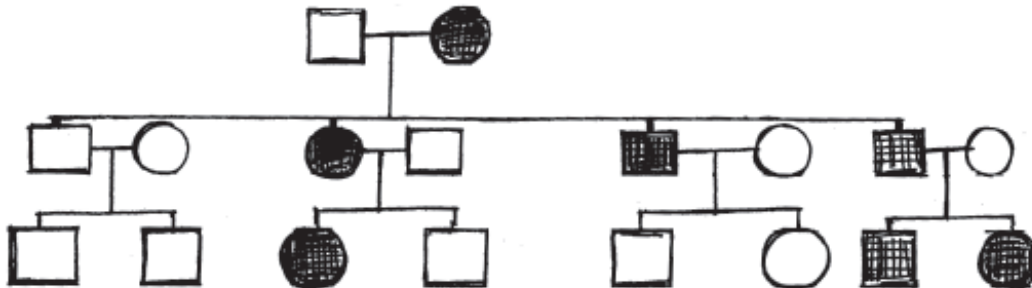
4+2+2=8

3. Laboratory Note Book.

2

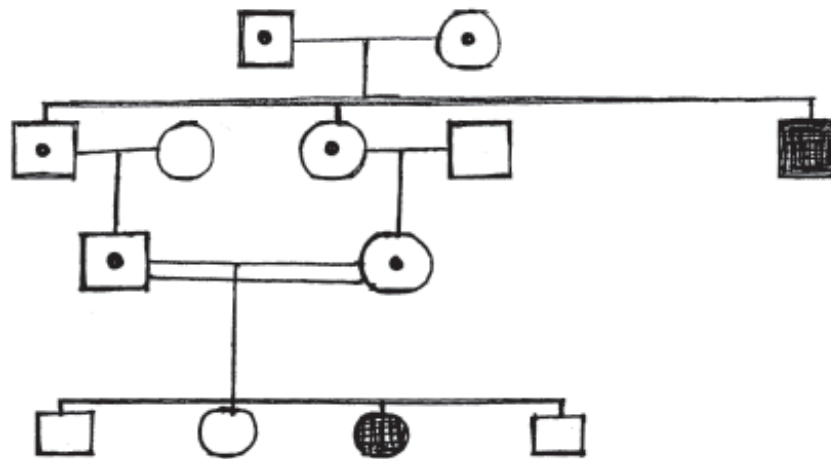
Card Combination Booklet

A.



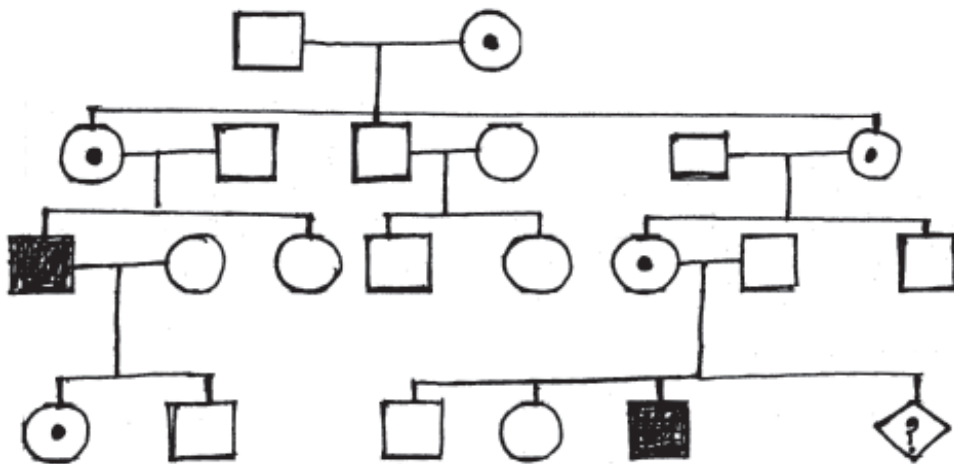
Analyze the pedigree and deduce the most likely mode of inheritance. Give your reasons

B.



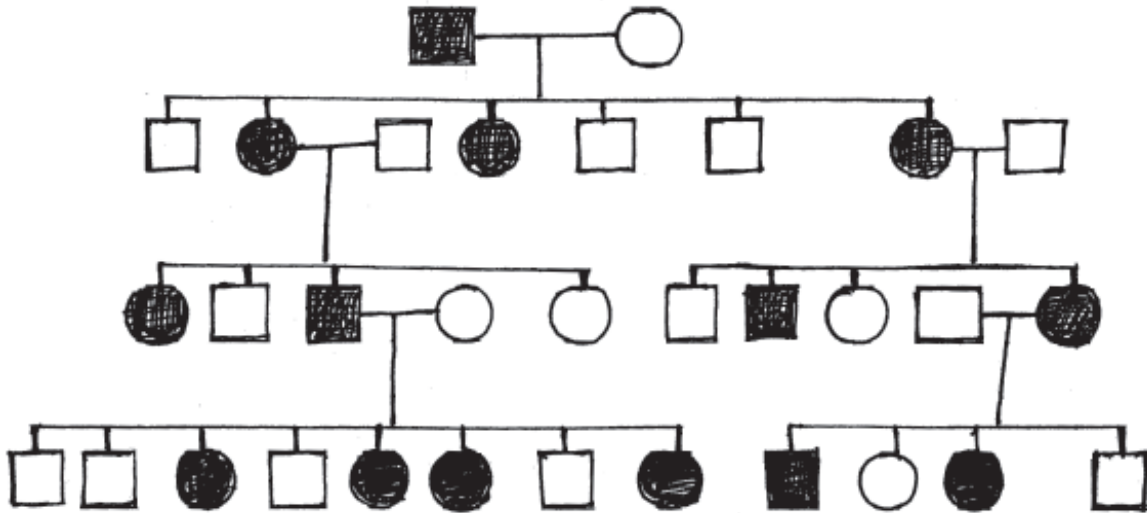
Analyze the pedigree and determine the most likely mode of inheritance. Give your reasons.

C.



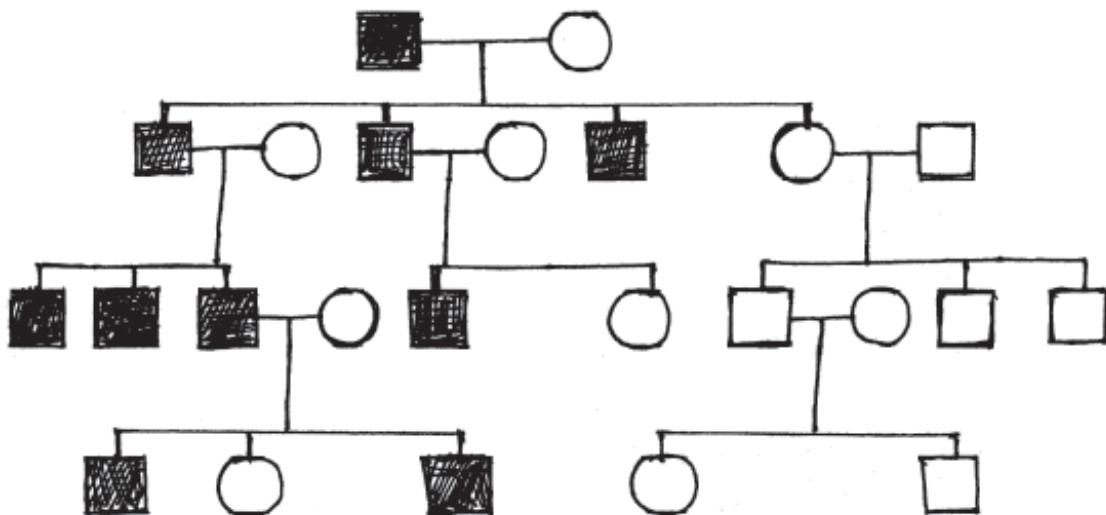
Analyze the pedigree and determine the most likely mode of inheritance. Give your reasons.

D.



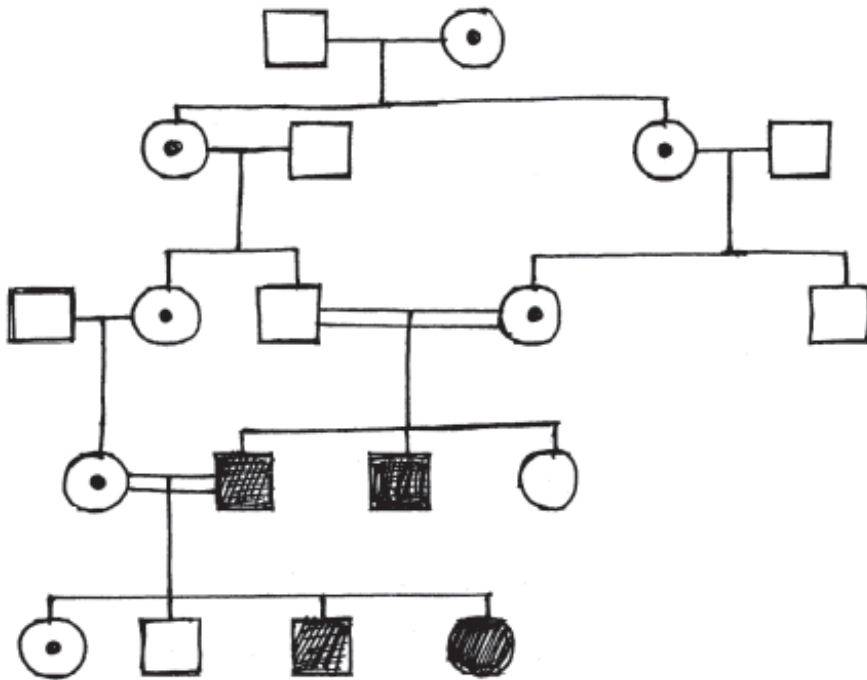
Analyze the pedigree and deduce the most likely mode of inheritance. Give your reasons.

E.



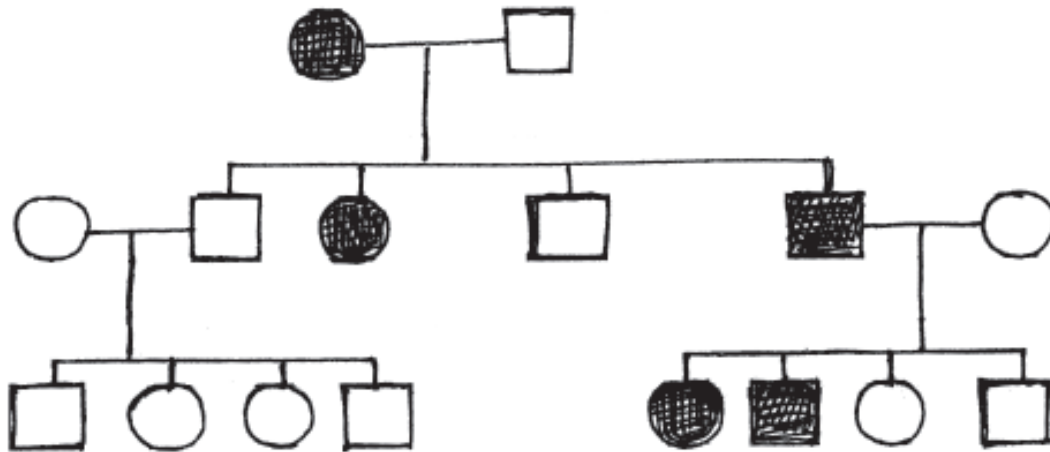
Analyze the pedigree and determine the most likely mode of inheritance. Give your reasons.

F.



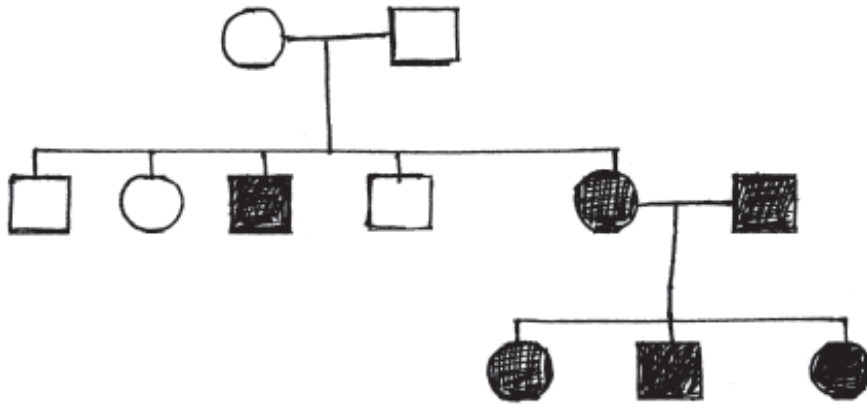
Analyze the pedigree and deduce the most likely mode of inheritance. Give your reasons.

G.



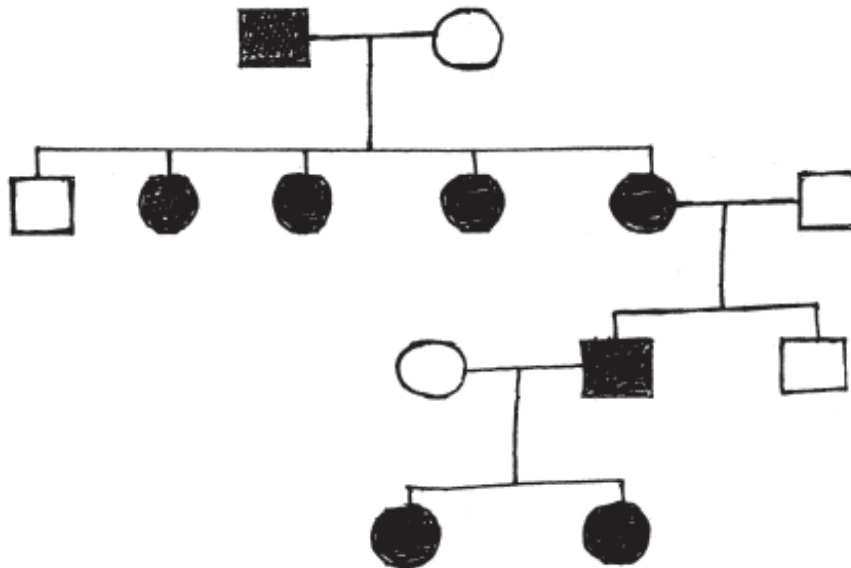
Analyze the pedigree and deduce the most likely mode of inheritance. Give your reasons.

H.



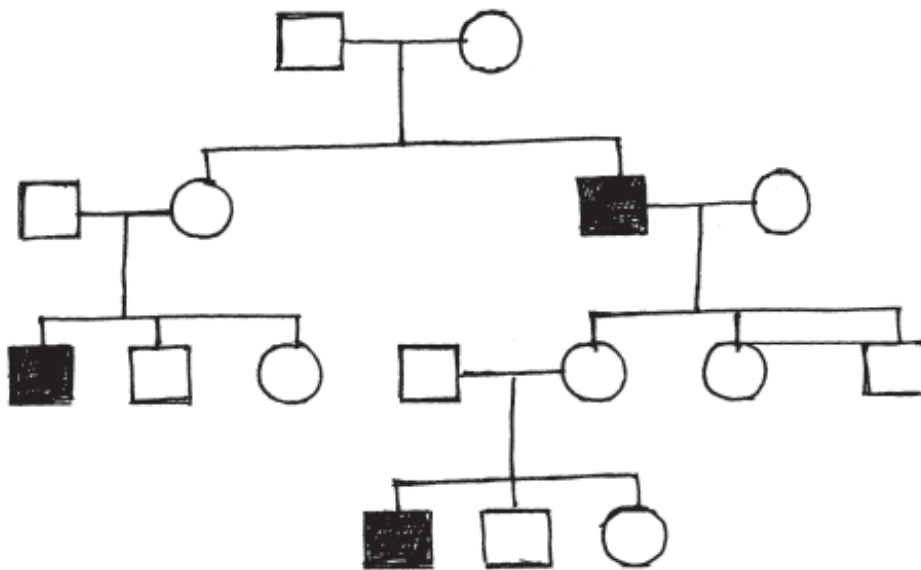
Analyze the pedigree and determine the most likely mode of inheritance. Give your reasons.

I.



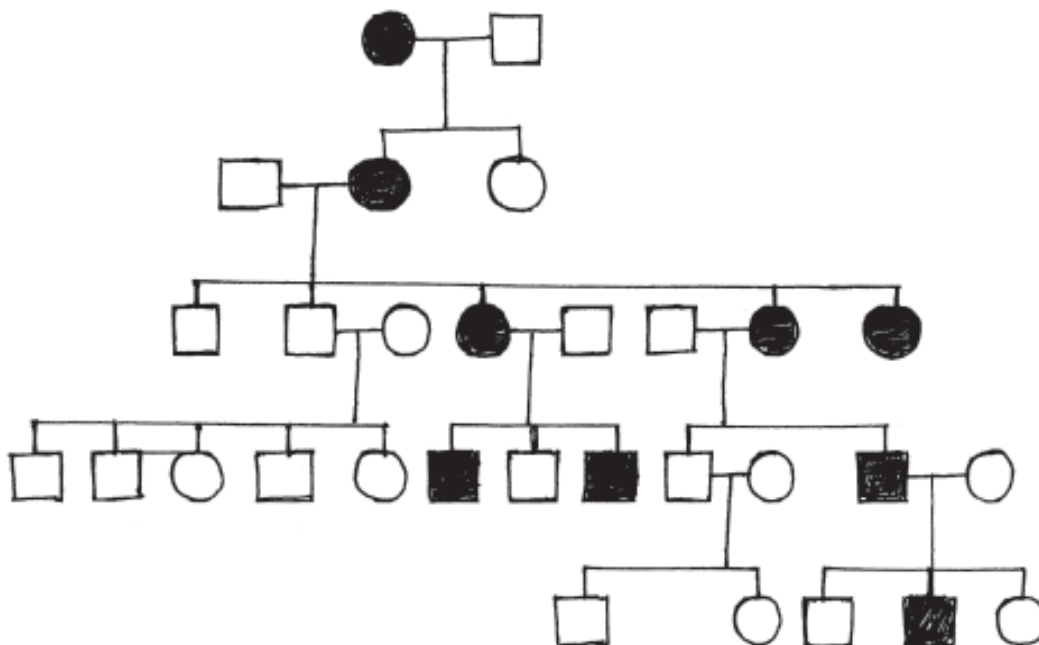
Analyze the pedigree and determine the most likely mode of inheritance. Give your reasons.

J.



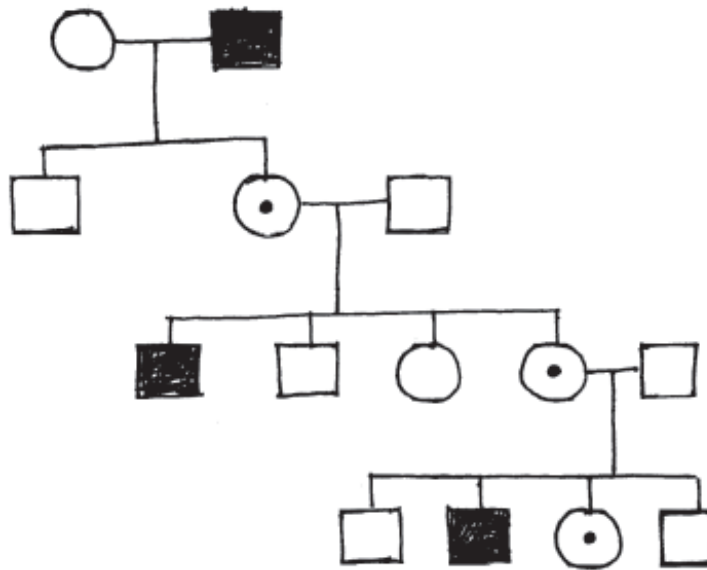
Analyze the pedigree and deduce the most likely mode of inheritance. Give your reasons.

K.



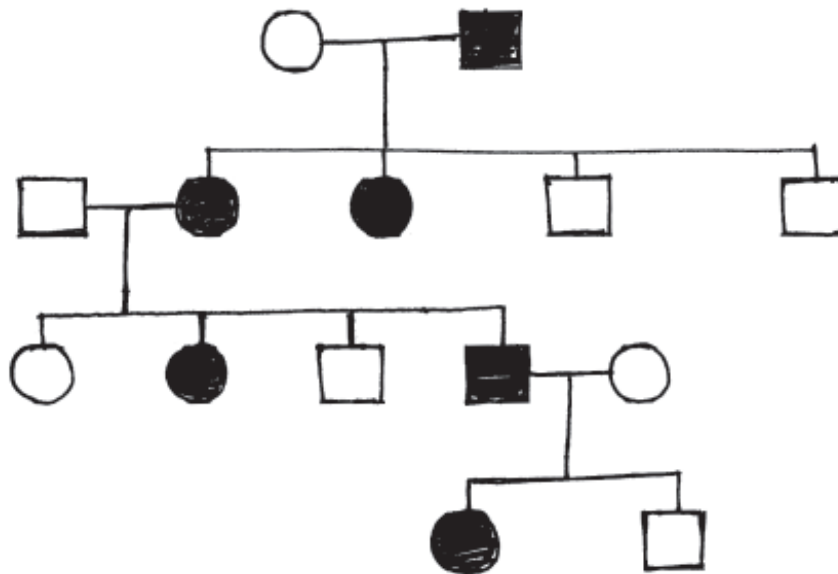
Analyze the pedigree and determine the most likely mode of inheritance. Give your reasons.

L.



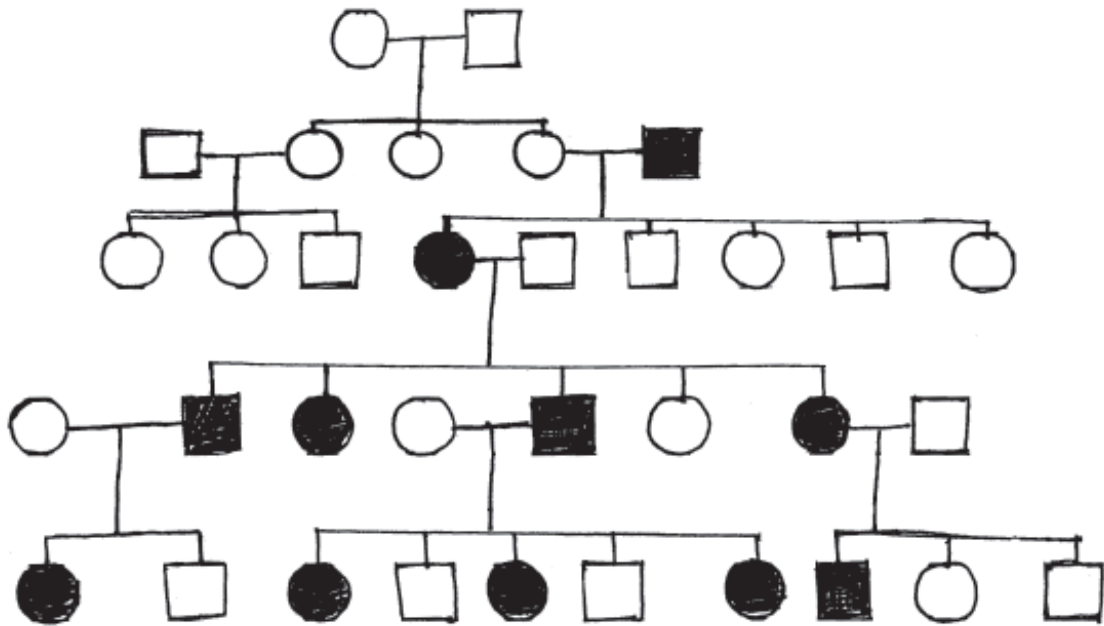
Analyze the pedigree and deduce the most likely mode of inheritance. Give your reasons.

M.



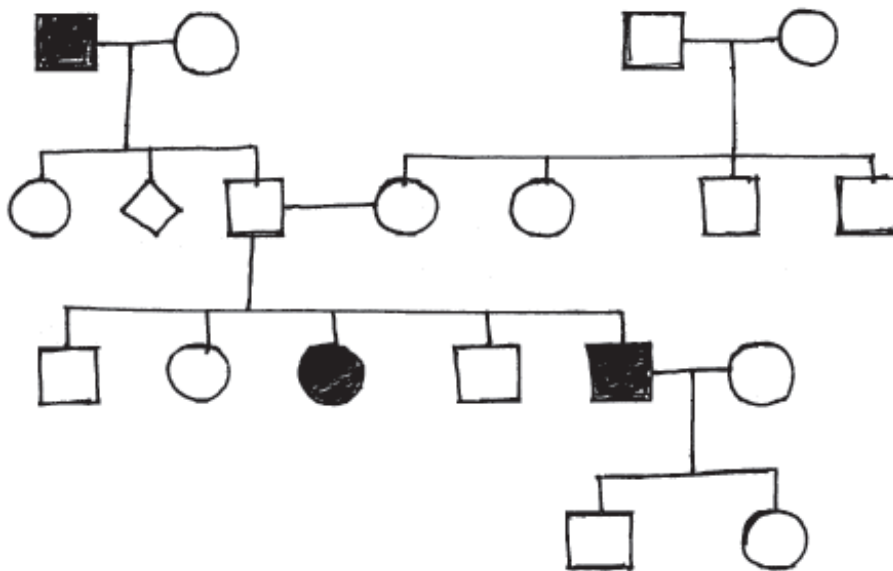
Analyze the pedigree and determine the most likely mode of inheritance. Give your reasons.

N.



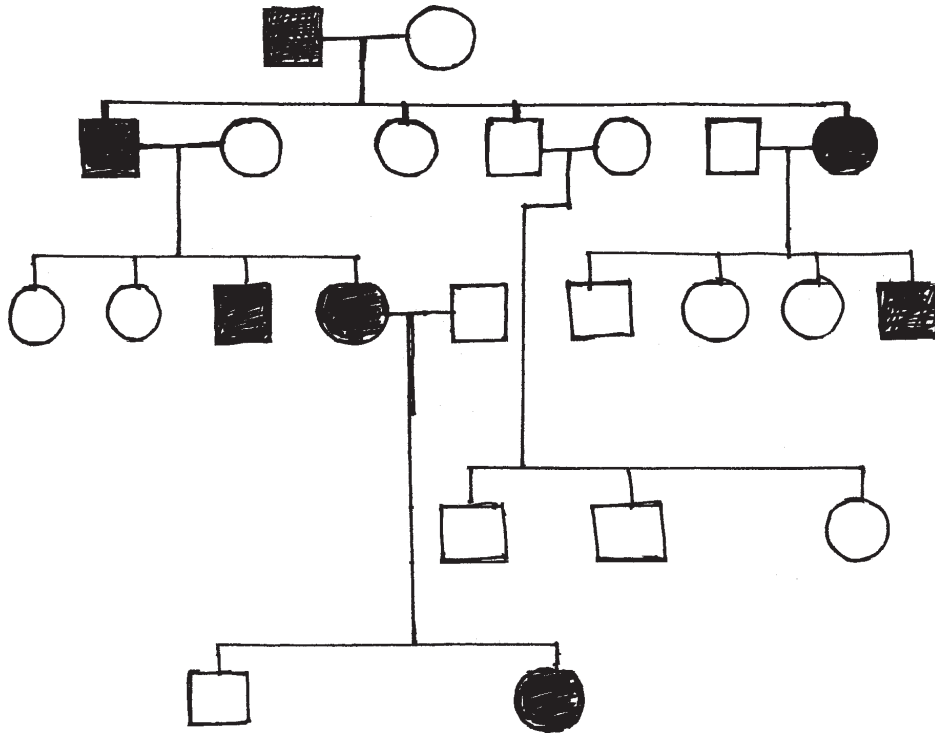
Analyze the pedigree and deduce the most likely mode of inheritance. Give your reasons.

O.



Analyze the pedigree and determine the most likely mode of inheritance. Give your reasons.

P.



Analyze the pedigree and deduce the most likely mode of inheritance. Give your reasons.

SH-V/ZOO-503/DSE-1/19

B.Sc. 5th Semester (Honours) Examination, 2019-20**ZOOLOGY****Course ID : 52616****Course Code : SH/ZOO-503/DSE-1**

Course Title: Animal Behaviour and Chronobiology

Time: 1 Hour 15 Minutes**Full Marks: 25***The figures in the right hand side margin indicate marks.**Candidates are required to give their answers in their own words as far as practicable.*

1. Answer *any five* questions: 1×5=5
 - (a) Define 'ethology'.
 - (b) Who is a 'stereotype' person?
 - (c) What is 'foraging'?
 - (d) What does 'sexual conflict' mean?
 - (e) Define Chronobiology.
 - (f) What do you understand by 'biological clock'?
 - (g) Why do females choose mates?
 - (h) Define 'imprinting'.

 2. Answer *any two* questions: 5×2=10
 - (a) How do different animals communicate with each other? Mention the differences between inter-sexual and intra-sexual selection? 3+2=5
 - (b) Describe the role of behaviour in Conservation Biology.
 - (c) What is meant by the term 'Sexual dimorphism'? Describe 'Various Castes' in honey bee. 2+3=5
 - (d) What is 'Biological oscillation'? Describe the significance of biological clocks in animals. 1+4=5

 3. Answer *any one* of the following: 10×1=10
 - (a) Describe the Tidal rhythm and Lunar rhythm in animals with suitable examples. Write a note on habituation. 3+3+4=10
 - (b) Write short notes (*any two*): 5×2=10
 - (i) Zeitgeber
 - (ii) Sexual Conflict
 - (iii) Circannual Rhythms
 - (iv) Role of Melatonin in Behavioural Biology
 - (v) Masking and Synchronization
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SH-V/ZOO-503/DSE-1/PR/19

B.Sc. 5th Semester (Honours) Practical Examination, 2019-20

ZOOLOGY

Course ID : 52626

Course Code : SH/ZOO-503/DSE-1

Course Title: Animal Behaviour and Chronobiology Lab

Time: 2 Hours

Full Marks: 15

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

1. Observe the geotaxis behaviour in earthworm or Phototaxis behaviour in insect larvae. 3
(Principle : 1; Observation : 2)
 2. Submission of project report (*any one*) from item No. 1 or 2 of the syllabus. 5
(Submission of Project report : 03, Viva voce related to Project : 02)
 3. Submission of project report on excursion (forest/wild life sanctuary/Biodiversity Park/Zoological Park, to study the behavioural activities of animals) 5
(Submission of excursion report : 03, Viva voce related to excursion : 02)
 4. Submission of Laboratory Note Book. 2
(Note Book must contain the topics of 3, 4 and 5 from the syllabus.)
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SH-V/ZOO-503/DSE-1/PRI/19

B.Sc. 5th Semester (Honours) Practical Examination, 2019-20

ZOOLOGY

Course ID : 52626

Course Code : SH/ZOO-503/DSE-1

Course Title: Animal Behaviour and Chronobiology Lab

Instructions to the Examiners.

1. The examiners are requested to make the necessary arrangements before the date of commencement of practical examination.
 2. For Question No. 1; Examiners are requested to supply live Earthworm and Insect larvae.
 3. For Question Nos. 2 and 3 A Project report should be submitted by each student properly signed by the respective teachers.
 4. Laboratory Note Book must be signed by the respective teachers regularly.
 5. Examiners are requested to send the evaluated answer scripts within 7 days after completion of practical examination to the Controller of Examination, Bankura University.
 6. 'Datasheet' should be furnished mentioning Names, Specimen Signature, Address and Mobile number of all the examiners.
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SH-V/ZOO-504/DSE-2/19

B.Sc. 5th Semester (Honours) Examination, 2019-20**ZOOLOGY****Course ID : 52617****Course Code : SH/ZOO-504/DSE-2**

Course Title: Biology of Insects

Time: 1 Hour 15 Minutes**Full Marks: 25***The figures in the right hand side margin indicate marks.**Candidates are required to give their answers in their own words as far as practicable.*

1. Answer *any five* questions: 1×5=5
- (a) Mention any two salient characters of class insecta.
 - (b) Why are termites called social insects?
 - (c) What do you mean by co-evolution?
 - (d) State any two roles of insects in human welfare.
 - (e) What kind of mouth parts is found in female mosquitoes?
 - (f) What is ommatidium?
 - (g) What do you mean by trophallaxis?
 - (h) Define metamorphosis.
2. Answer *any two* questions: 5×2=10
- (a) Describe the structure of the leg of an insect with labelled diagram. Mention one criterion for the selection of host plants by the phytophagous insects. 3+1+1=5
 - (b) What is a vector? Name one disease caused by Dipteran vector and mention its control measures. 1+1+3=5
 - (c) What is a termarium? Describe the composition of a termite colony mentioning the role played by each group members. 1+4=5
 - (d) Write short notes (*any two*): 2½+2½=5
 - (i) Structure of photoreceptors in insects
 - (ii) Role of allelochemicals in host plant mediation
 - (iii) Types of antennae in insects
3. Answer *any one* of the following: 10×1=10
- (a) Classify insects upto subclass with characters mentioning at least one example from each. Name two wingless insects (scientific name). 6+2+2=10
 - (b) Elaborate the structure and physiology of the reproductive or circulatory system of an insect with neat labelled diagram(s). 4+4+2=10
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SH-V/ZOO-504/DSE-2/PR/19

B.Sc. 5th Semester (Honours) Practical Examination, 2019-20

ZOOLOGY

Course ID : 52627

Course Code : SH/ZOO-504/DSE-2

Course Title: Biology of Insects Lab

Time: 2 Hours

Full Marks: 15

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

1. Spot identify the specimens (A and B) as provided stating its economic importance. (1+1)×2=4
 2. Identify the specimens (a and b) as provided with reasons. (1½+1½)×2=4
 3. Prepare a temporary mount of the specimen provided and draw and label its parts. (1½+1½)=2
 4. Submit your Project Report. 3
 5. Submit your Laboratory Note Book. 2
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SH-V/ZOO-504/DSE-2/PRI/19

B.Sc. 5th Semester (Honours) Practical Examination, 2019-20

ZOOLOGY

Course ID : 52627

Course Code : SH/ZOO-504/DSE-2

Course Title: Animal Behaviour and Chronobiology Lab

Instruction to the Examiners.

1. Necessary arrangements may please be made before the date of commencement of practical examinations.
2. For Question No. 1, two specimens are to be selected, one from item no. 6 and the other from item no. 7 of the syllabus.
Scientific name (½ mark), systematic position (½ mark) and economic importance (1 mark).
For Question No. 1, separate loose sheets should be supplied to the candidates in the identification Hall and should be collected within scheduled time.
The loose sheets are to be attached with the main answer scripts after evaluation and duly signed by the examiners.
3. For Question No. 2, one specimen is to be selected from item no. 1 and one from item no. 2 of the syllabus.
(Scientific name-½ mark and for reasons 1½ marks)
For Question, No 2 separate loose sheets, should be supplied to the candidates and collected within the scheduled time.
4. For Question No. 3, specimens are to be supplied to the examinee as per item no. 3 of the syllabus.
For mounting and dissection 1 mark, for drawing and labelling 1 mark is to be given.
5. For Question No. 4, a duly signed project report on any one topic from item no. 5 of the syllabus is to be submitted.
6. For Question No. 5, a duly signed laboratory note book containing all the items from syllabus must be submitted.
7. Full name and signature along with address of the examiners should be enclosed with the answer scripts.
8. After completion of examination the answer scripts should be enclosed in a sealed packet containing top sheet. Award list should be submitted separately.

B.Sc. 5th Semester (Programme) Examination, 2019-20**ZOOLOGY****Course ID : 52618****Course Code : SP/ZOO/501/DSE-1A****Course Title: Animal Physiology****Time : 1 Hour 15 Minutes****Full Marks : 25**

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

*দক্ষিণ প্রান্তস্থ সংখ্যাগুলি প্রশ্নের পূর্ণমানের নির্দেশক।
পরীক্ষার্থীদের যথাসম্ভব নিজের ভাষায় উত্তর দিতে হবে।*

1. Answer *any five* questions: 1×5=5
নীচের যে কোনো পাঁচটি প্রশ্নের উত্তর দাওঃ ১×৫=৫
 - (a) Define end plate potential.
End Plate Potential-এর সংজ্ঞা দাও।
 - (b) Name two hormones secreted by placenta.
Placenta থেকে ক্ষরিত হয় এমন দুটি হরমোন এর নাম উল্লেখ করো।
 - (c) What is islets of Langerhans?
Islets of Langerhans কী?
 - (d) Define axo-somatic synapse.
Axo-somatic synapse এর সংজ্ঞা দাও।
 - (e) Differentiate between red bone marrow and yellow bone marrow.
Red bone marrow এবং yellow bone marrow এর পার্থক্য উল্লেখ করো।
 - (f) What is cartilage?
Cartilage কী?
 - (g) Mention the function of 'Sertoli cells'.
'Sertoli cells' এর কাজ উল্লেখ করো।
 - (h) Which hormone is known as Calorigenic hormone and why?
কোন হরমোনকে Calorigenic হরমোন বলে ও কেন?
2. Answer *any two* questions from the following: 5×2=10
নীচের যে কোনো দুটি প্রশ্নের উত্তর দাওঃ
 - (a) What are the characteristic features of epithelial tissue? Name at least two organs in the body where pavement, ciliated and stratified squamous epithelium are present. 2+3=5
Epithelial tissue এর চারিত্রিক বৈশিষ্ট্য উল্লেখ করো। অন্তত দুটি করে অঙ্গের নাম উল্লেখ করো যেখানে pavement, ciliated এবং stratified squamous epithelium পাওয়া যায়।

(b) Describe the ultrastructure of skeletal muscle.

Skeletal muscle-এর আণুবীক্ষণিক গঠন বর্ণনা করো।

(c) Explain the permissive effect of hormone with suitable example. Mention the location of hormone receptors in the cell. 3+2=5

Hormone-এর permissive effect উদাহরণসহ বর্ণনা করো। কোষে hormone receptors-এর অবস্থান উল্লেখ করো।

(d) Describe the structure of mature Graafian follicle with diagram. 4+1=5

Mature Graffian follicle-এর গঠন চিত্রসহ বর্ণনা করো।

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

নীচের যে কোনো একটি প্রশ্নের উত্তর দাওঃ

(a) What is neurohormone? Cite two examples. Define trophic hormone. Name the trophic hormones secreted from cells of anterior pituitary gland and state their main functions. 2+2+6=10

Neurohormone কী? দুটি উদাহরণ দাও। Trophic hormone বলতে কী বোঝো? অগ্র পিটুইটারির কোষগুলি থেকে trophic hormone গুলির নাম ও মূল কাজগুলি উল্লেখ করো।

(b) Describe the process of nerve impulse propagation through non-medulated nerve fibre. Mention the factors effecting the nerve conduction velocity. What is synaptic delay. 6+2+2=10

মেডুলারী আবরণবিহীন স্নায়ুতন্তুর মধ্য দিয়ে কীভাবে স্নায়ুউদ্দীপনা পরিবাহিত হয় বিবৃত করো। Nerve conduction velocity-কে প্রভাবিত করে এমন প্রভাবকগুলি উল্লেখ করো। Synaptic delay কী?

SP-V/ZOO/501/DSE-1A(PR)/19

B.Sc. 5th Semester (Programme) Practical Examination, 2019-20**ZOOLOGY****Course ID : 52628****Course Code : SP-ZOO-501/DSE-1A**

Course Title: Animal Physiology Lab

Time: 2 Hours**Full Marks: 15**

*The figures in the right hand side margin indicate marks.
Candidates are required to give their answers in their own words
as far as practicable.
Answer all questions.*

1. Identify the histological slides with reasons (A, B, C & D) provided. Mention at least four specific characters 2×4=8

Identification	—	½ mark
Reasons	—	1½ mark

 2. Prepare a temporary mount of squamous epithelium. Draw a labelled diagram 4+1=5

Preparation	—	4 mark
Drawing & labelling	—	1 mark

 3. Submit your laboratory note-book 2
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SP-V/ZOO/501/DSE-1A(PRI)/19

B.Sc. 5th Semester (Programme) Practical Examination, 2019-20

ZOOLOGY

Course ID : 52628

Course Code : SP-ZOO-501/DSE-1A

Course Title: Animal Physiology Lab

Instruction for the Examiners.

1. For Question No. 1 (identification with reasons) four items (A, B, C & D) should be selected from the list of the syllabus.
 2. For Question No. 2 proper precaution should be enforced.
 3. For Question No. 3 emphasis should be given on covering all the practical items, scientific drawing and regular signature by the respective teachers.
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B.Sc. 5th Semester (Programme) Examination, 2019

ZOOLOGY

Course ID : 52610

Course Code : SP/ZOO/504/SEC-3

Course Title: Sericulture

Time : 2 Hours

Full Marks : 40

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

*দক্ষিণ প্রান্তস্থ সংখ্যাগুলি প্রশ্নের পূর্ণমানের নির্দেশক।
পরীক্ষার্থীদের যথাসম্ভব নিজের ভাষায় উত্তর দিতে হবে।*

1. Answer any five questions:

2×5=10

নীচের যে কোন পাঁচটি প্রশ্নের উত্তর দাওঃ

(a) Define Morigulture.

Morigulture এর সংজ্ঞা দাও।

(b) Name two branches of Economic Zoology.

অর্থনৈতিক প্রাণীবিদ্যার দুটি শাখার নাম লেখো।

(c) Define Yarn.

Yarn বলতে কী বোঝো?

(d) Name (Scientific name) the Tussar Silk Moth.

Tussar Silk Moth-র বৈজ্ঞানিক নাম লেখো।

(e) Name two host plants of Sericulture (Scientific).

Sericulture-এ ব্যবহৃত দুটি host plant-এর বৈজ্ঞানিক নাম লেখো।

(f) Name four types of Silk.

চার প্রকার Silk-এর নাম লেখো।

(g) Mulberry Silk moth—Mention its phylum and class.

Mulberry Silk মথের পর্ব ও শ্রেণি উল্লেখ করো।

(h) Name two diseases of Silk moth.

Silk মথের দুই প্রকার রোগের নাম লেখো।

2. Answer any four questions:

5×4=20

নীচের যে কোন চারটি প্রশ্নের উত্তর দাওঃ

(a) What is Silk? Mention its chemical composition and two physical properties. 1+2+2=5

Silk কী? ইহার রাসায়নিক উপাদান ও দুটি physical ধর্ম উল্লেখ করো।

- (b) Describe the structure of 5th Instar larva of Mulberry Silk moth.
তুঁতজাত রেশম মথের পঞ্চম Instar larva-র গঠন বর্ণনা করো।
- (c) Define Silk gland of Mulberry Silk moth with suitable illustrations. 3+2=5
চিত্রসহ Mulberry Silk Moth-এর Silk gland-এর বর্ণনা দাও।
- (d) Define voltinism and mention its various types with examples in Sericulture.
Voltinism কী? ইহা কয় প্রকার উদাহরণ সহ বর্ণনা দাও।
- (e) Name two protozoan diseases of Silk moth. Describe its symptoms and preventive measures. 1+2+2=5
Silk Moth-র দুই প্রকার protozoan রোগের নাম, লক্ষণ ও প্রতিকার উল্লেখ করো।
- (f) Describe the spinning and harvesting methods in Sericulture.
Sericulture-এর Spinning ও Harvesting পদ্ধতি আলোচনা করো।
3. Answer *any one* question from the following: 10×1=10
নীচের যে কোনো একটি প্রশ্নের উত্তর দাওঃ
- (a) Describe the prospects of Sericulture in India.
ভারতবর্ষে Sericulture-এর ভবিষ্যৎ সম্পর্কে আলোচনা করো।
- (b) Describe the importance of rearing house and rearing Appliances in Sericulture. 5+5=10
রেশম শিল্প-এর চাষে পালন-ঘর ও পালন-সরঞ্জাম সম্পর্কে আলোচনা করো।
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SH-V/ZOO-501/C-11/19

B.Sc. 5th Semester (Honours) Examination, 2019-20**ZOOLOGY****Course ID : 52611****Course Code : SH/ZOO-501/C-11**

Course Title: Molecular Biology

Time: 1 Hour 15 Minutes**Full Marks: 25**

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

1. Answer *any five* of the following: 1×5=5
- (a) Write down the chemical names of adenine and cytosine.
 - (b) What is major groove?
 - (c) State the function of sigma factor.
 - (d) What is alternative splicing?
 - (e) State the function of photolyase.
 - (f) Differentiate between activators and repressors.
 - (g) What is Shine-Dalgarno sequence?
 - (h) What is DNA Probe?
2. Answer *any two* of the following: 5×2=10
- (a) Briefly describe the process of NER. State the function of Mut S and Mut L. 4+1=5
 - (b) Describe the process of rho independent termination of transcription in prokaryotes. 5
 - (c) What is Post-transcriptional modification? How it is achieved in eukaryotes? 1+4=5
 - (d) Define insulator and mediator. State the function of guide RNA with suitable illustration. 1+1+3=5
3. Answer *any one* of the following: 10×1=10
- (a) What is replication fork? What do you mean by bi-directional replication? Briefly describe the structure and function of DNA polymerase-III. 2+2+6=10
 - (b) What is negative repressible operon? How attenuation is achieved *E. coli*? What is the positive control of Lac Operon? What is gratuitous inducer? 2+4+2+2=10

SH-V/ZOO-501/C-11/PR/19

B.Sc. 5th Semester (Honours) Practical Examination, 2019-20

ZOOLOGY

Course ID : 52621

Course Code : SH/ZOO-501/C-11

Course Title: Molecular Biology Lab

Time: 2 Hours

Full Marks: 15

The figures in the right hand side margin indicate marks.

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

1. Identify the provided micrographs/photographs (A & B). 2½×2=5
 2. Prepare a stained slide of Polytene Chromosome from the supplied *Chironomous* larva. Draw a labelled diagram of the same. 6+1+1=8
 3. Submission of Laboratory notebook. 2
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