

**Test examination 2017-2018**  
**Zoology Honours ( Part III )**  
**Nabadwip Vidyasagar College**  
Nabadwip, Nadia

Paper VII  
DATE: 27 .01.2018

Full Marks : 55 (in addition to paper VIII)

Time: 4 Hours(in addition to paper VIII)

1. Answer any two of the following  $1 \times 2 = 2$ 
  - A) MS-DOS – what does it mean?
  - B) Define text file. Give example?
  - C) Give full definition of stick lac.
  - D) What is Batesian mimicry?
  
2. Answer any six of the following  $2 \times 6 = 12$ 
  - A) What do you mean by system software?
  - B) What are the uses of lacs?
  - C) What Hardy-Weinberg principle states?
  - D) State the symptoms when brood lac to cut.
  - E) What is conscious mimicry? Cite example.
  - F) Mention the place and time of origin of man.
  - G) Write down the symptoms Ranikhet disease of fowl.
  - H) Why isolation is considered to be one of the most important factors responsible for evolution.
  
3. Answer any three questions:  $3 \times 7 = 21$ 
  - A) Define natural selection as proposed by Darwin. The concept of fitness is central to natural selection – Discuss.  $2+5= 7$
  - B) Find the median of the following data.

Class Boundaries	11-20	21-30	31-40	41-50	51-60	61-70	71-80
Frequency	42	38	125	84	45	36	30
  - C) What is beekeeping? Write down the structure of a bee colony.  $2+5= 7$
  - D) What is a natural pearl? How is it produced? Write how mollusk creates pearls.  $1+2+4 = 7$
  - E) State the types of file organization. How do you organize files using libraries.  $3+4= 7$

4. Answer any two of the following. 10X2= 20

A) How do mimicry and camouflage contrast? Using classical model of butterfly explain the phenomenon of Müllerian mimicry. State the adaptive value of biological colouration. 3+4+3= 10

B) What is student t-test?

C) The body weight of 10 fishes (*Labeo rohita*) of different ponds is given below:

	1	2	3	4	5	6	7	8	9	10
Pond A	85	75	70	90	80	75	80	80	90	85
Pond B	55	75	80	65	60	70	70	55	60	80

Find if there is significant difference between the mean body weights of the above mentioned groups of fishes.

t scores:  $t_{0.05(0.9)} = 2.093$ ,  $t_{0.05(18)} = 2.101$ ,  $t_{0.05(20)} = 2.086$ ,  $t_{0.05(17)} = 2.110$ . 2+8=10

Test examination 2017-2018  
Zoology Honours ( Part III )  
**Nabadwip Vidyasagar College**  
Nabadwip, Nadia

Paper VIII (Unit I and II)  
DATE: ~~27~~ .01.2018

Full Marks : 25 (in addition to paper VII)

Time: 4 Hours (in addition to paper IX )

A. Answer in short (4x1)

1. What is rho factor?
2. What is role of DNA ligase?
3. Name 2 chemical carcinogen
4. What is transition and transversion?
5. Role of sry gene
6. Name one sex linked recessive gene in human

B. Answer in brief (2x2)

1. Define alternative splicing
2. What is dosage compensation?
3. Define metastasis.
4. Role of sigma factor.
5. What is proof reading of DNA?
6. Distinguish oncogene and protooncogene.
7. What is gratuitous inducer? Why is it better than lactose as inducer.

C. Answer any 1 (1x7)

1. What is genic balance theory? Explain with reference to *Drosophila*. Elucidate role of *sxl* gene in sex determination of fruitfly 3+4
2. Describe the structure of lac operon with diagram. What is role of CAP-cAMP on the working of the operon? 5+2
3. What is H antigen? How is it involved in ABO blood group determination. What is Bombay phenotype? 1+5+1
4. What is linkage? How is it related to crossing over? Describe the process of complete and in complete linkage with a suitable cross. 2+1+4

D. Answer any 1 (1x10)

1. Describe the structure of eukaryotic spliceosomal complex. Describe the structure of GU- AG intron and the process of RNA processing. 3+7
2. Describe the process of initiation complex formation in DNA translation. Describe rho dependent and independent forms of termination of transcription. 5+5
3. Write short notes on (any 2) 5+5

- a. Chemical mutagens
- b. Epistasis
- c. Malignant tumour and metastasis

**Test examination 2017-2018**  
**Zoology Honours ( Part III )**  
**Nabadwip Vidyasagar College**  
Nabadwip, Nadia

Paper VIII (Unit III and IV)  
DATE: 27.01.2018

Full Marks : 25 (in addition to paper IX )

Time: 4 Hours (in addition to paper IX )

- A. Answer in short (4x1)
1. What is acid rain?
  2. Name 2 green house gases.
  3. What are GMOs?
  4. What is TAQ polymerase
  5. What are cosmids?
  6. What are restriction endonucleases?
  7. What are bioindicators?
- B. Answer in brief (2x2)
1. Distinguish primary and secondary pollutants
  2. What is the function of DNA ligase?
  3. What are cosmids?
  4. Difference between gene and cDNA library
  5. What are electrostatic precipitators?
  6. What is COD? How is it related to water pollution?
- C. Answer any 1 (1x7)
1. What is photochemical smog? Describe the reactions involved in its creation? What are the effects?
  2. Describe the steps of Southern blotting with suitable diagram.
  3. Describe noise. What are the different sources and effects of noise pollution?
- D. Answer any 1 (1x10)
1. What do you mean by solid waste management. Describe its steps and types.
  2. Describe the various primary air pollutants and their effect on human and vegetation.
  3. What is PCR? Describe the steps involved. Give two advantage and disadvantage of the process.

29 JAN 2018

Nabadwip Vidyasagar College Test Examination 2018 (Session 2017 – 2018)

ZOOLOGY [HONOURS]

Paper : IX

Full Marks : 55

Time : 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.*

1. Answer any **five** of the following:

1×5 = 5

- a) Define pH ?
- b) What is glomerular filtration rate.
- c) What is Z-line ?
- d) Name one disaccharide.
- e) What is  $\alpha$  – helix ?
- f) What is  $K_m$  value ?
- g) Define prosthetic group of an enzyme.
- h) Name two major endocrine glands in mammal.
- i) Name two hormones secreted by posterior pituitary.
- j) What is regeneration?
- k) What is Area Opaca?
- l) Name one animal with macrolecithal egg .

2. Answer any **four** of the following:

2×4 = 8

- a) What is depolarization and repolarization of nerve ?
- b) What is H – zone ?
- c) What are Aldoses and Ketoes ?
- d) Name two non-protein enzymes.
- e) Define Transamination.
- f) Name one peptide and one steroid hormone with their originating organ.
- g) What is spermiogenesis ?
- h) What do you mean by extra embryonic membrane? Give example.

3. Answer any **two** of the following:

6×2 = 12

- a) Describe 'Chloride Shift'.
- b) Describe the role of Troponin and  $Ca^{++}$  in muscle contraction.

- 017 KAL 99
- c) Describe the counter current mechanism in mammalian urine formation.
  - d) How is TCA cycle regulated ?
  - e) Describe Mitogenesis.
  - f) Write a short note on Estrous cycle.
  - g) Write a short note on fate map.
  - h) Describe the process of 'Block to polyspermy' in fertilization.

4. Answer any **three** of the following:

10×3 = 30

- a) Describe the process of Oxygen transport in mammal.
  - b) Describe the process of nerve impulse propagation with diagram.
  - c) Classify Enzymes with examples.
  - d) Describe the process of Glycogenesis with reactions.
  - e) Describe the histological structure of a mammalian Kidney with diagram.
  - f) Describe the stages of biosynthesis and function of Testosterone.
  - g) Describe the process of gastrulation in frog.
  - h) Describe brain development in chick with suitable diagram.
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27 FEB 2018

**Nabadwip Vidyasagar College**  
**Test examination 2017-2018**  
**Zoology Honours (Part II)**  
**Nabadwip, Nadia**  
**Paper IV (Unit I)**

Full Marks: 25

DATE: 27/02/2018

1. Answer any three of the following.

1×3 = 3

- I) What is productivity?
- II) What is density?
- III) What is age ratio?
- IV) What do you mean about species abundance?
- V) What is ecological succession?

2. Answer any three of the following.

2×3 = 6

- I) What do you understand by ecological efficiencies?
- II) What is species richness?
- III) What is meant by transported soil? Give one example.
- IV) What do you mean by niche?
- V) Write down differences between Natality and mortality in a population?

3. Answer any one of the following.

1×6 = 6

- I) Distinguish between S-shaped curve and J- shaped curve of population growth. Explain population density regulation. (3+3=6)
- II) Explain wet land ecosystem and its importance. Why wetland is called nature's kidney. (4+2=6)

4. Answer any one of the following.

1×10 = 10

- I) What is soil profile? In which way A horizon of soil profile is distinct from other horizon? State the factors that make soil as microhabitat for soilbiota? What is ecotone and edge effect. (1+2=2+2½+2½= 10)
- II) Write down the differences between r and k strategies. What is Gause's Principle. Explain Gause's Principle with one example from laboratory and field experiment. (3+2+2½+2½ = 10)

27 FEB 2018

Nabadwip Vidyasagar College Test Examination 2018 (Session 2017 – 2018)

ZOOLOGY PART – II HONOURS]

Paper : IV (UNIT – II)

Full Marks : 25

Time : 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.*

1. Answer any one of the following:

1×1 = 01

- What is WWF ?
- What is Ex-situ conservation ?
- Write the function of ZSI.
- Name one Endangered mammal from Eastern Himalaya of India.

2. Answer any one of the following:

2×1 = 02

- What is the basis for establishment of CITES.
- Name two mega diversity countries.
- What do you mean by Biodiversity Hotspots ? Give example.
- What are Red Data Book & Blue Data Book ?

3. Answer any two of the following:

6×2 = 12

- Write a short note on Oliver Turtle conservation in India.
- Write down the function of IUCN.
- Elucidate Human – Elephant conflict in India.
- Write a short note on MAB.
- Write a note on Biopiracy.

4. Answer any one of the following:

10×1 = 10

- Describe the process of Wildlife conservation procedure. Add a short note on Wildlife Protection Act, 1972.
  - Write a note on endangered mammals of India. Give the management strategies with reference to Tiger.
  - Describe in detail the People's Biodiversity Register. Add a note on Biodiversity Act.
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**Test examination 2017-2018**  
**Zoology Honours ( Part II )**  
**Nabadwip Vidyasagar College**  
**Nabadwip, Nadia**

27 FEB 2018

**Paper IV (Unit III)**

/ /2018

F.M = 25

A. Answer in short ( Any one):

1 × 1 = 01

1. Name two greenhouse gases.
2. Define eutrophication
3. Effect of ozone layer depletion on human.

B. Answer in brief (Any two):

2 × 2 = 04

1. Role of monooxygenases in biotransformation
2. What is ecological footprint?
3. What is GIS?
4. Give 2 threats to sustainable development.
5. Give two ways of groundwater recharge.

C. Answer any two:

2 × 10 = 20

1. Define bioremediation. Discuss various process of insitu and ex-situ bioremediation. Write a short note on phytoremediation  
(1+6+ 3) = 10
2. What are GMOs? Give some specific example. Are they safe to use? Write a short note on EIA.  
(2+2+4+2) = 10
3. a. Define the various ways of rain water harvesting. 5  
b. Ways of solid waste management. 5
4. Write short notes on  
a. Global warming 5  
b. Ozone layer depletion 5

**Nabadwip Vidyasagar College**

Test examination 2017-2018

Zoology Honours ( Part III )

Nabadwip, Nadia

Paper V (Unit I)

28 FEB 2018

Full Marks :25

DATE: /02/2018

1. Answer any three of the following

1×3 = 3

- I) What do you understand about learning of animal?
- II) Write one significance of bird migration.
- III) What is altitudinal bird migration?
- IV) What is circadian rhythm?

2. Answer any three of the following.

2×3 = 6

- I) Write about instinct behaviour of animal with example.
- II) What is fixed action pattern?
- III) What is biological rhythms? Give one example.
- V) What do you mean by fixed action pattern in instinct and learning behaviour of animal.

3. Answer any one of the following.

1×6 = 6

- I) What is altruistic behaviour? Write down differences between kinship and selfishness. What do you mean by cooperation. What is Reciprocal altruism?  
(2+3+1= 6)
- II) What is communication? How many types of communication are there in Honey bees. Explain different types of Dance pattern in Honey bees. What is the role of pheromone in communication of honey bees. (1+1+2½+1½= 6)

4. Answer any one of the following.

1×10 = 10

- I) What is parental care? Explain parental care with suitable examples from different class of Amphibia.  
(2+8 = 10)
- II) What is migration? Why do birds migrate? What are the clues that bird use during their migration. Explain different types of bird migration.  
(1+2+3+4 = 10)
- III) What do you mean eusociality in Termites. What are the different types of caste present in termite colony. Why termite is called social insect. Write some functions of different caste of termite.  
(2+2+2+4 = 10)

28 FEB 2018

Nabadwip Vidyasagar College Test Examination 2018 (Session 2017 – 2018)  
ZOOLOGY PART – II HONOURS]  
Paper : V (UNIT – II)

Full Marks : 25

Time : 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.*

1. Answer any one of the following: 1×1 = 01

- a) What is Paratype?
- b) What is bathymetric distribution of animal?
- c) What is Phenetics?
- d) Define Taxonomy.

2. Answer any two of the following: 2×2 = 04

- a) What is Hardy-Weinberg Equilibrium?
- b) What is Mimicry? Give example.
- c) What is synonym? Give example
- d) What is Morphological species concept?
- e) What is speciation?

3. Answer any two of the following: 10×2 = 20

- a) Describe the Zoo-geographical realms with special reference to Oriental Realm.
  - b) Describe the types of possible barriers in animal dispersal. Add a note on process of dispersal of animals in land.
  - c) Describe the morphological and physiological aquatic adaptation in animals.
  - d) Describe Modern Synthetic Theory of evolution.
  - e) Describe the evolutionary and adaptive significance of colouration.
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**Test examination 2017-2018**  
**Zoology Honours ( Part II )**  
**Nabadwip Vidyasagar College**  
**Nabadwip, Nadia**

**Paper V (Unit III)**

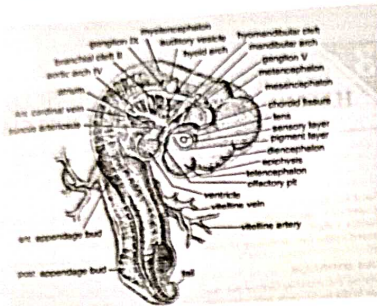
DATE: / /2018

F.M. = 25

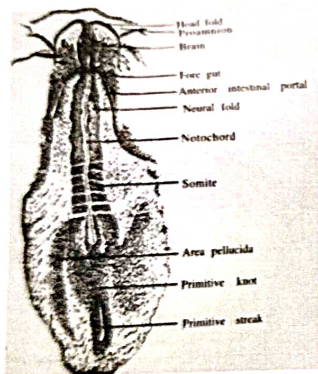
- A. Answer in short ( any one) 1 × 1 = 01
1. Define magnification power of a microscope
  2. What is the use of an autoclave?
  3. Write the full form of HPLC.
- B. Answer in brief (any one) 1 × 2 = 02
1. What do you mean by Native PAGE?
  2. Role of trypan blue in cell viability testing
  3. What is the function of dry heat sterilisation technique?
- C. Answer any two 2 × 6 = 12
1. Distinguish between SEM and TEM.
  2. Discuss the principle of phase contrast microscopy.
  3. Define density gradient centrifugation. Write a note on principle of centrifugation.
  4. Discuss on different types of cell culture media.
- D. Answer any one 1 × 10 = 10
1. What do you mean by fluorescence? Write the working principle of an epifluorescent microscope with illustration. (2+ 8)
  2. Write down the principle of electrophoresis. How is the gel bed prepared in PAGE? What is the role of SDS in SDS PAGE? (5+3+2)
  3. What is the basic principle and use of gel filtration chromatography? (7+3)

**Nabadwip Vidyasagar College**  
**Internal Examination**  
**SEM VI Zoology (Hons)**  
**Subj: Embryology**  
**Course Code: CC 13 (PR)**  
**F.M: 10**  
**25.4.2022**

1. Identify with two characteristics of the following pictures. (2.5)



2. Identify with two characteristics of the following pictures. (2.5)



**Nabadwip Vidyasagar College**  
**Internal Examination**  
**SEM VI Zoology (Hons)**  
**Subj: Embryology**  
**Course Code: CC 13 (T)**  
**F.M: 10**  
**25.4.2022**

Answer any five Questions. 5 x 2= 10

1. What is optic vesicle? (2)
2. What is lens placode? (2)
3. What is optic cup?
4. Name the two subdivisions of primordial brain tube? (2)
5. Name the portion which is formed by divisions of deuteron cephalon? (2)
6. How primary lens fibers are formed?

Date - 26.4.2022

**NABADWIP VIDYASAGAR COLLEGE**  
Internal Exam 2022- ZOOLOGY DEPARTMENT

**Sem VI**

**(CC 14) – Evolutionary Biology**

**THEORY**

**F.M- 10**

**Each question carries 2 marks:**

1. Explain the role of geographic isolation in speciation.
2. How does parapatric speciation occur in a population?
3. Write 2 significance of Biological Species Concept.
4. What is Isolating mechanism?
5. Two populations of same over time grow distant from one another. At what point will these two populations be considered different species?

**(CC 14) – Evolutionary Biology**

**PRACTICAL**

**F.M- 10**

**Each question carries 2 marks:**

1. When examine the wings of bat and bird, what kind of organs do we call these? And why?
2. Homologous organs leads to which type of evolution? Trunk of an elephant and hand of a chimpanzee show homology or analogy? 1+1=2
3. What we can learn while studying homology and analogy from suitable specimens?
4. Define Analogous organs with an example.
5. Write 2 differences between Homologous and Analogous organs.

Name: \_\_\_\_\_ Univ. Regi. No. \_\_\_\_\_

1. Polymerase used for PCR is extracted from \_\_\_\_\_  
a) *Escherichia coli* b) *Homo sapiens* c) *Thermus aquaticus* d) *Saccharomyces cerevisiae*
2. Which of the following statements is accurate for the PCR - polymerase chain reaction?  
a) Automated PCR machines are called thermal cyclers b) A thermo-stable DNA polymerase is required c) Millions to billions of desired DNA copies can be produced from microgram quantities of DNA d) **All of the above**
3. Which of the following is not a thermo-stable polymerase?  
a) pfu polymerase b) Taq polymerase c) Vent polymerase d) **DNA polymerase III**
4. How many DNA duplex is obtained from one DNA duplex after 4 cycles of PCR?  
a) 4 b) 8 c) **16** d) 32
5. From a single molecule of DNA, PCR can make  
a) One additional copy b) Hundreds of copies c) Thousands of copies d) **Millions of copies**
6. Lac operon is an example of  
a) Only positive regulation b) Only negative regulation c) **Both positive and negative regulation**  
d) Sometimes positive sometimes negative
7. The sequence of the structural genes in the lac operon is  
a) lacA-lacZ-lacY b) **lacZ-lacY-lacA** c) lacZ-lacA-lacY d) lacA-lacY-lacZ
8. Lac Operon will be turned on when  
a) Lactose is less than glucose b) Lactose is less in the medium c) **Lactose is more than glucose**  
d) Glucose is enough in the medium
9. The correct option regarding the lac operon in *E.coli* from the following is  
a) Lac operon is switched on in the absence of lactose b) Lac repressor binds to the lac promoter  
c)  $\beta$ -galactosidase is the only enzyme produced in large quantities when lac operon is turned on  
d) **lac operon messenger RNA is a polycistronic mRNA**
10. Regulation of the lac operon can be envisioned as regulation of enzyme synthesis by its  
a) Lactose b) Substrate c) Carbohydrates d) **All of the above**
11. Which of the following is found in Northern blotting but not in southern blotting?  
a) Gel b) Nitrocellulose c) **Reactive paper** d) Probe
12. How can hybridizing bands be located?  
a) Radiography b) **Autoradiography** c) UV radiation d) Infrared radiation
13. Applications of Southern Blotting includes  
a) Identification of Transferred Genes b) DNA Fingerprinting c) Preparation of RFLP Maps  
d) **All the above**
14. Which of the following statement is true regarding Southern Blotting  
a) DND-DNA Hybridization is the basis b) The transfer of DNA fragments from the Gel to Nitrocellulose membrane is called blotting c) Developed by E. M. Southern d) **All the above**
15. Which of the following technique is most suitable for detecting the presence of a gene product  
a) Dot blotting b) Southern blotting c) Plaque blotting d) **Western blotting**

Sem - VI - DSE(05) [Practical] CC-13 (Theory)

**Semester - 6 Internal Examination 2022 (20/04/2022)**  
**Department of Zoology, Nabadwip Vidyasagar College**

Microtechnique (Practical)

2×5 = 10

1. Write down the function of Bouin's fluid?
2. State the aim of tissue fixation?
3. Name one affixative agent with its composition?
4. What do you mean by wax impregnation?
5. What are the importances of dehydration during staining of tissue?

Teratogenic Agents and their effects on embryonic development (Theory)

2×5 = 10

1. What do you mean by Teratology?
2. Name two teratogenic agents?
3. State the congenital malfunction of Methotrexate?
4. Write the effect of Tetracycline on embryonic development?
5. Write down the name of two Bioteratogenic agents?



Sem-IV - CC-09 (Practical) CC-08 (Theory)

**Semester - 4 Internal Examination 2022 (23/03/2022)**

**Blood Pressure (Practical)**

2×5

1. What is blood pressure?
2. What is systolic and diastolic blood pressure?
3. How is blood pressure actually measured?
4. What are Korotkoff sounds?
5. What is mean arterial pressure (MAP)?

**Vertebrate Heart (Comparative Anatomy) Theory**

1×10

1. Why are bird and mammal hearts more efficient than a fish?
2. Which two types of vertebrates have hearts with three chambers?
3. What is open blood circulation?
4. What is a myogenic heart?
5. Do amphibian hearts have valves?
6. Why do fishes have 2 chambered heart?
7. How many chambered heart is present in fishes?
8. Why SA node is called pacemaker of heart?
9. What is vertebrate heart?
10. Which heart chamber does blood enter and exit respectively?

2019 - 2020

**Nabadwip Vidyasagar College**  
**ZOOLOGY (Hons)**  
**Internal examination 3<sup>RD</sup> semester 2019**

**Date: 30.09.2019**

**Paper: CC5**

**Answer ANY FIVE from the following questions. (2 × 5)**

**FM: 10**

1. What are solenoglyphous fang? Give example
2. Give scientific name of one poisonous and one non poisonous snake
3. What is neurotoxic venom. Give example
4. Define poison gland and name the parts of poison apparatus
5. Role of digastrics muscle in snake biting.
6. Give the composition of venom.
7. Describe the Accessory respiratory organ of *Anabas* fish
8. What is the use of Accessory respiratory organ?
9. What do you mean by 'Agnatha'?
10. Give two important characters of Cyclostomata.
11. Give two examples (scientific name) of Sub-order Petromyzontidea.
12. Write down salient features of Hag Fish.

7/17/22, 8:33 PM  
Session - 2019-2020

Nabadwip Vidyasagar College  
ZOOLOGY (Hons)  
Internal examination 3<sup>RD</sup> semester 2019

Date: 30.09.2019

Paper: CC6

Answer ANY FIVE from the following questions. (2 × 5)

FM: 10

1. What are leydig cells?
2. What are sertoli cells?
3. What is corpus luteum?
4. What is corpus albicans?
5. Define corona radiata?
6. What are I band and A band?
7. Define sarcomere
8. Name the different muscle proteins
9. What is tunica albuginea?
10. Who proposed sliding filament theory?
11. What is troponin and its role in muscle contraction.
12. What is liquor folliculi?
13. Define Hormone.
14. What are the differences between Peptide and Steroid hormones?
15. Give two examples of Glycoprotein hormone.

**Nabadwip Vidyasagar College**  
**ZOOLOGY (Hons)**  
**Internal examination 3<sup>RD</sup> semester 2019**

**Paper: CC7**

**Date: 30.09.2019**

**Answer ANY FIVE from the following questions. (2 × 5)**

**FM: 10**

1. Give an account of ATP production in anaerobic glycolysis.
2. What is pyruvate dehydrogenase complex
3. Name the step where NADH is produced in Glycolysis
4. What is substrate level phosphorylation?
5. Why Krebs cycle called TCA cycle?
6. Give the basis composition of a nucleotide with diagram
7. Draw the structure of ribose and deoxyribose sugar
8. How lactic acid produced from pyruvate and where ?
9. What are the differences between L-amino acid and D-amino acid?
10. Write down four important physical properties of amino acid.
11. Give two examples of Aromatic amino acids.
12. What is Imino Acid? Give example.

Name: \_\_\_\_\_ Univ. Regi. No. \_\_\_\_\_

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9. The correct option regarding the lac operon in *E.coli* from the following is  
a) Lac operon is switched on in the absence of lactose b) Lac repressor binds to the lac promoter c)  $\beta$ -galactosidase is the only enzyme produced in large quantities when lac operon is turned on d) lac operon messenger RNA is a polycistronic mRNA
10. Regulation of the lac operon can be envisioned as regulation of enzyme synthesis by its  
a) Lactose b) Substrate c) Carbohydrates d) All of the above
11. Which of the following is found in Northern blotting but not in southern blotting?  
a) Gel b) Nitrocellulose c) Reactive paper d) Probe
12. How can hybridizing bands be located?  
a) Radiography b) Autoradiography c) UV radiation d) Infrared radiation
13. Applications of Southern Blotting includes  
a) Identification of Transferred Genes b) DNA Fingerprinting c) Preparation of RFLP Maps d) All the above
14. Which of the following statement is true regarding Southern Blotting  
a) DND-DNA Hybridization is the basis b) The transfer of DNA fragments from the Gel to Nitrocellulose membrane is called blotting c) Developed by E. M. Southern d) All the above
15. Which of the following technique is most suitable for detecting the presence of a gene product  
a) Dot blotting b) Southern blotting c) Plaque blotting d) Western blotting

2021-2022

Date- 02/06/2022

NABADWIP VIDYASAGAR COLLEGE  
Internal Exam 2022- ZOOLOGY DEPARTMENT

Sem IV

(CC 09) – Animal Physiology

THEORY

F.M- 10

Each question carries 2 marks:

1. What is the normal volume of Total Lung Capacity? Name the instrument which is used to measure lung volumes and capacities. 1+1=2
2. Explain exchange of gases between alveoli and blood.
3. Write 2 symptoms of carbon monoxide poisoning.
4. Write note on: Vital capacity.
5. What do you mean by RQ? What is the value of RQ in case of carbohydrate? 1+1=2

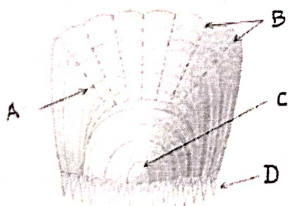
(CC 08) – Comparative Anatomy of Vertebrates

PRACTICAL

F.M- 10

Each question carries 2 marks:

1. Write 2 identifying features of Placoid scales.
2. How do Ctenoid and Placoid scales differ?
- 3.



Identify the scale and the parts of it (A, B, C, D) respectively.

4. Which type of fish scales resembling the structure of a tooth? several concentric lines of growth are found in which scale? 1+1=2
5. i) Carps ii) Elasmobranch iii) Perch fishes iv) Salmon

Write the name of scales found in the above fishes.  $\frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} = 2$

2021-2022

MCQ ON PROKARYOTES SEM II H: CC2

DATE: 8/2/22

Name:

2021-2022  
MD

A Gram negative cell wall is \_\_\_\_\_ than a Gram positive one.  
a. Thicker                      b. thinner

Flagella and pili are made of  
a. lipids    b. carbohydrates    c. nucleic acids    D. protein

A slippery outer covering in some bacteria that protects them from phagocytosis by host cells is  
A. capsule    b. cell wall    c. Flagellum    d. peptidoglycan

Which of the following contains polysaccharide?  
A. Gram negative cell wall    b. pili    c. flagella    d. plasmids

The cell wall type that has less peptidoglycan is  
A. Gram negative    B. Gram positive

Because penicillin prevents peptidoglycan synthesis, it is more effective on \_\_\_\_\_ cells.

A. Gram positive                      B. Gram negative

Which of this bacteria is resistant to penicillin as it lacks a cell wall?

(a) Spirochetes                      (b) Cyanobacteria                      (c) Mycoplasmas                      (d) Bdello vibrios

Flagella in bacteria enable them to

(a) reproduce    (b) locomote    (c) Thrive in nutrient agar    (d) Adhere to tissue surfaces

This about cell wall of gram-positive bacteria is true

(a) cell wall comprises of many layers  
(b) the cell wall is thicker than the associated gram-negative bacteria  
(c) Cell wall comprises of teichoic acids  
(d) All of the above

\*Which of the following contains structures composed of N-acetylmuramic acid and N-acetylglucosamine?

a. Mycoplasma                      b. Amoeba                      c. E.coli                      d. Spheroplast

Subunits of bacterial ribosome are

a. 60S, 40S                      b. 60S.30S                      c. 50S, 30S                      d. 50S, 40S

Enzyme hydrolyzing bacterial cell wall

a. Lysozyme                      b. Reductase                      c. Protease                      d. Lysozyme

2021-2022

2021-2022

SEM IIIH ZOOLOGY CC2 TEST

DATE: 8.2.2022; FM: 18

MP.

CLASS TEST ON PROKARYOTE CELL STRUCTURE

- A. Any 6 (6x2)
  1. How can you differentiate a gram positive cell wall from gram negative one?
  2. Distinguish pili and fimbriae
  3. Why do prokaryotes need a cell wall?
  4. What are hopanoids?
  5. Distinguish monotrichous and lophotrichous flagella.
  6. What is the function of Plasma membrane?
  7. What is function of cyanophycin granules and carboxysome?
  8. Define nucleoid.

B. Any 2 (2x3)

1. Some of the antibiotics used to treat bacterial infections in humans and other animals act by targeting the bacterial cell wall—how do they act?
2. What is LPS? How does it affect antigenicity.
3. What is capsule? How does it affect pathogenicity of bacteria?
4. How can antibiotic resistance spread through a colony of bacteria?



**Internal Examination 2022**  
**Nabadwip Vidyasagar College**  
**Course Code: Zool-HCC- T11**  
**Course Title: Molecular biology**  
**Sem V (H)**  
**28.09.2022**

**Write the following question.**

**2X5= 10**

1. What is transcription?
2. What is pribnow box?
3. What is TATA box?
4. What is holoenzyme? What is the function of sigma factor?
5. What is Rho-dependent termination?

NABADWIP VIDYASAGAR COLLEGE  
INTERNAL EXAM: SEM 5H  
DATE 28.9.2022

MCQ REPLICATION

What is the difference in the rate of replication of nucleotides between prokaryotes and eukaryotes?

- a. Eukaryotes are 50 times slower.
- b. Eukaryotes are 20 times faster.
- c. Prokaryotes are 100 times slower.
- d. Prokaryotes are 10 times faster

Here are names of some factors necessary for prokaryotic replication. Which of these or their homologue is unnecessary for eukaryotes?

- a) Dna G
- b) Dna b
- c) Beta clamp
- d) SSB

Which is not a part of Primosome complex?

- a) priA
- b) priB
- c) priC
- d) priD

In case of eukaryotes replication initiates at \_\_\_\_\_

- a) TATA
- b) C<sup>o</sup>G islets
- c) AUG
- d) ARS

The replication of a linear DNA molecule in a eukaryotic chromosome creates a problem which is reported to be sorted out by

- A. using enzyme called telomerase
- B. shortening of the double stranded replicated portion
- C. using RNA as a template
- D. none of the above

Which of the following is true about DNA polymerase?

- a) It can synthesize DNA in the 5' to 3' direction
- b) It can synthesize DNA in the 3' to 5' direction
- c) It can synthesize mRNA in the 3' to 5' direction
- d) It can synthesize mRNA in the 5' to 3' direction

Which of the following enzymes remove supercoiling in replicating DNA ahead of the replication fork?

- a) DNA polymerases
- b) Helicases
- c) Primases
- d) Topoisomerases

Which enzyme used to join bits of DNA?

- a) DNA polymerase
- b) DNA ligase
- c) Endonuclease
- d) Primase

Selection of replicator occurs in \_\_\_\_\_ phase.

- a) G1
- b) S
- c) G2
- d) M Division

In prokaryotes, the RNA primer from the lagging strand is removed and replaced by the DNA sequence. This process is catalyzed by an enzyme .....which possess 5'-3' exonuclease activity and 5'-3' polymerase activity.

- a) DNA polymerase I
- b) DNA polymerase II
- c) DNA polymerase III
- d) DNA polymerase IV

**In which of the following organisms the Semi-conservative DNA replication was first demonstrated\_\_\_\_\_**

- (a) *Drosophila melanogaster*
- (b) *Escherichia coli*
- (c) *Streptococcus pneumoniae*
- (d) *Drosophila melanogaster*

FNB (18X1/2=9)

1. Okazaki fragments in prokaryotes are ----- (larger/smaller) than eukaryotes, Size in prokaryotes ----- eukaryotes -----
2. ----- acts as helicase loading proteins in eukaryotes
3. ----- protein acts as helicase assistant in prokaryotes
4. The 2 two protein kinases that activate Pre-RCs to RC in eukaryotes are ----- and -----
5. leading and the lagging strand in eukaryotes are synthesized by ----- and ----- and in prokaryotes by -----
6. Which exonuclease activity is not shown by Klenow fragment? -----
7. -----acts as clamp loader In prokaryotes and -----in eukaryotes
8. Counterpart of helicase in eukaryote is -----

9. The equivalent of SSB protein in eukaryote is ----
10. Parts of CMG) complex are -----
11. ORC is known as ----- made of ----- subunits

Nabadwip Vidyasagar College  
Internal exam SEM 3H

Paper: CC 7  
Enzyme classification, glycolysis

DATE: 20-12-2022

Any 10 → (10 × 2) = 20 (FM) ANS IN SHORT

1. Differentiate b/n lyase and ligase
2. Which is the rate limiting step of glycolysis and why?
3. High levels of G6P inhibit glycolysis. How?
4. Describe the role of hexo and glucokinase in glycolysis
5. Which enzyme is used to join Okazaki fragments in replication
6. How IUBMB controls enzyme names?
7. pyruvate decarboxylase catalyses which type of reaction?
8. What is abzyme?
9. What are cis-trans-isomerases?
10. In which steps of glycolysis ATP are utilized?
11. Mode of action of hydrolase?
12. Which is the committed step of glycolysis?

20/12/2022

INTERNAL EXAM- 2022

SEM 3

CC-06 (NERVOUS SYSTEM)

Time – 30 minutes

Marks – 10x2=20

1. By which components Myelin Sheath is formed? What is the name of the covering outside the axoplasm. 1+1=2
  2. Write two differences between Myelinated and Non-myelinated nerve fibre.
  3. What do you mean by Resting Membrane Potential?
  4. What does it mean to say that Action Potentials are "All or None"?
  5. Write the role of voltage gated  $\text{Na}^+$  channel for producing action potential?
- Write two functions of Myelin sheath.  
What is relative refractory period?  
What do you mean by Threshold Potential?  
How is hyperpolarization achieved in axonal membrane?  
What do you mean by reflex arc?  
Write the value of electrical potential of neuron at resting stage and threshold point respectively? 1+1=2  
What do you mean by Saltatory Conduction?

INTERNAL EXAM- 2022

Date-13/12/20

SEM 5

(LAC OPERON AND TRP OPERON)

Time – 30 minutes

Marks – 10x2=20

- How does CAP allow a bacterial cell to use glucose in preference to other sugars?
- Write the differences between Inducible and Repressible Operon.
- Write briefly positive control of gene action in prokaryotic cell –
  - When both glucose and lactose are present.
  - When glucose is low
- What happens to the regulation of trp operon in high and low level of Tryptophan?
- What is Catabolite Repression?
- When the structural LacZ gene is mutated, what happens to the transcription process? Write the answer with the help of the following table. (O stands for operator and c stands for constitutive)

GENOTYPE OF STRAIN	LACTOSE PRESENT		LACTOSE ABSENT	
	BETA GALACTOSIDASE	PERMEASE	BETA GALACTOSIDASE	PERMEASE
LacI <sup>+</sup> LacP <sup>+</sup> LacO <sup>c</sup> LacZ <sup>-</sup> LacY <sup>+</sup>	-	+	-	+

- Write down the structure of the Lac Operon and name the product of 3 structural genes.
- In a negative repressible operon, the regulator protein is synthesized as which form?  
In high level of tryptophan, which regions of 5' UTR pair during attenuation process? 1+1=2
- A mutation at the operator site prevents the regular protein from binding. What effect will this mutation have in the following type of operon?
  - Regulator protein is a repressor in a repressible operon
- Synthesis of mRNA by the lac operon of *E. coli* increases with addition of inducer. In this the action of the inducer at transcriptional or the translational level?  
In which way operator and regulator sites dissimilar?

1+1=2

NABADWIP VIDYASAGAR COLLEGE  
INTERNAL ASSESSMENT SEM V (HONS): ZOOLOGY  
2021-2022  
Paper: CC 1

Date: 13/12/22.

TOPIC: SEX DETERMINATION DROSOPHILA , MAN

Any 10 (10x2) = 20

1. What is holandric gene?
2. What are PAR (pseudoautosomal region). Why called so?
3. What are triploid females?
4. What is XX male syndrome?
5. What is sry?
6. Which hormones determine secondary sexual characters of man?
7. What is transformer gene in *Drosophila* ?
8. How SXL gene helps in alternative splicing
9. What is Lyons hypothesis?
10. What are intersex in *Drosophila*?
11. Role of Dsx gene in *Drosophila*
12. Role of Wnt gene in *Drosophila*
13. Role of XIST in Dosage compensation



Nabadwipvidyasagar college

Internal sem 1 H 2023

PROTOZOA : classification, conjugation, Entamoeba DATE: 17.1.2023

Answer any 10

1. What are syngens?
2. What are apical complex?
3. Sarcomastigophora vs ciliophoran
4. Describe the infective stage of *Entamoeba*
5. Describe the structure of trophozoite of *Entamoeba*
6. Define conjugation bridge
7. Define amoebic dysentery
8. Excystation vs encystation
9. How conjugation helps in rejuvenation of *Paramecium*?
10. Give one example of microspore and ascetospore
11. What is pellicle?
12. What is Infraciliary system?
13. Define extraintestinal amoebiasis
14. Describe the treatment of *Entamoeba* infection

Nabadwip Vidyasagar College  
Department of Zoology  
Semester – 1 – Internal Examination  
Taxonomy  
19/01/2023

1. Differentiate between Taxonomy and Systematics. [2]
2. What do you mean by Primary Type? [2]
3. Define Holotype. [2]
4. What is Topotype? [2]
5. Give an idea regarding Codes of Zoological Nomenclature. [2]