

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2024
(First Semester)

Branch – ZOOLOGY

CELL BIOLOGY

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	The cells containing a true nucleus ----- a) Eukaryotic cells b) Prokaryotic cells c) Bacterial cells d) Fungal cells	K1	CO1
	2	----- is the second growth phase which prepares the cell for the mitotic phases a) M-phase b) S- phase c) G2 phase d) G1 phase	K2	CO2
2	3	Fluid Mosaic model was proposed by ----- a) Robertson b) Danielli & Davson c) Singer & Nicolson d) Hilleir & Hoffman	K1	CO1
	4	. The suicidal bag of a cell is called----- a) Golgi complex b) Ribosomes c) Lysosomes d) Mitochondria	K2	CO2
3	5	Which of the following is the site of cellular respiration in cells? a) Ribosomes b) Golgi complex c) Mitochondria d) Nucleus	K1	CO1
	6	The nucleus without a nuclear membrane ----- a) Nucleolus b) Nucleoid c) Nucleoplasm d) Nucleotide	K2	CO2
4	7	When the centrosome is located in the middle the chromosome is called ----- a) Telocentric b) Metacentric c) Acrocentric d) Submetacentric	K1	CO1
	8	The nitrogen base which is present only in RNA is----- a) Cytosine b) Adenine c) Uracil d) Guanine	K2	CO2
5	9	----- is programmed cell death a) Aging b) Apoptosis c) Mutation d) Proliferation	K1	CO1
	10	The spreading of tumour from one place to another is called----- a) Mutation b) Metastasis c) Contact inhibition d) Proliferation	K2	CO2

Cont...

SECTION - B (35 Marks)Answer **ALL** questions**ALL** questions carry **EQUAL** Marks (5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Explain the structure of prokaryotic cell with examples.	K3	CO3
	(OR)			
	11.b.	Describe the various phases of cell cycle.	K3	CO3
2	12.a.	Narrate the ultra structure and functions of golgi bodies.	K3	CO3
	(OR)			
	12.b.	Analyze the structure of lysosomes.	K3	CO3
3	13.a.	Explain the ultra structure of mitochondria and its functions.	K4	CO4
	(OR)			
	13.b.	Discuss about the structure and functions of centrosome.	K4	CO4
4	14.a.	Describe the structure of chromosomes with neat diagram.	K4	CO4
	(OR)			
	14.b.	Bring out the semi- conservative methods of DNA replication.	K4	CO4
5	15.a.	What is apoptosis? And significance of apoptosis.	K5	CO5
	(OR)			
	15.b.	Summarize the cell surface receptors.	K5	CO5

SECTION -C (30 Marks)Answer **ANY THREE** questions**ALL** questions carry **EQUAL** Marks (3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Enumerate the principle and applications of electron microscope.	K2	CO2
2	17	Discuss the ultra-structure and functions of plasma membrane.	K3	CO3
3	18	Summarize the structure and functions of endoplasmic reticulum.	K4	CO4
4	19	Elucidate the structure of mRNA and rRNA.	K4	CO4
5	20	Analyze the characteristics of cancer cells and cellular functions of oncogenes.	K5	CO5

Z-Z-Z END

**PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)**

**BSc DEGREE EXAMINATION DECEMBER 2024
(First Semester)**

Branch - **ZOOLOGY**

PLANT BIOLOGY – I

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer **ALL** questions

ALL questions carry EQUAL marks (10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	A member of plant lacks roots, stem and leaves (a) Fungi (b)Algae (c)Lichens (d)Bryophytes	K1	CO1
	2	Splitting of a fungi somatic cell into two daughter cells (a) Fragment (b)Fission (c)Conidia (d)Budding	K2	CO2
2	3	Root knots are caused by the below mentioned pathogens (a) Bacteria (b)Mollicutes (c)Nematodes (d)Vinses	K1	CO3
	4	How many species of Cycas are described so far (a) 20species (b)30 species (c)40 species (d)50species	K2	CO2
3	5	In Bentham and Hooker's system of classification, main emphasis has been given to (a) Embryological characters (b)Reproductive characters (c) Vegetative characters (d) Both (a) and (b)	K1	CO1
	6	<i>Annona squamosa</i> belongs to the family (a) Brassica ceae (b)Annonaceae (c) Rutaceae (d)Rubiaceae	K2	CO3
4	7	Poaceae is commonly known as ----- (a) Spurge family (b)Orange family (c) Oleander family (d)Grass family	K1	CO2
	8	Arecamut belongs to the family (a) Arecaceae (b) Annonaceae (c) Rutaceae (d) Euphorbioceae	K2	CO3
5	9	What are the products of light independent reactions of Photosynthesis (a) Oxygen, ATP and NADP (b)Oxygn, ATP and reduced oxygen (c) Water. ATP and NADP (d)Water, ATP and reduced NADP	K1	CO2
	10	A hormone used for inducing morphogenesis in plants tissue culture is called (a) Absciscic acid (b)Gibberlins (c) Cytokinins (d)Ethylene	K2	CO3

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SECTION - B (35 Marks)Answer **ALL** questions**ALL** questions carry **EQUAL** Marks (5 × 7 = 35)

ALL questions carry EQUAL Marks (5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Explain the salient features of Algae.	K2	CO1
	(OR)			
	11.b.	Describe the general characters of fungi.		
2	12.a.	Write a note on general symptoms of plant diseases.	K3	Co2
	(OR)			
	12.b.	Write about the symptoms seen in Tikka leaf spot disease.		
3	13.a.	Write the economic importance of Rutaceae.	K4	CO3
	(OR)			
	13.b.	Write on the economic uses of Caesalpiniaceae.		
4	14.a.	Write characteristic features of Poaceae.	K5	CO4
	(OR)			
	14.b.	Write the distinguishing characters of Euphorbiaceae.		
5	15.a.	Write a note on Calvin cycle.	K6	CO5
	(OR)			
	15.b.	Write about Aerobic respiration of plants.		

SECTION -C (30 Marks)Answer **ANY THREE** questions**ALL** questions carry **EQUAL** Marks (3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Discuss In Detail about Five kingdom of biological system.	K2	CO1
2	17	Describe plant diseases and its impact.	K3	Co2
3	18	Write a detailed note on Bentham and Hookers classification about plants.	K4	CO3
4	19	Elaborate on the economic uses of Asclepiadaceae family.	K3	Co2
5	20	Write a note on Plant growth regulators.	K5	CO4

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)
BSc DEGREE EXAMINATION DECEMBER 2024
(Second Semester)
Branch – ZOOLOGY

CHORDATA

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	Prochordates are also known as a. Acraniates b. Invertebrates c. Craniates d. Vertebrates	K1	CO1
	2	Chordates are classified into how many subphyla? a. 2 b. 3 c. 4 d. 5	K2	CO2
2	3	Which of the following is a unique characteristic of fishes? a. Four limbs b. Hair c. Gills for respiration d. Feathers	K1	CO1
	4	The movement of fishes from one place to another is known as a. Hibernation b. Aestivation c. Migration d. Diapause	K2	CO2
3	5	Amphibians undergo a process called a. Complete metamorphosis. b. Metamorphosis c. Incomplete metamorphosis d. No metamorphosis	K1	CO1
	6	Rana tigrina is a common species of a. Frog b. Toad c. Salamander d. Caecilian	K2	CO2
4	7	The heart of a reptile is a. Three-chambered b. Two-chambered c. Four-chambered d. None of the above	K1	CO1
	8	Sphenodon is found in a. Australia b. North America c. Africa d. New Zealand	K2	CO2
5	9	The beak of a bird is modified from a. Teeth b. Claws c. Jaws d. None of the above	K1	CO1
	10	Which of the following is a flightless bird? a. Ostrich b. Kiwi c. Penguin d. All of the above	K2	CO2

SECTION - B (35 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks

(5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Classify the phylum Chordata up to the class level and describe the important characteristics of each class.	K3	CO3

Cont...

	(OR)			
	11.b.	Develop a note on the general characteristic features of Protochordata.		
2	12.a.	Examine the structure of the gill and mode of respiration in <i>Scoliodon</i> .	K4	CO4
	(OR)			
	12.b.	Analyze the various types of parental care exhibited by fish.		
3	13.a.	Classify the Amphibia up to the level of order with salient features.	K4	CO4
	(OR)			
	13.b.	Analyze the structure and functions of skin in <i>Rana tigrina</i> .		
4	14.a.	Distinguish between poisonous and non-poisonous snakes of south India.	K4	CO4
	(OR)			
	14.b.	Analyze the evolutionary trends among extinct reptiles.		
5	15.a.	Evaluate the general characteristics of class Aves.	K5	CO5
	(OR)			
	15.b.	Assess the aquatic adaptations in mammals.		

SECTION -C (30 Marks)

Answer ANY THREE questions

ALL questions carry EQUAL Marks

(3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Explain the retrogressive metamorphosis in Ascidian.	K5	CO5
2	17	Distinguish the characteristics and morphological differences between Catla and Tilapia.	K4	CO4
3	18	Explain the nervous system of frog.	K5	CO5
4	19	Inspect the reproductive system of <i>Calotes versicolor</i> .	K4	CO4
5	20	Discuss the circulatory system of <i>Columba livia</i> .	K6	CO5

Z-Z-Z

END

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)
BSc DEGREE EXAMINATION DECEMBER 2024
(Third Semester)

Branch - **ZOOLOGY**

GENETICS

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** marks

(10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	During gamete formation the genes of a particular character separate and enter different gametes is ---- a) Law of segregation b) law of dominance c) Law of independent assortment d) Incomplete dominance	K1	CO1
	2	The two genes controlling a character are called ----- a) Crossing over b) Coupling c) Alleles d) Epistasis	K2	CO2
2	3	When a single character is controlled by two or more pairs of non- allelic genes independently called ----- a) Supplementary genes b) Duplicate genes c) Complementary genes d) Lethal genes	K1	CO1
	4	The prevention of the expression of a gene by a recessive non-allelic gene is called ----- a) Dominant epistasis b) Recessive epistasis c) Complementary genes d) Supplementary genes	K2	CO2
3	5	The separation of linked genes during inheritance is called ----- a) Complete linkage b) Incomplete linkage c) Coupling d) Repulsion	K1	CO1
	6	Which of the following disease is sex linked? a) Phenylketonuria b) Anaemia c) Alkaptonuria d) Haemophilia	K2	CO2
4	7	The chromosomal aberration where non-homologous chromosomes exchange segments is called ----- a) Translocation b) Inversion c) Duplication d) Deletion	K1	CO1
	8	----- is a genetical disease in human female caused by the absence of one X chromosome a) Klinefelter's syndrome b) Turner's syndrome c) Down's syndrome d) Sickle cell anaemia	K2	CO2
5	9	----- is a hereditary defect where the melanin pigments are absent from the skin a) Phenylketonuria b) Alkaptonuria c) Albinism d) Haemophilia	K1	CO1
	10	The of improvement of existing human race is called ----- a) Eugenics b) Euthenics c) Inbreeding d) Outbreeding	K2	CO2

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SECTION - B (35 Marks)Answer **ALL** questions**ALL** questions carry **EQUAL** Marks

(5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Describe the law of dominance.	K1	CO1
	(OR)			
	11.b.	Explain the law of segregation with example.	K1	CO1
2	12.a.	Write a note on inheritance of supplementary genes with example.	K2	CO2
	(OR)			
	12.b.	Discuss about duplicate genes.	K2	CO2
3	13.a.	Summarize the complete and incomplete linkage.	K2	CO2
	(OR)			
	13.b.	Comment on pedigree analysis.	K2	CO2
4	14.a.	Explain about Klinfelter's syndrome.	K4	CO4
	(OR)			
	14.b.	Describe about the Barr body.	K4	CO4
5	15.a.	Give an account of sickle cell anaemia.	K5	CO5
	(OR)			
	15.b.	Summarize the inborn errors of metabolism.	K5	CO5

SECTION - C (30 Marks)Answer **ANY THREE** questions**ALL** questions carry **EQUAL** Marks

(3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Elucidate Mendel's law of independent assortment with suitable example.	K2	CO2
2	17	What is epistasis? and explain the dominant and recessive epistasis with examples.	K3	CO3
3	18	Discuss about sex linked inheritance in man with any two examples.	K3	CO3
4	19	Explain in detail the numerical chromosomal abnormalities.	K4	CO3
5	20	Give an account on inbreeding and out breeding with its merits and demerits.	K5	CO5

Z-Z-Z

END

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)
BSc DEGREE EXAMINATION DECEMBER 2024
(Third Semester)
Branch - **ZOOLOGY**
SERICULTURE

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** marks

(10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	Match the Moriculture with the following. a) cultur of Rice b) culture of mulberry c) culture of paddy d) culture of moth	K1	CO1
	2	Tell the new system of plantations evolved for the slopes in Nilgiris. a) Pit system b) Angular system c) Row system d) strip system	K2	CO2
2	3	Which one of the following causes Leaf blight disease in mulberry plant? a) bacteria b) fungal c) virus d) all the above	K1	CO1
	4	Show the vegetative propagation of mulberry plant? a) cutting b) grafting c) layering d) all the above	K2	CO2
3	5	Which is the third stage in the life cycle of silk moth? a) egg b) pupa c) cocoon d) moth	K1	CO1
	6	Relate the silk worm egg with the following a) telolecithal b) centrolecithal c) microlecithal d) none of the above	K2	CO2
4	7	Which one of the following is used to brush the newly hatched larva from the egg card to rearing trays? a) mats b) feathers c) knife d) cleaning nets	K1	CO1
	8	Relate the following which is used to pick up the larva? a) Joy sticks b) Chop sticks c) Paraffin paper d) Chopping board	K2	CO2
5	9	Which is the most common pest of silk worm? a) wasps b) uzi fly c) beetle d) honey bees	K1	CO1
	10	Show the name of the number of kilograms of cocoons needed to get 1 kg of reeled silk. a) flossing b) shell weight c) renditta d) shell ratio	K2	CO2

SECTION - B (35 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** Marks

(5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Organize the various methods of irrigation.	K3	CO3
		(OR)		

Cont...

1	11.b.	Outline the major plantation system followed for mulberry.	K3	CO3
2	12.a.	Identify the deficiency symptoms of Boron in mulberry plant.	K3	CO3
	(OR)			
	12.b.	Identify the causative agents, symptoms and treatment of Leaf mosaic disease.		
3	13.a.	Explain about silkworm seed production.	K4	CO4
	(OR)			
	13.b.	Analyze the structure of silk gland with neat sketch.		
4	14.a.	Simplify the rearing of young age worm.	K4	CO4
	(OR)			
	14.b.	Analyze the guidelines used to construct silk worm rearing house.		
5	15.a.	Explain the Byproducts of sericulture.	K5	CO5
	(OR)			
	15.b.	Justify – Silkworm as bioreactor.		

SECTION -C (30 Marks)Answer **ANY THREE** questions**ALL** questions carry **EQUAL** Marks

(3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Explain the functions of central silk board.	K4	CO4
2	17	Explain the bacterial disease of mulberry plants.	K4	CO4
3	18	Interpret the Life cycle of mulberry silk worm.	K5	CO5
4	19	Assess the various rearing appliances of silk worm	K5	CO5
5	20	Analyze the causative agents, symptoms and control measures of Flacherie disease.	K4	CO4

Z-Z-Z

END

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)
BSc DEGREE EXAMINATION DECEMBER 2024
(Third Semester)
Branch - **ZOOLOGY**
CHEMISTRY- I

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** marks

(10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	All cations and molecules that are short of an electron pair act as _____ a) Lewis acids b) Lewis bases c) Bronsted acid d) Bronsted bases	K1	CO1
	2	Oxidation number of 'Mn' in KMnO ₄ ? a) +1 b) +3 c) +5 d) +7	K2	CO1
2	3	Identify the alkaloids among the following: a) Geraniol b) Citral c) Menthol d) Nicotine	K1	CO2
	4	The monomer used for preparation of teflon is a) Tetrafluoroethylene b) Trichloroethylene c) Tetrachloroethylene d) Tetrabromoethylene	K2	CO2
3	5	Which separation method is used for separating acetone and water? a) Fractional distillation b) Vacuum Distillation c) Steam Distillation d) Solvent extraction	K1	CO3
	6	Normality of a solution is the number of _____ of solute per litre of the solution. a) Moles b) Equivalents c) Formula weight d) Mole fraction	K2	CO3
4	7	Enzymes are a) Finely divided metals b) Transition metal ions c) Auto-catalysts d) Proteins	K1	CO4
	8	The decomposition of nitroglycerine is an example of a) Negative catalytic reaction b) Enzyme catalysed reaction c) Autocatalytic reaction d) Induced catalysis	K2	CO4
5	9	Which causes water pollution? a) Jet planes b) Herbicides c) Smoke d) Combustion of fossils	K1	CO5
	10	Cause of eutrophication is a) Nutrient enrichment of water bodies b) Increase of oxygen in water bodies c) Increase in number of aquatic organisms d) All of these	K2	CO5

Cont...

SECTION - B (35 Marks)Answer **ALL** questions**ALL** questions carry **EQUAL** Marks

(5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Build the shapes of s, p and d orbitals with neat diagram.	K3	CO1
	(OR)			
	11.b.	Develop the concept of Lowry-Bronsted and Lewis theory of acids and bases.		
2	12.a.	How are the following polymers prepared? i) Polyethylene ii) Teflon iii) Terylene	K4	CO2
	(OR)			
	12.b.	Examine the uses of following terpenoids. i) Geraniol (1.5 Marks) ii) Citral (1.5 Marks) iii) Menthol (2 Marks) iv) Camphor (2 Marks)		
3	13.a.	Make use of following methods for the purification of organic samples i) Crystallization (3.5 Marks) ii) Sublimation (3.5 Marks)	K3	CO3
	(OR)			
	13.b.	Identify the applications of paper and column chromatography. (3.5+3.5 Marks)		
4	14.a.	Interpret the characteristics of catalytic reactions.	K2	CO4
	(OR)			
	14.b.	Outline the mechanism of enzyme catalysis.		
5	15.a.	Criticize the effect of acid rain.	K5	CO5
	(OR)			
	15.b.	Explain the sources of air and water pollution.		

SECTION -C (30 Marks)Answer **ANY THREE** questions**ALL** questions carry **EQUAL** Marks

(3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Develop the importance of following concept i) Pauli's exclusion principle (3 Marks) ii) Aufbau principle (3 Marks) iii) Hund's rule (4 Marks)	K3	CO1
2	17	Interpret one preparation and four chemical properties of benzene (2+8 Marks)	K4	CO2
3	18	Inspect the principle, procedure and applications of ion-exchange chromatography (2+5+3 Marks)	K4	CO3
4	19	Show the derivation steps of integral rate equation for first order reaction	K2	CO4
5	20	Explain the various stages of water treatment.	K5	CO5

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2024
(Fourth Semester)

Branch – ZOOLOGY

MICROBIOLOGY & IMMUNOLOGY

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(5 x 1 = 5)

1. Which bacteria appears purple-violet colour after staining?
a) Gram-positive
b) Gram-negative
c) Both Gram-positive and Gram-negative
d) Neither Gram-positive nor Gram-negative
2. What is the most common food preservation methods?
a) Freezing b) Fermentation c) Heating d) Freeze drying.
3. Anaerobic respiration is the cellular type of respiration, it is also called as _____.
a) Fermentation b) Respiration
c) Aerobic respiration d) None of these.
4. B-cells and T-cells are two types of cells involved in _____.
a) Innate Immunity b) Active immunity
c) Passive immunity d) Acquired immunity
5. What is a graft between different members of the same species termed?
a) Auto graft b) Isograft c) Xenograft d) Allograft.

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(5 x 3 = 15)

- 6 a) List out the salient features of Fungi.
OR
b) Describe the Batch culture techniques.
- 7 a) Write a brief note on Basic concept of Probiotics.
OR
b) Give a brief account of staphylococcus poisoning.
- 8 a) Give an account of VAM fungi.
OR
b) Briefly explain the production of penicillin.
- 9 a) Write a brief note on Lymph node.
OR
b) Discuss about the Humoral mediated immunity.

Cont...

- 10 a) Write short notes on Antigens
OR
b) Give a brief note on Immunoglobulin G.

SECTION -C (30 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks

(5 x 6 = 30)

- 11 a) Describe the structure and reproduction of Bacteria.
OR
b) Explain the types of Staining used for observation of Bacteria.
- 12 a) Write a detailed account of food spoilage.
OR
b) Discuss the Microbial examination of milk.
- 13 a) Write a brief note on Waste water treatment.
OR
b) Discuss about the Mass cultivation of Rhizobium and its application.
- 14 a) Give an account of Acquired immunity.
OR
b) Describe the Primary lymphoid organs.
- 15 a) Discuss about the immunoprophylaxis.
OR
b) Write an account of transplantation immunology.

Z-Z-Z

END

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2024
(Fourth Semester)

Branch – ZOOLOGY

EVOLUTION

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(5 x 1 = 5)

1. What is the primary driving force behind evolution?
(i) Natural selection (ii) Artificial selection
(iii) Genetic drift (iv) Mutation
2. Fossil evidence is crucial in supporting Darwin's theory because it:
(i) Confirms the fixity of species
(ii) Shows sudden and drastic changes in species
(iii) Provides a record of gradual changes over time
(iv) Rejects the concept of natural selection
3. What is speciation?
(i) Evolution of a single species
(ii) Formation of new species
(iii) Extinction of a species
(iv) Genetic variation within a species
4. Which of the following is an example of convergent evolution?
(i) The wings of bats and birds
(ii) The fins of fish and dolphins
(iii) The limbs of cats and dogs
(iv) The leaves of deciduous and evergreen trees
5. During which geological epoch did the evolution of horses begin?
(i) Pleistocene (ii) Miocene
(iii) Holocene (iv) Eocene

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(5 x 3 = 15)

- 6 a Describe the findings from the Urey Miller experiment.
OR
b Outline the Oparin and Haldane theory of biochemical evolution.
- 7 a Summarize the basic principles of Lamarckism theory.
OR
b Describe the salient features of mutation theory.
- 8 a Differentiate the temporal and behavioral isolation.
OR
b Highlight the stages of sympatric speciation.

Cont...

- 9 a Explain the concept of adaptive radiation in evolution.
OR
b Illustrate the causes of adaptive radiation in evolution.
- 10 a Outline the features of Merychippus horse.
OR
b Differentiate the distinctive characteristics of Ape and Humans.

SECTION -C (30 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** Marks

(5 x 6 = 30)

- 11 a Elucidate the comparative anatomy evidence of evolution.
OR
b Discuss the physiological evidence of evolution.
- 12 a Explain the natural selection of industrial melanism.
OR
b Discuss the geological time scale and their types.
- 13 a Explain the reproductive isolation mechanism of evolution.
OR
b Differentiate the allopatric and parapatric speciation.
- 14 a Explain the convergent evolution and their examples.
OR
b How do animals use warning coloration and mimicry to protect themselves? Explain.
- 15 a Discuss the evolution history of Equus Horse.
OR
b Examine the cultural evolution of man and their characteristics.

Z-Z-Z

END

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2024
(Fourth Semester)

Branch – ZOOLOGY

CHEMISTRY – II

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(5 x 1 = 5)

1. Select the metal present in Chlorophyll:
(i) Fe (ii) Mg
(iii) Co (iv) Mn
2. The amino acid without chiral carbon is _____.
(i) Glycine (ii) Alanine
(iii) Proline (iv) Insulin
3. Alizarin belongs to the class of
(i) Vat dyes (ii) Mordant dyes
(iii) Substantive dyes (iv) Reactive dyes
4. What is the unit of specific conductance?
(i) cm (ii) cm^{-1}
(iii) ohm cm (iv) $\text{ohm}^{-1} \text{cm}^{-1}$
5. Which of the following is not a principle of Green Chemistry?
(i) Green solvents and auxiliaries (ii) Use of renewable feedstock
(iii) Hazardous chemical synthesis (iv) Design for energy efficiency

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(5 x 3 = 15)

6. (a) Explain the Werner's theory of Co-ordination compounds.
(OR)
(b) Write the commercial preparation and uses of triple superphosphate.
7. (a) What are proteins? How are they classified? Give an example for each.
(OR)
(b) Write the characteristics of enzymes.
8. (a) Write short notes: Anesthetics.
(OR)
(b) What are chromophores and auxochromes? Give examples.

Cont...

9. (a) Derive Ostwald's dilution law.

(OR)

- (b) Explain the laws of photochemistry.

10. (a) Describe about the chemistry of myoglobin.

(OR)

- (b) Give an account on the green synthesis with a suitable example.

SECTION -C (30 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks

(5 x 6 = 30)

11. (a) How will you estimate the hardness of water by using EDTA titration method?

(OR)

- (b) What are fertilizers? What is the need for fertilizers in agricultural fields? Describe the classification of fertilizers with suitable examples.

12. (a) Give the preparation, properties and uses of Pyridine.

(OR)

- (b) Explain the structure of proteins in detail.

13. (a) Describe the preparation, uses and mode of action of Sulphadiazine.

(OR)

- (b) Give an account on the preparation of Malachite green and Indigo.

14. (a) What are buffer solutions? How are they classified? Explain the mechanism of acidic buffer solution.

(OR)

- (b) Compare the fluorescence and phosphorescence.

15. (a) Explain the role of essential and trace elements in biological systems.

(OR)

- (b) Write an essay on the toxic nature and remedial measures of mercury, cadmium and chromium.

Z-Z-Z END

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2024
(Fifth Semester)

Branch – ZOOLOGY

PHYSIOLOGY

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(5 x 1 = 5)

- 1 Identify the organ where the digestion of protein begins?
(i) Mouth (ii) Stomach
(iii) Small intestine (iv) Large intestine
- 2 Name the metal present in hemoglobin.
(i) Copper (ii) Zinc
(iii) Iron (iv) Magnesium
- 3 What is the structural and functional unit of kidney?
(i) Glomerulus (ii) Nephron
(iii) Nephridium (iv) Loop of Henle
- 4 Find the colored part of the eye that regulates the amount of light entering the eye.
(i) Cornea (ii) Iris
(iii) Fovea (iv) Macula
- 5 Which gland is responsible for the secretion of Melatonin?
(i) Pituitary gland (ii) Parathyroid gland
(iii) Prostate gland (iv) Pineal gland

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(5 x 3 = 15)

- 6 a. Narrate the four main anatomical divisions of stomach.
OR
b. Describe the transamination reaction.
- 7 a. Outline the cardiac cycle.
OR
b. Summarise the structure and functions of WBC.
- 8 a. Compare ammonotelism and ureotelism.
OR
b. Analyze the steps involved in urine formation.
- 9 a. Distinguish between skeletal muscle and cardiac muscle.
OR
b. Explain the parts of inner ear and their role in hearing.

Cont...

- 10 a. Sketch the structure of reflex action and mechanism.
OR
b. State the hormones secreted by posterior lobe of pituitary gland with its functions.

SECTION -C (30 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks (5 x 6 = 30)

- 11 a. Examine the digestion of carbohydrates.
OR
b. Summarise the steps involved in beta-oxidation of fatty acids.
- 12 a. Elucidate the transportation of air in the lungs and explain CO_2 transportation.
OR
b. Highlight the process of blood clotting.
- 13 a. Enumerate the structure of kidney and mention their role.
OR
b. Classify the osmoregulation in animals.
- 14 a. Explain the contraction of skeletal muscle.
OR
b. Infer the mechanism of hearing.
- 15 a. Describe in detail about the sex-related hormones.
OR
b. Discuss the concept of the biological clock.

Z-Z-Z

END

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2024
(Fifth Semester)

Branch – ZOOLOGY

APICULTURE

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

ALL questions carry EQUAL marks (5 x 1 = 5)

- 1 The queen bee's primary role in a honey bee colony is to:
(i) Collect nectar (ii) Lay eggs
(iii) Defend the hive (iv) Make honey
- 2 What is the purpose of a bee escape board?
(i) To prevent bees from leaving the hive
(ii) To allow bees to exit without returning
(iii) To capture swarming bees
(iv) To protect bees from predators
- 3 Which species of honey bee is most commonly used in commercial honey production?
(i) *Apis dorsata* (ii) *Apis cerana*
(iii) *Apis florea* (iv) *Apis mellifera*
- 4 Which natural enemy is known for feeding on honey bees and cause harm to a colony?
(i) Ladybugs (ii) Praying mantis
(iii) Varroa mites (iv) Butterflies
- 5 Which substance is known for its medicinal properties and is used in various health supplements?
(i) Propolis (ii) Honeycomb
(iii) Royal jelly (iv) Pollen

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks (5 x 3 = 15)

- 6 a Discuss the economic importance of apiculture as a cottage industry.
OR
b Explain how honey is produced in a bee colony?
- 7 a How do honey bees perform the "waggle dance," and what information does it convey to other bees?
OR
b What is a honey extractor, and how does it function in honey production?
- 8 a Analyze the importance of inspection in bee hives.
OR
b Explain the role of pollen and nectar- yielding plants in honey production.
- 9 a Identify and explain the common natural enemies of honey bees.
OR
b Describe the key maintenance practices required for a honey bee colony during nectar season.

Cont...

- 10 a Analyze the chemical composition of honey and its medicinal values.
OR
b Explain the process of bee wax production and its applications.

SECTION -C (30 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** Marks

(5 x 6 = 30)

- 11 a Analyze the life cycle of honey bees from egg to adult.
OR
b Explain the structure and development of a honey bee colony.
- 12 a Describe the primary equipment required for successful honey bee rearing and explain their functions.
OR
b Explain the different types of bee hive.
- 13 a Identify the role of queen, drones and worker bees in the hive.
OR
b Outline the key factors involved in honeybee rearing.
- 14 a Explain the maintenance of honey bee colony during rainy and summer season.
OR
b Examine the major diseases and pests that affect honey bee colony.
- 15 a Elaborate various products derived from apiculture, their benefits and applications.
OR
b Examine the economics of beekeeping and its benefits.

Z-Z-Z

END

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2024
(Fifth Semester)

Branch – ZOOLOGY

MAJOR ELECTIVE COURSE – I :

MEDICAL LABORATORY TECHNOLOGY

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(5 x 1 = 5)

- 1 Who is the father of medical laboratory technology?
(i) Louis Pasteur (ii) Robert Hook
(iii) Alexander Fleming (iv) Antonie van Leeuwenhoek
- 2 Which among the following is normal clotting time of blood?
(i) 1-5 minutes (ii) 2-8 minutes
(iii) 4-7 minutes (iv) 10-15 minutes
- 3 What is the universal donor blood type?
(i) A^{+ve} (ii) O^{+ve}
(iii) B^{-ve} (iv) O^{-ve}
- 4 Brown coloured urine is an indication of
(i) normal (ii) rehydration
(iii) dehydration (iv) hydration
- 5 Choose the condition in which higher level of blood glucose.
(i) diabetes mellitus (ii) diabetes insipidus
(iii) anemia (iv) thyroidism

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(5 x 3 = 15)

- 6 a. Summarise the parts of compound microscope.
OR
b. What is centrifuge? Write its application.
- 7 a. Narrate the differential leucocyte count.
OR
b. Analyze the PCV.
- 8 a. Classify the types of anemia.
OR
b. Explain the Coomb's test.
- 9 a. Show the physical examination of Cerebrospinal fluid.
OR
b. Describe the analysis of semen.

Cont...

- 10 a. Analyze the liver function tests.
OR
b. Outline the feecal analysis during the diseased condition.

SECTION -C (30 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks (5 x 6 = 30)

- 11 a. Outline different types of sterilization methods.
OR
b. Discuss the safety measures to be followed in the medical laboratory.
- 12 a. Summarize the Hb estimation methods.
OR
b. Explain the method and calculation of ESR.
- 13 a. Examine the ABO blood grouping.
OR
b. Enumerate the hemophilia.
- 14 a. Infer the physical and biochemical tests of urine.
OR
b. Highlight the collection of sputum and it's analysis.
- 15 a. Analyze the urea in blood and its significance.
OR
b. Discuss on examination of cholesterol in blood.

Z-Z-Z

END

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2024
(Fifth Semester)

Branch – ZOOLOGY

COMPUTER APPLICATIONS IN BIOLOGY

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(5 x 1 = 5)

1. What is the main function of the CPU in a computer?
(i) Storing data (ii) Executing instructions
(iii) Generating graphics (iv) Handling network connections
2. What type of chart in Excel would you use to show the parts of a whole?
(i) Line Chart (ii) Pie Chart (iii) Bar Chart (iv) Scatter Plot
3. What is the primary purpose of Microsoft PowerPoint?
(i) Word processing (ii) Spreadsheet management
(iii) Creating presentations (iv) Graphic design
4. Which of the following is a popular web browser developed by Google?
(i) Internet Explorer (ii) Safari (iii) Chrome (iv) Firefox
5. What does EMBL stand for?
(i) European Molecular Biology Laboratory
(ii) European Molecular Biobank Laboratory
(iii) European Medical Biochemistry Lab
(iv) European Mutational Biology Library

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(5 x 3 = 15)

- 6 a. How do you change the font size in Microsoft word?
OR
b. Briefly explain the following input devices (i) Key board (ii) Mouse.
- 7 a. State the common functions in Excel.
OR
b. Calculate the mean in Excel by using following data
50, 60, 70, 80, 90.
- 8 a. How to create the Title slide in MS PowerPoint?
OR
b. Discuss the importance of Animation in MS Power point.
- 9 a. Summarize the some common color mode for digital images.
OR
b. Point out the importance of E.mail.

Cont...

- 10 a. Briefly explain the methods to obtain a nucleotide sequence from DDBJ.
OR
b. Highlights the several key functions and services of EMBL related to molecular Biology and Bioinformatics.

SECTION -C (30 Marks)

Answer **ALL** questions
ALL questions carry **EQUAL** Marks (5 x 6 = 30)

- 11 a. Explain the output devices of a computer.
OR
b. Discuss in detail about the external storage devices.
- 12 a. Explain the various types of chart in Excel.
OR
b. What is standard deviation? What are the steps followed to calculate the standard deviation in Excel?
- 13 a. Discuss about the editing Screen of MS PowerPoint.
OR
b. Describe the Main element of Microsoft access.
- 14 a. Examine some common types of web browsers.
OR
b. Analyze the Role of Google in Biological studies.
- 15 a. Discuss the important aspects of NCBI.
OR
b. Describe the sequence analysis using BLAST.

Z-Z-Z

END

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)
BSc DEGREE EXAMINATION DECEMBER 2024
(Fifth Semester)

Branch – ZOOLOGY

BIOSTATISTICS

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(5 x 1 = 5)

1. Which of the following is an example of secondary data?
(i) Data collected from a survey (ii) Data from an interview
(ii) Data published in research papers (iv) Data collected by observation
2. Which type of graph is best suited for representing frequency distribution?
(i) Line graph (ii) Pie chart (iii) Histogram (iv) Scatter plot
3. Which measure of central tendency is most affected by extreme values?
(i) Mean (ii) Median (iii) Mode (iv) Range
4. Which of the following is a measure of variation?
(i) Mean (ii) Mode (iii) Range (iv) Median
5. Which of the following correlation coefficient represents the strongest relationship?
(i) 0.85 (ii) -0.90 (iii) 0.10 (iv) -0.30

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(5 x 3 = 15)

- 6 a Define Biostatistics. Also write the development of Biostatistics.
OR
b Write short notes on population and sample.
- 7 a What do you understand by tabulation ? State any six points that should be kept in mind while tabulating the data.
OR
b The following data relating to the strength of the Indian Merchant Shipping Fleet gives the Gross Registered Tonnage (GRT) as on 31st December, for different years.

Year :	1961	1966	1971	1975	1976
GRT in '000 :	901	1792	2500	4464	5115

Represent the data by a suitable bar diagram.

- 8 a Find out the Mean, Median and Mode in the following series:

Size (below) :	5	10	15	20	25	30	35
Frequency :	1	3	13	17	27	36	38

OR

- b Write the merits and demerits of arithmetic mean.

- 9 a State the merits and demerits of standard deviation.

OR

- b Calculate mean deviation about A.M. from the following :

Value (x) :	10	11	12	13	14
Frequency (f) :	3	12	18	12	5

- 10 a The ranks of the same 15 students in two subjects A and B are given below ; the two numbers within the brackets denoting the ranks of the same student in A and B respectively. (1, 10), (2, 7), (3, 2), (4, 6), (5, 4), (6, 8), (7, 3), (8, 1), (9, 11), (10, 15), (11, 9), (12, 5), (13, 14), (14, 12), (15, 13). Use Spearman's formula to find the rank correlation coefficient.

OR

Cont...

Q.no10 Cont...

- b Write the properties of correlation coefficient.

SECTION -C (30 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks

(5 x 6 = 30)

- 11 a Briefly explain the sources of secondary data.

OR

- b Discuss the methods of collecting primary data.

- 12 a Draw a histogram and frequency curve for the following distribution :

Age (Yrs.) :	17-19	19-21	21-23	23-25	25-27	27-29	29-31
No. of Students :	7	12	24	30	22	15	6

OR

- b Classify the following data by taking class intervals such that their mid-values are 17, 22, 27, 32, and so on.

30	42	30	54	40	48
15	17	51	42	25	41
30	27	42	36	28	26
37	54	44	31	36	40
36	22	30	31	19	48
16	42	32	21	22	46
33	41	21			

- 13 a The following table shows the frequency distribution of ages (in years) of participants in a survey:

Age (Yrs.) :	21-30	31-40	41-50	51-60	61-70
Frequency :	5	8	12	15	10

Calculate the mean, median and mode of the ages.

OR

- b Write a detailed note on various measures of finding average.

- 14 a Compute the Coefficient of Quartile Deviation for the following data :

Size	4-8	8-12	12-16	16-20	20-24	24-28	28-32	32-36	36-40
Frequency	6	10	18	30	15	12	10	6	2

OR

- b From the data given below state which series is more consistent?

Variable:	10-20	20-30	30-40	40-50	50-60	60-70
Series A:	10	18	32	40	22	18
Series B:	18	22	40	32	18	10

- 15 a Calculate Karl Pearson's coefficient of correlation between expenditure on advertising and sales from the data given below.

Advertising expenses ('000 Rs.) :	39	65	62	90	82	75	25	98	36	78
Sales (lakh Rs.)	47	53	58	86	62	68	60	91	51	84

OR

- b From the data given below find :

- (a) The two regression coefficients. (b) The two regression equations.
(c) The coefficient of correlation between the marks in Economics and Statistics.
(d) The most likely marks in Statistics when marks in Economics are 30.

Marks in Economics :	25	28	35	32	31	36	29	38	34	32
Marks in Statistics :	43	46	49	41	36	32	31	30	33	39

**PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)**

**BSc DEGREE EXAMINATION DECEMBER 2024
(First Semester)**

Branch - **ZOOLOGY**

INVERTEBRATA

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** marks

(10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	The most common asexual reproduction exhibited by paramecium is ----- a) Multiple Fission b) Binary Fission c) Mono Fission d) Poly Fission	K1	CO1
	2	Sponges belong to the phylum----- a) Protozoa b) porifera c) coelenterate d) mollusca	K2	CO2
2	3	The organ for offense and defense in obelia is ----- a) Cnidoblast b) Intestinal Cells c) Glandular Cells d) Longitudinal Cells	K1	CO1
	4	Which part of <i>Taenia solium</i> helps it to attach to the intestinal wall of the host? a) Scolex b) Proglottid c) Rostellum d) Strobila	K2	CO2
3	5	Metamerism is seen in the phylum----- a) Coelenterata b) Porifera c) Annelida d) Arthropoda	K1	CO1
	6	Which segment of <i>Megascolex mauritii</i> contains the clitellum? a) 1-5 b) 7-11 c) 14-17 d) 18-21	K2	CO2
4	7	The first three pairs of walking legs are----- legs. a) Non- chelate b) Chelate c) Uropods d) Mandibles	K1	CO1
	8	Which larva is finally transformed into prawn? a) Nauplius b) Metanauplius c) Mysis d) Zoea	K2	CO2
5	9	The blood of pila is blue in colour due to the presence of ----- a) Haemoglobin b) Haemocyanin c) Haemoerythrin d) Amoebocytes	K1	CO1
	10	Locomotory organs of star fish ----- a) Tube feet b) Polion Vesicles c) Madreporite d) Stone canal	K2	CO2

Cont...

SECTION - B (35 Marks)Answer **ALL** questions**ALL** questions carry **EQUAL** Marks

(5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Summarize the Cyclosis in Paramecium.	K2	CO2
		(OR)		
	11.b.	Narrate the external features of Leucosolenia.	K3	CO3

2	12.a.	Illustrate the structure of medusa in obelia colony.	K3	CO3
		(OR)		
	12.b.	Describe the external features of <i>Taenia solium</i> .	K3	CO3
3	13.a.	Enlist any ten salient features of phylum Annelida.	K3	CO3
		(OR)		
	13.b.	With a neat diagram explain the life history of earthworm.	K4	CO4
4	14.a.	List out the unique characters of phylum Arthropoda.	K4	CO4
		(OR)		
	14.b.	Describe the Morphology of <i>Penaeus</i> .	K5	CO5
5	15.a.	What are the important sense organs of <i>Pila</i> and write their functions?	K5	CO4
		(OR)		
	15.b.	Explain the structure of a typical pedicellaria. Add a note on its functions.	K6	CO5

SECTION - C (30 Marks)Answer **ANY THREE** questions**ALL** questions carry **EQUAL** Marks

(3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Outline the locomotion exhibited by the protozoans.	K2	CO2
2	17	"Coral reefs are an ideal habitat for marine animals"- Justify	K4	CO4
3	18	"Vermiculture helps in the recycling of wastes"- Discuss.	K5	CO5
4	19	Elaborate the process of culturing the Prawn.	K5	CO5
5	20	Propose the techniques involved in Pearl culture.	K6	CO6

Z-Z-Z

END