

1745/PZ0001

NOVEMBER 2016

CELL AND MOLECULAR BIOLOGY

Time : Three hours

Maximum : 100 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

Define/Differentiate/Comment on the following :

1. Robertson unit membrane concept.
2. Prokaryotes and eukaryotes.
3. Rough and smooth endoplasmic reticulum.
4. Cis-trans arrangement of golgi complex.
5. Amphipathic cycle.
6. Euchromatin and Hetero chromatin.
7. Mitotic apparatus.
8. Benign and malignant tumour.
9. Nitrogenous bases of DNA and RNA.
10. Semi conservative mode of replication.

PART B — (7 × 5 = 35 marks)

Answer any SEVEN questions.

11. Describe the structural organization of a typical prokaryotic cell.
12. Fluid mosaic model in the most acceptable model of all the proposed molecular model - Substantiate.
13. Lysosomes are very polymorphic - Justify.
14. Endoplasmic reticular is the chief cyto skeleton of cell - Explain.
15. Explain glycolysis with reference to (a) energy investment phase (b) splitting phase and (c) energy generation phase.
16. Outline the special features of unusual, the giant chromosomes.
17. Compare and contrast the characteristics of cancer cells and normal cells.
18. Examine the components of cell cycle and explain the molecular events take place in cell cycle.
19. Summarize the salient features of genetic code.
20. Elucidate the salient features of Watson and Crick double helix structure of DNA.

PART C — (3 × 15 = 45 marks)

Answer any THREE questions.

21. Bring out the structural architecture and Micro filaments and Microtubules and comment on their functions.
22. Describe the structural organization of mitochondria and list down its important biological function.
23. Krebs cycle forms the common metabolic sink for all metabolic path ways - Justify.
24. Illustrate and elaborate the sequential events of meiosis and comment on its significances.
25. High light the mechanism of protein synthesis in Eukaryotes.

1746/PZ0002

NOVEMBER 2016

BIOCHEMISTRY AND BIOPHYSICS

Time : Three hours

Maximum : 100 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Peptide bonds
2. Cytochromes
3. Isomers
4. Brown fat
5. Photon
6. Wavelength
7. Haemolysis
8. Expand ADH.
9. Homeostasis
10. Cyclosis

SECTION B — (7 × 5 = 35 marks)

Answer any SEVEN questions.

11. With suitable illustration explain the formation of hydrogen bond. Mention its characteristic features.
12. Explain the structure of an atom.
13. Write an account of the biological importance of proteins.
14. Describe the structure of amino acids.
15. Explain the structure of Monosaccharide
16. Give an account of the biological importance of lipids.
17. What is the meaning of threshold frequency in photoelectric effect? Give its importance.
18. Write a short note on the principle of a compound microscope.
19. What is plasmolysis? Explain the types of plasmolysis.
20. Discuss on the rate of diffusion in relation to temperature.

SECTION C — (3 × 15 = 45 marks)

Answer any THREE questions.

21. What is a buffer solution? How do buffer solutions work?
22. Write an essay on the classification of proteins.
23. What is a polysaccharide? Give examples. How do you say that glycogen is a polysaccharide?
24. What are the laws of photoelectric effect? Write Einstein's photoelectric equation and with its help explain any two laws of photoelectric effect.
25. Describe the effect of electrolytes and non electrolytes on osmosis.

1747/PZ0003

NOVEMBER 2016

ANIMAL PHYSIOLOGY

Time : Three hours

Maximum : 100 marks

PART A — (10 × 2 = 20 marks)

Answer: ALL questions.

1. Functions of saliva.
2. Egestion.
3. Anaerobic respiration.
4. Respiratory quotient.
5. Phagocytosis.
6. Stenohaline animals.
7. Bowman's capsule.
8. Uricotelic animals.
9. Gonadotropins.
10. Photoreceptors.

PART B — (7 × 5 = 35 marks)

Answer any SEVEN questions.

11. Write different types of nutrition.
12. Write short notes on defecation.
13. Give brief account on respiratory pigments.
14. Describe in details the respiratory disturbance and diseases.
15. Describe in details the structure and composition of blood.
16. Give brief account on functions of circulatory system.
17. How do hormones control the formation of urine?
18. Write short notes on excretory products.
19. Explain the energetic of muscle contraction.
20. Describe the structure and functions of nephrons.

PART C — (3 × 15 = 45 marks)

Answer any THREE questions.

21. What is nutrition? Describe various feeding mechanisms found in organisms.
22. Write an essay on respiratory process in mammals.

23. Give an account of different types of circulatory systems found in animals.

24. Describe the biosynthesis of urea and explain the structure of nephrons and urine formation.

25. What are the photoreceptors? Describe in brief the structure and function of photoreceptive organs of mammals.

1748/PZOO04

NOVEMBER 2016

DEVELOPMENTAL BIOLOGY

Time : Three hours Maximum : 100 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Cleidoic egg.
2. Zona pellucida.
3. Neuroblastic cleavage.
4. Archenteron.
5. Rhomben cephalon.
6. Lens placode.
7. Regeneration field.
8. Autotomy.
9. Corpus albicans.
10. Oestrogen.

PART B — (7 × 5 = 35 marks)

Answer any SEVEN questions.

11. Classify eggs on the basis of amount of yolks and their distribution with example.
12. With a neat labelled sketch explain the structure of sperm.
13. What is Fate map? How it can be constructed?
14. Bring out the chemical changes occur during the process of cleavage.
15. Analyse the chemical basis of differentiation.
16. With a neat labelled sketch explain the development of limb.
17. Differentiate the different types of regeneration with suitable example.
18. Deduce the causative factors of metamorphosis.
19. Enlist and explain the endocrine changes associated with normal pregnancy.
20. Explain the different phases of menstrual cycle.

PART C — (3 × 15 = 45 marks)

Answer any THREE questions.

21. Write a elaborate account on egg membranes found in animals.
22. Write short notes on :
 - (a) Primary organ
 - (b) Rudimental organ and
 - (c) Organizer.
23. Write critical note on :
 - (a) Aging and
 - (b) Cell death.
24. Trace the histological process of regeneration in salamander limb regeneration.
25. Illustrate the principle, technique and advantages of Invitro fertilization.

1749/PZ0005

NOVEMBER 2016

BIostatistics and Computer Applications

Time : Three hours

Maximum : 100 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL the questions.

1. What are Secondary data?
2. How is non-random sampling done?
3. Differentiate the terms median and mode.
4. Define the term Kurtosis.
5. Give the formula for calculating chi-square.
6. State the use of Test of Significance.
7. What is Hybrid computer?
8. Give four examples for computer hardware.
9. What are statistical packages? Give an example.
10. State the applications of Pubmed.

SECTION B — (7 × 5 = 35 marks)

Answer any SEVEN of the following questions.

11. Enlist the methods of collecting data and explain any one method.
12. Differentiate Histogram and Bar diagram.
13. Discuss the Architecture of computer.
14. Explain the methods of non-random sampling.
15. Write about 't' test.
16. Of the 200 children born in a hospital, 120 were male babies and 80 were female babies. Using these data test if there is any significant difference between the birth of male and female babies (Table value = 3.841).
17. Explain the Components of CPU.
18. Discuss the Output devices of computer.
19. Explain the significance of Mat Lab.
20. Discuss the applications of Internet.

SECTION C — (3 × 15 = 45 marks)

Answer any THREE of the following questions.

21. Illustrate the Diagrammatic Presentation of data.
22. Describe the Correlation Analysis.
23. Explain the One way Classification of Analysis of Variance.
24. Classify the various types of Computer with examples.
25. Enumerate the various Databases in Biology and write their significance.

1750/PZ0006

NOVEMBER 2016

GENETICS

Time : Three hours

Maximum : 100 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Xeroderma pigmentosum
2. Okazaki fragments
3. Law of segregation
4. Erythroblastosis foetalis
5. Mongolism
6. B – thalassaemia
7. Transduction
8. Prophage
9. Oncogene
10. IS elements.

PART B — (7 × 5 = 35 marks)

Answer any SEVEN questions.

11. Explain Griffith experiment to prove DNA as genetic material.
12. Discuss the molecular basis of spontaneous mutation.
13. Describe law of independent assortment with di hybrid cross as example.
14. Give an account on gene mapping in fungi.
15. Write an essay on genetic counseling.
16. Discuss the types of chromosomal aberration.
17. Write the events that occur during conjugation.
18. Give an account on bacterial chromosome mapping.
19. Discuss the diseases caused due to defect in amino acid metabolism.
20. Write an account on karyotyping and its application.

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PART C — (3 × 15 = 45 marks)

Answer ALL questions.

21. Give a detailed account on DNA replication.
22. Discuss inheritance of multiple allele with ABO blood group as example.
23. Write a detailed account on syndromes.
24. Describe the process and types of transduction.
25. Elaborately discuss the molecular basis of cancer and agents causing it.

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NOVEMBER 2016

BIOTECHNOLOGY

Time : Three hours Maximum : 100 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Define Cosmids.
2. What are elicitors?
3. What is ORF?
4. Give full form of PEG.
5. Virulence plasmid.
6. Name few chemical used in chemical method for transformation.
7. Define bioherbicides.
8. Name two transgenic animals.
9. Name the organisms used for control of weeds in Field.
10. Define biogas.

PART B — (7 × 5 = 35 marks)

Answer any SEVEN questions.

11. What is a cloning vector? Why are they necessary?
12. Write basic features of bacteriophages.
13. Discuss the identification of the clone from a gene library.
14. Discuss utility of large scale cell culture for production of monoclonal antibodies.
15. What is gene therapy? What are the limitations and prospects of its use in medicine?
16. Write the advantages of embryo transfer farm animals.
17. Write a short note on encapsulated seed.
18. What is vermicompost? Explain the methods and application.
19. What is immobilization of enzymes? What are the advantages of using them?
20. What are edible mushrooms? What role could they play in facing the challenge of world food shortage? Discuss their nutritional status.

PART C — (3 × 15 = 45 marks)

Answer any THREE questions.

21. Discuss briefly about plasmid size and copy number.
22. What is colony hybridization? Discuss the steps involved in colony hybridization.
23. Discuss significance of technique of embryo transfer and achievements made through this technique in livestock.
24. Discuss the role of microorganisms in biofertilizers.
25. What are 'biosensors'? How are biosensors used for environmental monitoring and bio-monitoring?

1752/PZ0008

NOVEMBER 2016

MICROBIOLOGY

Time : Three hours

Maximum : 100 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Acid fast bacilli
2. Coliforms
3. Nitrofication
4. BOD
5. Nucleocapsid
6. Micronutrients
7. Bacteriostatic
8. Mycotoxin
9. Fermentation
10. Methanogens.

SECTION B — (7 × 5 = 35 marks)

Answer any SEVEN questions.

11. Describe the structure of bacterial flagella and fimbriae.
12. Write a note on different types staining methods.
13. Describe the transmission routes of microorganisms to humans.
14. Give a detailed note on the pathogenesis and prophylaxis of Tubercle bacilli.
15. Write an account on Phosphorous cycle.
16. Elaborate Pasteurization and Lyophilization
17. Write a short note on T₄ Bacteriophage.
18. Describe the causes and symptoms of Cholera.
19. Discuss role of soil microbes in Agriculture.
20. How will you check the quality of drinking water? Explain.

SECTION C — (3 × 15 = 45 marks)

Answer any THREE questions.

21. Describe the ultra structure of cell wall of both Gram positive and Gram negative bacteria.
22. Describe in detail about the food preservation by chemicals and radiation. Explain their mechanism of action.
23. Discuss in detail about the industrial production of antibiotics. Explain by citing an example.
24. Describe in detail about various methods of sterilization.
25. Write a detailed note on pathogenesis and prophylaxis and treatment of human immunodeficiency virus.

1753/PZ0009

NOVEMBER 2016

IMMUNOLOGY

Time : Three hours

Maximum : 100 marks

PART A -- (10 × 2 = 20 marks)

Answer ALL questions.

1. Adjuvants.
2. Abzymes.
3. Immunofluorescence.
4. Chimeric antibody.
5. Superantigens.
6. Idiotype and Isotype
7. Dendritic cells.
8. SCID Mice.
9. Toll Like Receptors
10. Th 17 cells.

PART B — (7 × 5 = 35 marks)

Answer any SEVEN questions.

11. Define anaphylaxis and write mechanism of anaphylaxis list for pharmacological mediators of anaphylaxis.
12. Write four steps in the cellular immune response. State two methods for the deflection of cell mediated immunity.
13. List the factor influencing the level of innate immunity state the effect of hormones on the level of innate immunity.
14. Differentiate allograft reaction and graft versus host reaction.
15. Write four differentiating features between serum sickness and anaphylaxis reaction.
16. Write four steps in the development of delayed hypersensitivity.
17. Write four equipment's used in cold chain.
18. State four mechanism in the development of autoimmune diseases.
19. Write type route of administration reaction immunity and contraindications of polio vaccines.
20. State the method by which a child can be protected from tetanus. Whooping cough and diphtheria by a single prick.

PART C — (3 × 15 = 45 marks)

Answer any THREE questions.

21. Describe the different types of Hypersensitivity reactions.
22. What are Complements? How are they involved in the defense mechanism?
23. Explain the process of B-cell maturation, activation and differentiation.
24. Elaborate on the molecular basis of Antibody Diversity. Write a note on class switching.
25. Describe the various Antigen-Antibody reactions in detail.

1754/PZ0010

NOVEMBER 2016

ENVIRONMENTAL BIOLOGY AND EVOLUTION

Time : Three hours

Maximum : 100 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. What are Autotrophs?
2. Write about denitrification.
3. What is meant by geothermal energy?
4. Define exhaustible energy resource.
5. Write an account on carboxy haemoglobin.
6. What are somatic effect of radiation?
7. Define tautomerization.
8. Write about allopatric speciation.
9. Define neolithic period.
10. Write about the human fossil propliopithecus.

SECTION B — (7 × 5 = 35 marks)

Answer any SEVEN questions.

11. Describe energy based classification of ecosystem.
12. Give an account on carbon cycle.
13. Discuss fossil fuel as an important non renewable energy resource.
14. Discuss wind energy as an important renewable energy resource.
15. Write about air pollution.
16. Describe the causes and effects of radiative pollution:
17. Describe the isolating mechanisms.
18. Give an account on species formation.
19. Write about human fossils.
20. Explain DNA barcoding.

SECTION C — (3 × 15 = 45 marks)

Answer any THREE questions.

21. Comment on the following with examples :
 - (a) Food chain
 - (b) Food web.
22. Discuss solar energy as an important renewable energy source.

23. Explain water pollution.

24. Describe evidences for evolution from embryology.

25. Explain cultural evolution of man.

1755/PZ0011

NOVEMBER 2016

FISHERIES AND AQUACULTURE

Time : Three hours

Maximum : 100 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Cirrhinus mrigale.
2. Scale method.
3. Metahaline aquaculture.
4. Hatching pits.
5. Stripping.
6. Spawning pool.
7. Pokkali culture.
8. Penaeus monodon.
9. Seine nets.
10. Vallam.

PART B -- (7 × 5 = 35 marks)

Answer any SEVEN questions.

11. Examine the scope of Fisheries in India.
12. How will you determine age of fishes by Otolith method?
13. Distinguish the natural feed and supplement feed of fishes.
14. What is love feed? Explain any one's culture method.
15. Explain the methods adopted in transport of fish feed.
16. Enumerate and explain the factors affecting spawning.
17. Outline the cultural technique of fresh water prawn.
18. How will you culture pearl oyster in large scale?
19. Write a brief account on traditional fishing method.
20. Examine the economics of fish culture.

PART C -- (3 × 15 = 45 marks)

Answer any THREE questions.

21. Discuss the natural food and feeding habits of mayor Indian carps.
22. Write short notes on :
 - (a) Criteria of site selection for aqua farm
 - (b) Construction of fish farm.
 - (c) Maintenance of aqua farm.
23. Explain the causative organism symptoms and their control measures of viral diseases affecting fishes.
24. Write an elaborate account on modern methods of fishing.
25. Integrate the various methods adopted in fish preservation and processing.

1756/PZ0012

NOVEMBER 2016

ENTOMOLOGY

Time : Three hours

Maximum : 100 marks

PART A — (10 × 2 = 20 marks)

Answer ALL the questions.

1. Diptera.
2. Sternum.
3. Proventriculus.
4. Nephrocytes.
5. Protharacic gland.
6. Ametabola.
7. 'Hopper burn'.
8. Brinjal fruit borer.
9. Swarming.
10. Inoculation.

PART B — (7 × 5 = 35 marks)

Answer any SEVEN questions.

11. List the taxonomic characters of order-coleoptera giving examples and their economic importance.
12. Describe the typical structure of an antenna and add a note on its modifications in various in sects.
13. Explain the different types of respiratory organs and the physiology of respiration in aquatic insects.
14. Describe the alimentary canal and the digestive glands of insects.
15. Describe the male and female reproductive system of insects.
16. Explain the structure of malphigian tubules and the mechanism of excretion in insects.
17. Write a note on the life cycle, damage caused and the control measures of cotton bollworms.
18. Describe the life cycle, damage caused and the control measures of sugarcane borers.
19. Describe the architecture of a beehive and add a note on its types.
20. Explain the procedure for the preparation of commercial lac and add a note on its uses.

PART C — (3 × 15 = 45 marks)

Answer any THREE questions.

21. Explain the structure, chemical composition and the functions of integument.
22. Describe the organs of circulation and the course of circulation in insects.
23. Give an account on the hormonal control of insect metamorphosis.
24. Write an essay on IPM.
25. Write an account on reeling procedure for cocoons and add a note on optimum conditions required.