WEST BENGAL STATE UNIVERSITY

B.Sc. Honours 2nd Semester Examination, 2022

ZOOACOR03T-ZOOLOGY (CC3)

Time Allotted: 2 Hours | Full Marks: 40

The figures in the margin indicate full marks.
Candidates should answer in their own words and adhere to the word limit as practicable.

1. Answer any ***eight*** questions from the following: 2×8 = 16

(a) What is chiastaneury?

(b) What is coelom? Name one pseudocoelomate animal.

(c) Write the functions of radula and osphradium.

(d) Mention two functions of worker bees in a honey comb.

(e) Write two similarities of Phylum Hemichordata with Phylum Annelida.

(f) Write two characters of Bipinnaria larva of Phylum Echinodermata.

(g) Mention the function and location of tubefeet.

(h) What is madreporite? State its function.

(i) What is Parapodia? Where is it found?

(j) What is ink gland? State its function.

(k) What is metamere? Name an animal which shows true metamerism.

(l) Define a metabolous metamorphosis in insects. Give example.

2. Answer any ***three*** questions from the following: 3×3 = 9

(a) To which Phylum does the following structures belong and mention one function of each

(i) Clitellum (ii) Malpighian tubules (iii) Ctenidia

(b) State the general characteristic features of Phylum Onychophora.

(c) Compare between Schizocoelous and enterocoelous mode of coelom formation.

(d) Draw a labelled diagram and write the salient features of Pluteus larva. 1+2

(e) State the advantages and disadvantages of torsion in Gastropods.

3. Answer any ***three*** questions from the following: 5×3 = 15

(a) Name the Phylum and class of the following animals—

(i) Sea cucumber (ii) King crab (iii) Devil fish (iv) *Saccoglossus* sp. (v) *Hirudinaria* sp.

(b) Write short notes on any ***two*** of the following: $2\frac{1}{2} \times 2 = 5$

(i) Holometabolous metamorphosis of insects

(ii) Reproductive caste of termites

(iii) Protonephridia

(c) Describe the structure associated with aquatic respiration in mollusca with suitable diagram. 3+2

(d) Describe the structure of water vascular system of *Asterias* sp. with a suitable diagram. 3+2

(e) Classify Phylum Annelida up to class with suitable examples.

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WEST BENGAL STATE UNIVERSITY

B.Sc. Honours 2nd Semester Examination, 2022

ZOOACOR04T-ZOOLOGY (CC4)

Time Allotted: 2 Hours | Full Marks: 40

The figures in the margin indicate full marks.
Candidates should answer in their own words and adhere to the word limit as practicable.

1. Answer any ***eight*** questions from the following: 2×8 = 16

   (a) What is chromatosome?
   (b) What do you mean by desmosome?
   (c) What are aquaporins?
   (d) What do you mean by MPF?
   (e) What is linker histone?
   (f) Distinguish between passive transport and facilitated diffusion?
   (g) Describe ABC transporter.
   (h) Name a few intermediate filament proteins. Which one is found in nucleus?
   (i) What are functions of smooth endoplasmic reticulum?
   (j) Distinguish between mitochondrial DNA and nuclear DNA.
   (k) What is the function of peroxisome?
   (l) What is F_1 particle?

2. Answer any ***three*** questions from the following: 3×3 = 9

   (a) Distinguish between SER and RER.
   (b) Mention the functional significance of two faces of Golgi complex.
   (c) What do you mean by capsomere?
   (d) Distinguish between tight junction and gap junction.
   (e) Write the intrinsic pathway of Apoptosis with suitable diagram.

3. Answer any ***three*** questions from the following: 5×3 = 15

   (a) Write the chemical composition of a Plasma membrane. How does the Fluid Mosaic model of Singer Nicholson differ from the unit membrane model of Robertson? 3+2
   (b) Explain the role of nitric oxide as a cellular signalling molecule.
   (c) Describe the structure of myosin filament with labelled diagram. State the role of caspase-8 in inducing cell apoptosis. 3+2
   (d) Write the chemical structure of a bacterial cell wall. Distinguish between Gram positive and Gram negative bacteria.
   (e) Explain, how the flow of electrons through the electron transport chain is translated into ATP synthesis.

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WEST BENGAL STATE UNIVERSITY

B.Sc. Honours 2nd Semester Examination, 2021

ZOOACOR03T-ZOOLOGY (CC3)

Time Allotted: 2 Hours | Full Marks: 40

The figures in the margin indicate full marks.
Candidates should answer in their own words and adhere to the word limit as practicable.
All symbols are of usual significance.

1. Answer any ***eight*** questions from the following: 2×8 = 16

(a) Distinguish between holometabolous and hemimetabolous.

(b) Name two hormones that control metamorphosis in insects.

(c) What is nuptial flight?

(d) What is parapodia? Where do you find it?

(e) Differentiate between true metamerism and pseudometamerism.

(f) Mention functions of Tube feet.

(g) What is monopectinate gill? Give example.

(h) What is Tiedemann's body? Mention functions of it.

(i) Differentiate between torsion and detorsion in gastropods.

(j) In which animal 'Aristotle's Lantern' is found? What is its function?

(k) Mention two functions of nephridia.

(l) What do you mean by 'metamere'? Which two body parts are never be metameric?

(m) Differentiate between schizocoely and enterocoely.

(n) What is 'Organ of Bojanus'?

(o) Define ametabolous metamorphosis in insects.

2. Answer any ***three*** questions from the following: 3×3 = 9

(a) In which phylum the following structures are found? Write one functional role from these following structures.
(i) Radula (ii) Malpighian tubules (iii) Tiedman's body

(b) State briefly about the endocrine control of the metamorphosis in insects with suitable illustrations.

(c) Write short note on any ***one***:
(i) Bee dance
(ii) Hemimetabolous metamorphosis.

(d) State briefly the significance of torsion in Gastropoda.

(e) Briefly describe the various castes found in social life of bees.

3. Answer any ***three*** questions from the following: 5×3 = 15

(a) Draw and describe components of a typical water vascular system in *Asterias* sp. 5

(b) Name the phylum and class of the following animals: 1×5=5

(i) Sea-Mouse (ii) Sea lily (iii) Barnacle
(iv) Silverfish (v) Sea hare

(c) Describe with a proper diagram the structure of Auricularia larva. 3+2

(d) Write short notes on any ***two*** of the following: $2\frac{1}{2}\times 2 = 5$

(i) Termitarium (ii) Metamerism in Annelida (iii) Detorsion in gastropods

(e) What are the respiratory organs of mollusca? Discuss the mechanism of aquatic respiration of molluscan. 2+3

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WEST BENGAL STATE UNIVERSITY

B.Sc. Honours 2nd Semester Examination, 2021

ZOOACOR04T-ZOOLOGY (CC4)

Time Allotted: 2 Hours | Full Marks: 40

The figures in the margin indicate full marks.
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1. Answer any ***eight*** questions from the following: 2×8 = 16

(a) Differentiate between active and passive transport.
(b) Define Gap Junctions.
(c) State the semi-autonomous nature of mitochondria.
(d) Differentiate between pinocytosis and phagocytosis.
(e) Define first messenger and second messenger in a cell signaling pathway.
(f) Define apoptosis. Differentiate it with necrosis.
(g) What is GPCR? Write down its subunits and their functional aspects.
(h) State the role of lysosome in cellular functioning.
(i) What do you know about linker histone.
(j) What do you mean my PLP model of plasma membrane?
(k) What are RTK and non-RTK receptors?
(l) What are caspase and anti-apoptotic factors?
(m) Write and draw the structure of myosin filaments.
(n) State the constituents of nucleosome core particle.
(o) What is Virion?

2. Answer any ***three*** questions from the following: 3×3 = 9

(a) Differentiate between mitosis and meiosis. Why meiosis is called reductional division? 1+2
(b) What is rough ER? State its role in protein synthesis. What ER is closely positioned to nucleus? 1+1+1
(c) Name one nuclear receptor and membrane receptor in cellular signaling. Elaborate signaling pathway (any ***one***). 1+2
(d) Portray an account of Na^+/K^+ pump or Na^+/K^+ ATPase activity with suitable diagram. 3

(e) Describe the sliding filament mechanism for contraction- relaxation cycle of actin and myosin microfilaments with diagramme. 3

(f) Describe the role of cyclin-cdks in cell cycle. 3

3. Answer any ***three*** questions from the following: 5×3 = 15

(a) Why mitochondrion is called the power house of the cell? Elaborate the role of F_0-F_1 particle in mitochondrial respiratory chain. $1\frac{1}{2}+3\frac{1}{2}$

(b) Furnish an account on the ultrastructure of Golgi complex with suitable diagram. 5

(c) Discuss the role of cAMP as a secondary messenger in signal transduction pathway. What are ionophores? 4+1

(d) Explain the extrinsic pathway of the programmed cell death. Distinguish between constitutive and facultative heterochromatin. 3+2

(e) What do you mean by negative regulator of cell cycle? State the role of Rb and p53 in cell cycle regulation. 1+4

(f) Delineate the structure of nuclear lamina with suitable diagram. What is the major function of the nuclear envelope? 4+1

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WEST BENGAL STATE UNIVERSITY

B.Sc. Honours 2nd Semester Examination, 2020

ZOOACOR03T-ZOOLOGY (CC3)

Time Allotted: 2 Hours | Full Marks: 40

The figures in the margin indicate full marks.
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All symbols are of usual significance.

1. Answer any ***eight*** questions from the following: 2×8 = 16

(a) State two main characteristics of Phylum Annelida.

(b) Define "Nacre".

(c) Name the hormones that control metamorphosis in insects.

(d) Define rhabdomere.

(e) Define stone canal. Write its functions.

(f) What is coelomoducts?

(g) What do you mean by mosaic vision?

(h) Differentiate between haemolymph and haemocyanin.

(i) State two characteristic features of Bipinnaria larva of Echinodermata.

(j) What is the function of Drone bees?

(k) Define chiastoneury.

(l) State two examples (Scientific names) of subphylum Crustacea of Phylum Arthropoda.

(m) Differentiate between torsion and detorsion.

(n) How do you justify the name Echinodermata?

(o) Name one acoelomate and one coelomate animal.

2. Answer any ***three*** questions from the following: 3×3 = 9

(a) Write short note on any ***one***: 3×1

(i) Nephridium (ii) Ctenidia

(b) State the general characteristics of Onychophora.

(c) In which Phylum the following structures are found? 1+1+1

(i) Osphradium (ii) Rectal gills (iii) Ambulacral groove

(d) Briefly describe the various castes found in the social life of a termite.

(e) Discuss the advantages of torsion.

(f) Why are hemichordates not considered as chordates?

(g) Describe Hemimetabolous metamorphosis in insects with suitable diagram. 2+1

3. Answer any ***three*** questions from the following: 5×3 = 15

(a) Briefly describe the structure of Auricularia larva with proper diagram. 3+2

(b) Name the Phylum and Class of the following animals:

(i) Sea Lily (ii) *Bombyx mori* (iii) *Hirudinaria sp*.

(iv) Cuttlefish (v) *Dolichoglossus sp*.

(c) Classify Phylum Echinodermata up to classes with examples.

(d) State briefly the significance of Trochophore larva.

(e) Describe the structures associated with terrestrial respiration process in Mollusca with suitable diagram. 3+2

(f) Write short notes on any ***two*** of the following: $2\frac{1}{2}\times2$

(i) Superposition image

(ii) Arthrobranch gill

(iii) Nuptial flight of honey bee

(g) Describe briefly different types of metamerism found in different animals with suitable diagrams.

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WEST BENGAL STATE UNIVERSITY

B.Sc. Honours 2nd Semester Examination, 2020

ZOOACOR04T-ZOOLOGY (CC4)

Time Allotted: 2 Hours | Full Marks: 40

The figures in the margin indicate full marks.
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1. Answer any ***eight*** questions from the following: 2×8 = 16

(a) What is synaptonemal complex?
(b) What do you mean by GERL system?
(c) What is tumor suppressor gene? Give example.
(d) Write two differences between genomic DNA and mitochondrial DNA.
(e) Differentiate between desmosome and hemidesmosome.
(f) Differentiate between SER and RER.
(g) Differentiate between primary and secondary lysosome.
(h) What is "unit membrane" according to Robertson?
(i) What is chromatosome?
(j) Name the amino acids present in histone protein.
(k) How do viroids differ from viruses?
(l) What do you mean by polarization of Golgi body?
(m) What is restriction point in cell cycle?
(n) What is autocrine and juxtacrine signalling?
(o) Why plasma membrane is called amphipathic?

2. Answer any ***three*** questions from the following: 3×3 = 9

(a) Why p53 is considered as the guardian of the genome?
(b) Differentiate between microtubules, microfilaments and intermediate filaments.
(c) Write the role of facilitated transport in taking up glucose into cell.
(d) State the chemical structure of bacterial cell wall.
(e) Why mitochondria are considered as semiautonomous organelles?
(f) Compare between desmosome, tight junction and gap junction.

3. Answer any ***three*** questions from the following: 5×3 = 15

(a) What is mitoribosome? Briefly describe the structure of ATP synthase. 1+4
(b) What do you mean by extra and intra cellular receptor? State the structure of G protein coupled receptor. 2+3

(c) What is MPF? Schematically explain G2-M check point regulating mechanism. 2+3

(d) What is oncogene? Describe how protooncogenes can be converted into oncogenes. 1+4

(e) What is nuclear pore complex? State the nucleosome concept briefly. 2+3

(f) Why mitochondrion is known as power house of cell? Explain the electron transport chain (ETC) with a diagram. 2+3

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WEST BENGAL STATE UNIVERSITY

B.Sc. Honours 2nd Semester Examination, 2019

ZOOACOR03T-ZOOLOGY (CC3)

Time Allotted: 2 Hours | **Full Marks: 40**

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Candidates should answer in their own words and adhere to the word limit as practicable.
All symbols are of usual significance.

1. Answer any ***eight*** questions from the following: 2×8 = 16

(a) Write two similarities of phylum Hemichordata with phylum Annelida.

(b) What is ommatidium? Mention its function.

(c) Name marine and fresh water oysters responsible for productions of pearl.

(d) Define coelom. Name one pseudocoelomate animal.

(e) Write two main characters of phylum Mollusca.

(f) Name the phylum with (i) no fresh water animals and (ii) with largest number of animals.

(g) How do you justify the name "Hemichordata"?

(h) What is madreporite? Write its function.

(i) Name the phylum to which *Peripatus* belongs. Write two characters of the phylum.

(j) Write the functions of radula and osphradium.

(k) What do you mean by "metamere"? Which two body-parts never be metameric?

(l) What is the difference between open and closed types of blood circulation?

2. Answer any ***three*** questions from the following: 3×3 = 9

(a) Draw, label and describe the structure of Pluteus larva. 1+1+1

(b) In which phylum following structures are found? 1+1+1

(i) Cirri. (ii) Ctenidia, (iii) Tiedmann's body

(c) Briefly illustrate the divisions of labour found in different castes of a honey bee. 3

(d) State significance of torsion in gastropods. 3

(e) Write short note on any one: (i) Schizocoelom, (ii) Book lung. 3×1 = 3

3. Answer any ***three*** questions from the following: 5×3 = 15

(a) Name the phylum and class of the following animals: 1×5

(i) *Lepisma* sp., (ii) *Saccoglossus* sp., (iii) *Nereis* sp.,

(iv) Squids, (v) Sea cucumber

(b) Classify phylum Annelida up to classes with example. 5

(c) Discuss the different types of metamorphosis found in insects with suitable example. 5

(d) Write the scientific names of two pearl forming bivalves. What is the mechanism of natural pearl formation? What is blister pearl? 2+2+1

(e) Draw and label the component parts of a typical water vascular system of *Asterias* sp. and briefly describe the mechanism of water-flow through it. 3+2

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WEST BENGAL STATE UNIVERSITY

B.Sc. Honours 2nd Semester Examination, 2019

ZOOACOR04T-ZOOLOGY (CC4)

Time Allotted: 2 Hours | Full Marks: 40

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Candidates should answer in their own words and adhere to the word limit as practicable.

1. Answer any ***eight*** questions from the following: 2×8 = 16

(a) What is flip-flop movement?
(b) Give an example of biomolecules synthesized in peroxisomes.
(c) What is Viroid? Name one disease caused by it.
(d) Name one RNA virus and one DNA virus.
(e) What are cell cycle check points?
(f) State the differences between nucleoid and nucleus.
(g) What is Zonula Occludens? State its function.
(h) Name one microfilament and one microtubule with their function.
(i) Name two components of extracellular matrix (ECM).
(j) What is MPF? State its function.
(k) What are MTOC and Kinetochore?
(l) Write two functions of Mitochondria.

2. Answer any ***three*** questions from the following: 3×3 = 9

(a) Differentiate between light and gap junctions with proper diagrams.
(b) How DNA is packed in a nucleosome? What is a linker DNA?
(c) Write a note on endosymbiotic theory of organelles.
(d) Explain in brief how prions cause diseases with suitable examples.
(e) Differentiate between protooncogene, oncogene and tumour suppressor gene.

3. Answer any ***three*** questions from the following: 5×3 = 15

(a) Differentiate between lytic and lysogenic cycles of virus. Mention their importance as infections strategy. Give an example of viral oncogene. 3+1+1
(b) Differentiate between intrinsic and extrinsic pathways of apoptosis. Mention the functions of caspases in this process. 3+2
(c) Discuss briefly how proteins are synthesized, modified and secreted through GERL system. 5
(d) Discuss the role of cAMP as second messenger in cell signal transduction. 5
(e) Describe in brief the most accepted model of plasma membrane with a proper diagram. Name the scientist(s) who proposed the model. 2+2+1

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