

ZOOLOGY, PAPER-I

**FEDERAL PUBLIC SERVICE COMMISSION
COMPETITIVE EXAMINATION FOR
RECRUITMENT TO POSTS IN BPS-17 UNDER
THE FEDERAL GOVERNMENT, 2009**

S.No.	
R.No.	

ZOOLOGY, PAPER-I

TIME ALLOWED:	(PART-I) 30 MINUTES	MAXIMUM MARKS:20
	(PART-II) 2 HOURS & 30 MINUTES	MAXIMUM MARKS:80

- NOTE: (i) First attempt PART-I (MCQ) on separate Answer Sheet which shall be taken back after 30 minutes.**
(ii) Overwriting/cutting of the options/answers will not be given credit.

PART – I (MCQ)
(COMPULSORY)

Q.1. Select the best option/answer and fill in the appropriate box on the Answer Sheet. (20)

- (i) What is the function of contractile vacuole?
 (a) respiration (b) reproduction (c) osmoregulation
 (d) digestion (e) None of these
- (ii) Specules are secreted by special mesenchymal amoebocytes called:
 (a) scleroblasts (b) microscleres (c) myocytes
 (d) collencytes (e) None of these
- (iii) True nerve cells or ganglion cells occur for the first time in:
 (a) Protozoa (b) Porifera (c) Coelenterata
 (d) Annelida (e) None of these
- (iv) The process by which an organism can replace its lost or damaged body parts is called:
 (a) reformation (b) regeneration (c) reclamation
 (d) reconstruction (e) None of these
- (v) Nematocysts are found in:
 (a) Protozoa (b) Porifera (c) Annelida
 (d) Mollusca (e) None of these
- (vi) In polychaetes the locomotory organ is:
 (a) pseudopodium (b) neuropodium (c) notopodium
 (d) parapodium (e) None of these
- (vii) Worms belonging to phylum platyhelminthes are commonly known as:
 (a) round worms (b) ring worms (c) segmented worms
 (d) earth worms (e) None of these
- (viii) Bipinnaria is a larval form of:
 (a) Coelenterate (b) Polychaeta (c) Echinodermata
 (d) Cestoda (e) None of these
- (ix) Closed type of circulatory system is found in:
 (a) Platyhelminthes (b) Annelida (c) Porifera
 (d) Arthropoda (e) None of these
- (x) The two common mosquito genera, Anopheles and Culex, can be easily identified by their:
 (a) colour (b) flying speed (c) size
 (d) sitting posture (e) None of these
- (xi) Sweat glands are epidermal glands and are found in:
 (a) all birds (b) reptiles and mammals (c) mammals only
 (d) birds and reptiles (e) None of these
- (xii) Sternum is absent in:
 (a) mammals (b) birds (c) amphibians
 (d) fishes (e) None of these
- (xiii) Amphioxus belongs to:
 (a) Cephalochordata (b) Hemichordata (c) Urochordata
 (d) Cyclostomata (e) None of these

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- (xiv) The urochordates or tunicates are marine animals, commonly known as:
(a) Sea cucumber (b) Sea squirts (c) Sea urchin
(d) Sea star (e) None of these
- (xv) Optic lobes are found in:
(a) fore brain (b) mid brain (c) hind brain
(d) medulla (e) None of these
- (xvi) The number of cervical vertebrae in most mammals is:
(a) two (b) four (c) nine
(d) eleven (e) None of these
- (xvii) Lymph hearts are absent in:
(a) fishes (b) amphibians (c) reptiles
(d) mammals (e) None of these
- (xviii) The lymph capillaries coming from intestinal villi are called:
(a) veins (b) lymph nodes (c) lacteals
(d) lymph duct (e) None of these
- (xix) How many caudal vertebrae are found in man?
(a) 1 – 2 (b) 3 – 4 (c) 5 – 6
(d) 7 – 8 (e) None of these
- (xx) The inner membrane of the two foetal membranes in reptiles, birds and mammals is called:
(a) chorion (b) amnion (c) peritoneum
(d) pericardium (e) None of these

PART – II

NOTE:	<p>(i) PART-II is to be attempted on the separate Answer Book.</p> <p>(ii) Attempt ONLY FOUR questions from PART-II, selecting at least TWO questions from EACH SECTION. All questions carry EQUAL marks.</p> <p>(iii) Extra attempt of any question or any part of the attempted question will not be considered.</p>
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SECTION – I

- Q.2.** (a) Write an essay on “Protozoa and diseases”. (10)
(b) What are coral reefs? Give an account of the various forms of coral reefs. (6)
(c) Coelenterates show some resemblances with Porifera. Discuss briefly. (4)
- Q.3.** (a) Give an account of the canal system in sponges. (10)
(b) What is adaptation? Briefly discuss parasitic adaptations in platyhelminthes. (6)
(c) Define the following terms: (4)
(i) Polymorphism (ii) Metamerism (iii) Parasitism (iv) Osmoregulation
- Q.4.** (a) Describe the water vascular system of Echinodermata. (10)
(b) Give an account of human diseases caused by nematodes. (7)
(c) What is conjugation? Briefly discuss its significance. (3)
- Q.5.** Write short notes on: (20)
(i) Torsion in gastropods (ii) Flame cells (iii) Spicules (iv) Coelom

SECTION – II

- Q.6.** (a) Write an essay on “Flight adaptations of birds”. (10)
(b) What is cleavage? Describe different types of cleavages, with example, found in chordata. (6)
(c) What are the functions of blood? (4)
- Q.7.** (a) What is placenta? Give classification of placenta in mammals according to the mode of implantation. (8)
(b) Describe various types of heart found in vertebrates. (8)
(c) Give the classification of vertebrate eggs according to the quantity of yolk they contain. (4)
- Q.8.** Write short notes on: (5+5+5+5)
(i) Uriniferous tubule of a mammal (ii) Neuron
(iii) Functions of the skin (iv) Structure of the bone

ZOOLOGY, PAPER-II

**FEDERAL PUBLIC SERVICE COMMISSION
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S.No.	
R.No.	

ZOOLOGY, PAPER-II

TIME ALLOWED:	(PART-I) 30 MINUTES	MAXIMUM MARKS:20
	(PART-II) 2 HOURS & 30 MINUTES	MAXIMUM MARKS:80

- NOTE: (i) First attempt PART-I (MCQ) on separate Answer Sheet which shall be taken back after 30 minutes.**
(ii) Overwriting/cutting of the options/answers will not be given credit.

PART – I (MCQ)
(COMPULSORY)

- Q.1. Select the best option/answer and fill in the appropriate box on the Answer Sheet. (20)**
- (i) Which part of the brain detects temperature changes in the blood?
 (a) cerebellum (b) cerebral hemisphere (c) hypothalamus
 (d) medulla (e) None of these
- (ii) From which of the following is urea formed?
 (a) fat (b) glycerol (c) protein
 (d) starch (e) None of these
- (iii) Where are hormones destroyed?
 (a) adrenal gland (b) kidney (c) liver
 (d) pancreas (e) None of these
- (iv) During the beating of the heart, in which region will the highest pressure develop?
 (a) left atrium (b) left ventricle (c) pulmonary artery
 (d) right ventricle (e) None of these
- (v) Which molecules are produced by the digestion of starch and of protein?
 (a) glycerol and amino acids (b) glycerol and fatty acids (c) sugar and amino acids
 (d) sugar and fatty acids (e) None of these
- (vi) Which type of cell stimulates the release of adrenaline?
 (a) white blood cells (b) muscle cells (c) pancreatic cells
 (d) red blood cells (e) None of these
- (vii) Which secretion, released into the alimentary canal, contains no enzymes but speeds up fat digestion?
 (a) bile (b) intestinal juice (c) mucus
 (d) pancreatic juice (e) None of these
- (viii) Which of the following normally enters the blood as it passes through the pancreas?
 (a) amino acids (b) glycogen (c) insulin
 (d) lipase (e) None of these
- (ix) Which of the following is an example of discontinuous variation?
 (a) blood group (b) height (c) intelligence
 (d) weight (e) None of these
- (x) Which of the following would be more prominent in a secretory cell than in a non-secretory cell?
 (a) golgi apparatus (b) mitochondria (c) ribosomes
 (d) pinocytotic vesicles (e) None of these
- (xi) Which of the following is found in both DNA and messenger RNA?
 (a) ribose (b) thymine (c) sugar-phosphate chain
 (d) double helix structure (e) None of these
- (xii) What is carried by a molecule of transfer RNA?
 (a) an amino acid molecule (b) enzyme for protein synthesis (c) information from the DNA
 (d) sequence of codons (e) None of these

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- (xiii) The populations of all the species in a given habitat are referred to as the:
(a) biosphere (b) community (c) ecosphere
(d) ecosystem (e) None of these
- (xiv) Which of the following is not recycled in ecosystem?
(a) carbon (b) energy (c) sulphur
(d) water (e) None of these
- (xv) In most ecosystems, the greatest amount of energy flows through the:
(a) secondary consumers (b) herbivores (c) carnivores
(d) decomposers (e) None of these
- (xvi) During which phase of meiosis are chiasmata formed?
(a) prophase I (b) metaphase II (c) metaphase I
(d) telophase II (e) None of these
- (xvii) Who proposed the mutation theory of Evolution?
(a) Lamarck (b) Darwin (c) de Vries
(d) Wallace (e) None of these
- (xviii) During which stage of meiosis do homologous chromosomes separate?
(a) prophase I (b) prophase II (c) anaphase I
(d) anaphase II (e) None of these
- (xix) In a DNA molecule, the bases of pyrimidine are:
(a) thymine and cytosine (b) cytosine and guanine (c) adenine and thymine
(d) thymine and guanine (e) None of these
- (xx) Triassic and Jurassic periods are included in the:
(a) Palaeozoic era (b) Mesozoic era (c) Coenozoic era
(d) Proterozoic era (e) None of these

PART – II

NOTE:	<p>(i) PART-II is to be attempted on the separate Answer Book.</p> <p>(ii) Attempt ONLY FOUR questions from PART-II. All questions carry EQUAL marks.</p> <p>(iii) Extra attempt of any question or any part of the attempted question will not be considered.</p>
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- Q.2.** (a) Give an account of the mechanisms by which the living cell is believed to synthesize proteins. **(12)**
(b) Explain how carbon dioxide is transported by the blood? **(8)**
- Q.3.** (a) Describe the structure and functions of cell membrane. **(12)**
(b) How is the nerve impulse generated and conducted. **(8)**
- Q.4.** (a) Describe prophase-I of meiosis in detail with the help of labeled diagrams. **(10)**
(b) Give an account of digestion of food in mammals. **(10)**
- Q.5.** (a) Describe the structure and functions of Endoplasmic reticulum. **(10)**
(b) What is haemoglobin? How it carries oxygen in the blood? What happens when carbon monoxide combine with haemoglobin? **(7)**
(c) Differentiate between pinocytosis and phagocytosis. **(3)**
- Q.6.** (a) Give an account of Mendel's law of segregation with example. **(10)**
(b) What is vestigial organ? Presence of vestigial organs is taken as an evidence of evolution. Discuss. **(10)**
- Q.7.** (a) What are biogeochemical cycles? Describe the carbon cycle in detail. **(10)**
(b) Given an account of Lamarck's theory of evolution. **(10)**
- Q.8.** Write short notes on: **(5+5+5+5)**
(i) Natural Selection (ii) Mutation
(iii) Hormones (iv) Chromosomal aberration

ZOOLOGY, PAPER-I

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Roll Number

ZOOLOGY, PAPER-I

TIME ALLOWED:	(PART-I) 30 MINUTES	MAXIMUM MARKS:20
	(PART-II) 2 HOURS & 30 MINUTES	MAXIMUM MARKS:80

<p>NOTE: (i) First attempt PART-I (MCQ) on separate Answer Sheet which shall be taken back after 30 minutes.</p> <p>(ii) Overwriting/cutting of the options/answers will not be given credit.</p>

PART – I (MCQ)
(COMPULSORY)

- Q.1. Select the best option/answer and fill in the appropriate box on the Answer Sheet. (20)**
- (i) Chano cysts are found in?
 (a) Coelentrate (b) Annelida (c) Porifera
 (d) Arthropoda (e) All of these
- (ii) House fly is a common insect having _____ legs.
 (a) 4 (b) 6 (c) 8 (d) None of these
- (iii) Silver fish is included in:
 (a) Pisces (b) Arthropoda (c) Annelida (d) None of these
- (iv) Number of vertebrae in neck of a giraffe are:
 (a) 10 (b) 5 (c) 7 (d) None of these
- (v) Flame cell is typical of:
 (a) Annelida (b) Chordata (c) Porifera (d) Platyhelminthes
 (e) None of these
- (vi) Nervous system originates from:
 (a) Epidermis (b) Mesodermis (c) Endodermis (d) None of these
 (e) All of these
- (vii) Mammals are characterized by:
 (a) Mammary Glands (b) Hair (c) All of these (d) None of these
- (viii) Nucleus is not present in RBC of:
 (a) Fish (b) Snake (c) Bird (d) Mammal
 (e) None of these
- (ix) Scales in fish derive their origin from:
 (a) Epidermis (b) Mesodermis (c) Endodermis (d) None of these
- (x) Sound in insect is produced through:
 (a) Mouth (b) Tracheal movements (c) Wing beat (d) None of these
- (xi) Sole of foot in man has _____ location:
 (a) Dorsal (b) Ventral (c) lateral (d) None of these
- (xii) Coelome in adult mammals is represented by:
 (a) Visceral cavity (b) Cavity in brain (c) Both of these (d) None of these
- (xiii) The Skelton in insects is:
 (a) Exoskeleton (b) Endoskeleton (c) None of these (d) Both of these

ZOOLOGY, PAPER-I

- (xiv) Sea horse is included in:
(a) Mammals (b) Fish (c) Reptiles (d) None of these
- (xv) Circulatory system is open type in:
(a) Annelida (b) Insecta (c) Mammals (d) None of these
- (xvi) The body cavity is regarded as pseudocoel in Nematodes because:
(a) Has ectodermal origin
(b) Not completely lined by Mesodermal epithelium
(c) Has endodermal origin
(d) None of these
(e) All of these
- (xvii) True metaneric segmentation is characteristic of:
(a) Molluses (b) Annelida (c) Arthropoda (d) None of these
- (xviii) Hollow dorsal nervous system is present in:
(a) Amphioxus (b) Fish (c) Mammals (d) None of these
(e) All of these
- (xix) Contractile vacuole in protozoa is mainly responsible for:
(a) Excretion (b) Osmoregulation (c) respiration (d) None of these
- (xx) Scorpion is included in:
(a) Insecta (b) Arachnida (c) Echinodermata (d) None of these

PART – II

NOTE:	<p>(i) PART-II is to be attempted on the separate Answer Book. (ii) Attempt ONLY FIVE questions from PART-II, selecting THREE questions from SECTION-I and TWO from SECTION-II. All questions carry EQUAL marks. (iii) Be precise in your answers and draw labelled diagrams, wherever required. (iv) Extra attempt of any question or any part of the attempted question will not be considered.</p>
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SECTION – I

- Q.2.** (a) “A protozoan cell is not equal to a cell of multicellular organism”. Discuss the statement. (8)
(b) “Sponges are at colonial level of cellular organization”. Justify the statement. (8)
- Q.3.** (a) How will you differentiate between corals and coral reefs? How are different types of coral reefs formed? (3+7)
(b) Discuss parasite adaptation with special reference to platyhelminthes. (6)
- Q.4.** (a) Define metameric segmentation. Explain with reference to Annelida. (2+6)
(b) Discuss metamorphosis with reference to insects. (8)
- Q.5.** Write short notes on: (16)
(i) Echinoderm affinity (ii) Shell in Mollusca (iii) Importance of Nematodes (4+4+4+4)
(iv) Polymorphism – coelentrata

SECTION – II

- Q.6.** (a) Discuss Amphioxus as a complete chordate. (8)
(b) “Hemichordates have both chordate and non-chordate character”. Justify. (8)
- Q.7.** (a) Discuss evolution of heart in different chordate groups. (8)
(b) Give a brief account of embryonic membranes. (8)
- Q.8.** (a) Define biological migration. Discuss the phenomenon with reference to birds. (8)
(b) “Birds are said to be glorified reptiles”. Justify the statement. (8)
- Q.9.** Write short notes on: (16)
(a) Scales in Fishes (b) Exoskeleton in mammals (4+4+4+4)
(c) Feathers in Birds (d) Desert adaptations in Reptiles

ZOOLOGY, PAPER-II

**FEDERAL PUBLIC SERVICE COMMISSION
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THE FEDERAL GOVERNMENT, 2010**

Roll Number

ZOOLOGY, PAPER-II

TIME ALLOWED:	(PART-I) 30 MINUTES	MAXIMUM MARKS:20
	(PART-II) 2 HOURS & 30 MINUTES	MAXIMUM MARKS:80

NOTE: (i) First attempt PART-I (MCQ) on separate Answer Sheet which shall be taken back after 30 minutes.
(ii) Overwriting/cutting of the options/answers will not be given credit.

PART – I (MCQ)
(COMPULSORY)

Q.1. Select the best option/answer and fill in the appropriate box on the Answer Sheet. (20)

- (i) Cell membrane is formed of:
 (a) Carbohydrate (b) Lipid (c) Protein
 (d) Lipoprotein (e) None of these
- (ii) Electron transport chain reaction occur in:
 (a) Cell membrane (b) Cell wall (c) Endoplasm
 (d) Mitochondrion (e) None of these
- (iii) Ribosomes in cell are responsible for:
 (a) Protein formation (b) Glycolysis (c) Lipid breakdown
 (d) All of these (e) None of these
- (iv) Golgi complex is responsible for:
 (a) Carbohydrate metabolism (b) Protein synthesis (c) Lipid synthesis
 (d) None of these (e) All of these
- (v) Basic excretory chemicals in all the cells is:
 (a) Urea (b) Uric acid (c) Ammonia
 (d) None of these (e) All of these
- (vi) Oxygen transport from lungs to tissue occurs through:
 (a) Difference in pressure (b) Solubility in plasma (c) Attachment with RBC surface
 (d) None of these (e) All of these
- (vii) FSH (Follicle Stimulating Hormone) is produced in:
 (a) Ovary (b) Hypothalamus (c) Pituitary
 (d) None of these (e) All of these
- (viii) Lipase is an enzyme responsible for:
 (a) Carbohydrate metabolism (b) Lipid breakdown (c) Protein breakdown
 (d) None of these
- (ix) Law of segregation is applicable to:
 (a) Homozygous individual (b) Heterozygous individual
 (c) Both Homozygous and heterozygous (d) None of these
- (x) Sex linked genes concern:
 (a) Sex characters (b) Somatic character
 (c) Mostly somatic character (d) None of these
- (xi) XXY individual in man is a phenotypic male, because:
 (a) Two X chromosomes are present (b) Y-chromosome is present
 (c) Both X and Y chromosomes are present (d) None of these
- (xii) Trisomic condition can be produced through:
 (a) Primary Non-disjunction (b) Secondary non-disjunction (c) Both a and b (d) None of these
- (xiii) First living organism on this planet was:
 (a) A protozoan (b) An algae (c) Bacteria (d) A virus (e) None of these
- (xiv) Theory of Natural Selection was proposed by:
 (a) Charles Darwin (b) A.R. Wallace (c) Both a and b (d) None of these
- (xv) Lamarck's theory of inheritance of acquired characters says:
 (a) Environment forces a character (b) Environment selects a character
 (c) Environment has no effect (d) None of these

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- (xvi) Orthoselection means:
(a) Selection occurring at different times (b) Selection occurring at different rates
(c) Selection occurring in one direction (d) None of these
(e) All of these
- (xvii) Haeckle's biogenetic law says:
(a) Ontogeny repeats phylogeny (b) Phylogeny repeats ontogeny
(c) None of these (d) Both a and b together
- (xviii) Ecosystem is a system involving biotic and abiotic components which:
(a) Interact (b) Interact for energy flow (c) No interaction (d) None of these
- (xix) Nitrogen biogeochemical cycle is regarded as gaseous cycle because:
(a) Nitrogen is a gas (b) Recycling is almost complete
(c) Major part of cycle is in gaseous state (d) None of these
- (xx) Raw material for evolution are variation, which are produced through:
(a) Gene mutation (b) Chromosomal aberration (c) Both a and b (d) None of these

PART – II

NOTE:	<p>(i) PART-II is to be attempted on the separate Answer Book.</p> <p>(ii) Attempt ONLY FIVE questions from PART-II, selecting at least THREE questions from SECTION-I and TWO questions from SECTION-II. All questions carry EQUAL marks.</p> <p>(iii) Extra attempt of any question or any part of the attempted question will not be considered.</p>
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SECTION-I

- Q.2.** (a) Describe structure, chemical composition and function of Endoplasmic reticulum. (10)
(b) Define membrane system. What are the main members of this system in a cell? (6)
- Q.3.** (a) Draw neat diagrams to show different stages of meiosis in a cell, where diploid number of chromosomes is 6. (9)
(b) Describe the phenomenon of transcription. (7)
- Q.4.** (a) Discuss the mechanism of transport of carbon dioxide from tissue to lungs. (8)
(b) How are the nerve impulses pass through the nervous network. (8)
- Q.5.** (a) Develop a list of the hormones secreted by pituitary gland and indicate their target organs and effects. (10)
(b) Define excretion. What are the rationales for adapting to different excretory substances in different animal groups? (6)
- Q.6.** (a) Define Epistasis. Describe six basic types of epistatic reactions. (10)
(b) Define sex-linkage. Explain the phenomenon with one example. (6)

SECTION-II

- Q.7.** (a) Write an essay on possible origin of life. (12)
(b) "Fossils provide some important evidences of evolution". Discuss. (4)
- Q.8.** (a) "Hardy Weinberg Law provides the basis for modern synthesis on mechanism of evolution". Explain. (8)
(b) "Darwin and Wallace worked under identical conditions but in different areas to develop the theory of natural selection". Justify the statement. (8)
- Q.9.** (a) Define an ecosystem. Discuss the system considering the example of a pond as an almost complete ecosystem. (12)
(b) List four adaptations of animals to desert conditions. (4)

FEDERAL PUBLIC SERVICE COMMISSION



COMPETITIVE EXAMINATION FOR RECRUITMENT TO POSTS IN BS-17 UNDER THE FEDERAL GOVERNMENT, 2011

Roll Number

ZOOLOGY, PAPER-I

TIME ALLOWED:	(PART-I MCQs) 30 MINUTES	MAXIMUM MARKS: 20
THREE HOURS	(PART-II) 2 HOURS & 30 MINUTES	MAXIMUM MARKS: 80
NOTE: (i) First attempt PART-I (MCQs) on separate Answer Sheet which shall be taken back after 30 minutes.		
(ii) Overwriting/cutting of the options/answers will not be given credit.		

(PART-I MCQs) (COMPULSORY)

- Q.1. Select the best option/answer and fill in the appropriate box on the Answer Sheet. (1 x 20=20)**
- (i) The disease causing protozoan is:
(a) Amoeba (b) Paramecium (c) Stentor (d) Trypanosoma (e) None of these
- (ii) Binucleate protozoan is:
(a) Mastigo-amoeba (b) Toxoplasma (c) Didymium (d) Trichonympha (e) None of these
- (iii) Spicules in sponges are secreted by cells called:
(a) Chromocytes (b) Thesocytes (c) Scleroblasts (d) Spongoblast (e) None of these
- (iv) Which one of the following coelenterate is also called Portuguese-man of war:
(a) Hydra (b) Velella (c) Obelia (d) Physalia (e) None of these
- (v) Pseudocoelomate animals are:
(a) Coelenterates (b) Nematodes (c) Annelids (d) Arthropods (e) None of these
- (vi) Earth worm belongs to:
(a) Phylum platyhelminthes (b) Nematode (c) Mollusca (d) Arthropoda (e) None of these
- (vii) The number of arms in octopus is:
(a) Four (b) Six (c) Eight (d) Ten (e) None of these
- (viii) The excretor organ of cockroach is:
(a) Flame cell (b) Nephridia (c) Coxal gland (d) Green gland (e) None of these
- (ix) The compound eyes are present in:
(a) Cuttle fish (b) Sea urchin (c) Sea mouse (d) Honey bee (e) None of these
- (x) Balanoglossus belongs to:
(a) Hemichordata (b) Cephalochordata (c) Urochordata (d) Craniata (e) None of these
- (xi) The extinct vertebrates are:
(a) Elasmobranchi (b) Placodermi (c) Osteichthyes (d) All of these (e) None of these
- (xii) The type of scales found in shark is:
(a) Placoid scale (b) Ganoid scale (c) Cosmoid scale (d) Cycloid scale (e) None of these
- (xiii) All of the following animals have three chamber heart except:
(a) Uromastix (b) Snake (c) Wall lizard (d) Crocodile (e) None of these
- (xiv) An animal group having radially symmetrical adults but bilaterally larvae are:
(a) Annelids (b) Echinoderm (c) Chordates (d) All of these (e) None of these

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- (xv) Which one of the following is not an extra embryonic membranes?
(a) Pleura (b) Amnion (c) Chorion (d) Allantois (e) None of these
- (xvi) The egg laying mammals such as Duck billed platypus and spiny anteater are found in:
(a) Asia (b) North America (c) South America (d) Australia (e) None of these
- (xvii) Renal portal system is absent in:
(a) Mammals (b) Fish (c) Amphibian (d) Reptiles (e) None of these
- (xviii) Swim bladder is present in:
(a) Amphibia (b) Giant turtle (c) Sea snake (d) All of these (e) None of these
- (xix) Diencephalons is a part of:
(a) Circulatory system (b) Excretory system
(c) Nervous system (d) Respiratory system (e) None of these
- (xx) Microlecithal egg is found in:
(a) Reptiles (b) Birds (c) Amphibian (d) All of these (e) None of these

PART-II

- NOTE:**(i) **PART-II** is to be attempted on separate Answer Book.
(ii) **Attempt ONLY FOUR questions from PART-II, selecting TWO questions from each SECTION. All questions carry EQUAL marks.**
(iii) **Extra attempt of any question or any part of the attempted question will not be considered.**

SECTION - I

- Q.2.** (a) Describe reproduction in paramecium. (10)
(b) Explain the different kinds of spicules in porifera. (10)
- Q.3.** (a) Discuss polymorphism in coelenterates. (10)
(b) Explain the life cycle of obelia.. (10)
- Q.4.** (a) What are platelminths. (10)
(b) Describe the life cycle of any medically important platelminths. (10)
- Q.5.** Write short notes on: (5 x 4 = 20)
(a) Metamerism (b) Mouth parts of insects.
(c) Foot in Mollusca (d) Larvae of Echinoderm.

SECTION – II

- Q.6.** (a) Give an account of arterial system of pigeon. (10)
(b) Explain hepatic portal system. (10)
- Q.7.** (a) What is Gastrulation? Describe gastrulation in frog. (10)
(b) Write an essay on parental care in Mammals. (10)
- Q.8.** Write short notes on the following: (5 x 4 = 20)
(a) Hairs in Mammals (b) Development of bone
(c) Fish migration (d) Egg types.

FEDERAL PUBLIC SERVICE COMMISSION



COMPETITIVE EXAMINATION FOR RECRUITMENT TO POSTS IN BS-17 UNDER THE FEDERAL GOVERNMENT, 2011

Roll Number

ZOOLOGY, PAPER-II

TIME ALLOWED:	(PART-I MCQs) 30 MINUTES	MAXIMUM MARKS: 20
THREE HOURS	(PART-II) 2 HOURS & 30 MINUTES	MAXIMUM MARKS: 80
NOTE: (i) First attempt PART-I (MCQs) on separate Answer Sheet which shall be taken back after 30 minutes.		
(ii) Overwriting/cutting of the options/answers will not be given credit.		

(PART-I MCQs) (COMPULSORY)

- Q.1. Select the best option/answer and fill in the appropriate box on the Answer Sheet. (1 x 20=20)**
- (i) Which one of the enzyme is present in saliva:
(a) Tyaline (b) Pepsin (c) Enterokinase (d) Lipase (e) None of these
- (ii) Which one of the following act as Secondary Messenger after hormonal action on target cells:
(a) ATP (b) CTP (c) CAMP (d) ADP (e) None of these
- (iii) Besides nucleus of cell, which organelles also contain DNA?
(a) Golgibodies (b) Lysosome (c) Mitochondria (d) Cell Membrane (e) None of these
- (iv) Lysosome in a cell is responsible for:
(a) Autolysis (b) Autophagy (c) Intracellular digestion (d) All of these (e) None of these
- (v) ABO blood system in human is example of:
(a) Epistasis (b) Linkage (c) Polygenic inheritance (d) Multiple allele (e) None of these
- (vi) Who describe sex linkage in Drosophilla:
(a) Sutton (b) Garth Nicolson (c) Jhonathan Singer (d) Robertson (e) None of these
- (vii) The number of cranial nerves in man is:
(a) 8 (b) 10 (c) 12 (d) 14 (e) None of these
- (viii) Wings of Birds and fly are example of:
(a) Homologus organ (b) Analogus organ
(c) Vestigeal organ (d) All of these (e) None of these
- (ix) The main chemical composition of ribosome is:
(a) RNA + Protein (b) DNA + Protein
(c) Protein + Carbohydrate (d) Protein + Lipids (e) None of these
- (x) The hormone cortisone is secreted by:
(a) Pituitary gland (b) Ovary (c) Pancreas (d) Adrenal gland (e) None of these
- (xi) In pond ecosystem the primary consumer are:
(a) Zooplankton (b) Insect larvae (c) Fish (d) All of these (e) None of these
- (xii) The xx, xo sex determination mechanism is present in:
(a) Man (b) Grasshopper (c) Birds (d) All of these (e) None of these
- (xiii) The DNA replication is:
(a) Conservative (b) Semi conservative
(c) Dispersive (d) Equatorial (e) None of these

ZOOLOGY, PAPER-II

- (xiv) Which one of the following genetic disorder is dominant in man:
(a) Colour blindness (b) Haemophilia (c) Tay-Sachs (d) All of these (e) None of these
- (xv) The abiotic factor that bring sudden changes in ecosystem is:
(a) Light (b) Soil (c) Inorganic nutrients (d) Fire (e) None of these
- (xvi) In human, blood clotting is due to the presence of protein called:
(a) Albumin (b) Globulin (c) Haemoglobin (d) Actin (e) None of these
- (xvii) Male sex hormones are collectively known as:
(a) Estrogen (b) Androgen (c) Cortisone (d) Somatotrophic (e) None of these
- (xviii) Which one of the following is not a Membrane bound cell organelle:
(a) Mitochondria (b) Endoplasmic Reticulum
(c) Ribosome (d) Chloroplast (e) None of these
- (xix) The enzyme pepsin is present in:
(a) Pancreatic Juice (b) Bile (c) Saliva (d) Gastric Juice (e) None of these
- (xx) The change in species composition of a community over a long period of time is called:
(a) Food chain (b) Food web
(c) Ecological succession (d) Nich (e) None of these

PART-II

- | | |
|-----------------|--|
| NOTE:(i) | PART-II is to be attempted on separate Answer Book. |
| (ii) | Attempt ONLY FOUR questions from PART-II, selecting TWO questions from each SECTION. All questions carry EQUAL marks. |
| (iii) | Extra attempt of any question or any part of the attempted question will not be considered. |

SECTION - I

- Q.2.** (a) Describe the structure, chemical composition and function of Golgi complex. (10)
(b) Explain Transport mechanism of plasma membrane. (10)
- Q.3.** (a) Differentiate between Mitosis and Meiosis cell division. (10)
(b) Define linkage with examples. (10)
- Q.4.** (a) What are respiratory pigments? Describe haemoglobin in detail. (10)
(b) Explain digestion of protein. (10)
- Q.5.** (a) Describe the main component of nervous system (10)
(b) How nerve impulse is generated in neuron. (10)

SECTION - II

- Q.6.** (a) Explain the Darwin theory about evolution. (10)
(b) Give an account of species concept. (10)
- Q.7.** (a) Differentiate between complete and incomplete ecosystem. (10)
(b) Describe Air Pollution. (10)
- Q.8.** Write short notes on the following: (5 x 4 = 20)
- (a) Evolutionary trend (b) Phylogeny
(c) Multiple alleles (d) Fossils.

FEDERAL PUBLIC SERVICE COMMISSION



COMPETITIVE EXAMINATION FOR RECRUITMENT TO POSTS IN BS-17 UNDER THE FEDERAL GOVERNMENT, 2012

Roll Number

ZOOLOGY, PAPER-I

TIME ALLOWED:	(PART-I MCQs)	30 MINUTES	MAXIMUM MARKS: 20
THREE HOURS	(PART-II)	2 HOURS & 30 MINUTES	MAXIMUM MARKS: 80
NOTE: (i) Candidate must write Q.No. in the Answer Book in accordance with Q.No. in the Q.Paper . (ii) Attempt ONLY FOUR questions from PART-II , selecting TWO questions from EACH SECTION . All questions carry EQUAL marks. (iii) Extra attempt of any question or any part of the attempted question will not be considered.			

PART-II

SECTION-I

- Q.2** (a) Define parasitism. What are parasitic adaptations in platyhelminthes? (10)
(b) Discuss water circulating pathways in (i) an ascon sponge (ii) Sycon Sponge (10)
(iii) Lencon sponge. Illustrate answer with diagrams.
- Q.3** (a) Describe parasitism in Protozoa. (10)
(b) What are corals and coral reefs? What are different types of coral reefs? Discuss. Give suitable diagrams. (10)
- Q.4** (a) Describe feeding in bivalves and mechanism of food movement in cephalopoda digestive tract. Does it differ (cephalopod) from other molluscs. (10)
(b) Give an account of appendages and body divisions in crayfish. Give suitable diagrams. (10)

SECTION-II

- Q.5** (a) What are the variations in vertebrae in fishes, amphibians, reptiles, birds and mammals? Give diagrams. (10)
(b) Describe pronephros, mesonephros and metanephros kidneys in vertebrates. Illustrate answer with diagrams. (10)
- Q.6** (a) Discuss with suitable diagrams Amniote aortic arches. (10)
(b) Give description of primitive vertebrate heart and its diagram. (10)
- Q.7** (a) Describe Reflex arc and its action in mammalian spinal cord. Give diagrams. (10)
(b) Give Brief comparative account of structure of brain in fish, Amphibia, reptiles, birds and mammals. Give suitable diagrams. (10)
- Q.8** (a) Give a brief account of biting mechanism in snake. Give suitable diagram. (10)
(b) Illustrate answer with diagrams giving an account of different types of vertebrate eggs. (10)

FEDERAL PUBLIC SERVICE COMMISSION



COMPETITIVE EXAMINATION FOR RECRUITMENT TO POSTS IN BS-17 UNDER THE FEDERAL GOVERNMENT, 2012

Roll Number

ZOOLOGY, PAPER-II

TIME ALLOWED:	(PART-I MCQs)	30 MINUTES	MAXIMUM MARKS: 20
THREE HOURS	(PART-II)	2 HOURS & 30 MINUTES	MAXIMUM MARKS: 80
NOTE: (i) Candidate must write Q.No. in the Answer Book in accordance with Q.No. in the Q.Paper . (ii) Attempt ONLY FOUR questions from PART-II , selecting TWO questions from EACH SECTION . All questions carry EQUAL marks. (iii) Extra attempt of any question or any part of the attempted question will not be considered.			

PART-II

SECTION-I

- Q.2** (a) Describe the structure and function of ribosomes. (10)
(b) Describe the structure and function of endoplasmic reticulum. (10)
- Q.3** (a) In the respiratory mechanism explain transport of oxygen in the arterial blood. (10)
(b) How transport of carbon dioxide in blood takes place? Explain. (10)
- Q.4** (a) Under what conditions the following phenotypic ratios are obtained. (10)
(i) 9:7 (ii) 9:3:4 (iii) 13:3 (iv) 9:3:3:1
(b) Explain the following chromosomal aberrations and their evolutionary significance. (10)
(i) Deficiency (ii) Duplication (iii) Translocation (iv) Inversion
- Q.5** (a) Describe in detail glomerular filtration and glomerular filtrate. Illustrate your answer with suitable diagrams. (10)
(b) Discuss absorption in small intestine of different food constituents like carbohydrates, fats, water, lipids. Give suitable diagrams. (10)

SECTION-II

- Q.6** (a) What is the role of Natural Selection in biological process? Explain. (10)
(b) How would you compare Lamarck's theory of evolution and Darwin's concept of evolution? Explain. (10)
- Q.7** (a) Explain pond ecosystem with reference to: (10)
(i) A biotic substance (ii) Producer organisms (iii) Consumer organisms
(iv) Decomposers
(b) Give description of biogeochemical cycles: (10)
(i) Nitrogen cycle (ii) Phosphorous cycle
- Q.8** (a) Explain important features of Watson and Crick's model of DNA. (10)
(b) Explain transcription and the role of messenger RNA. (10)
- Q.9** (a) Write short notes on: (4 x 5=20)
(i) Linkage (ii) Habitat (iii) Biological Species (iv) Gene mutation

FEDERAL PUBLIC SERVICE COMMISSION



COMPETITIVE EXAMINATION FOR RECRUITMENT TO POSTS IN BS-17 UNDER THE FEDERAL GOVERNMENT, 2013

Roll Number

ZOOLOGY, PAPER-I

TIME ALLOWED:	(PART-I MCQs) 30 MINUTES	MAXIMUM MARKS: 20
THREE HOURS	(PART-II) 2 HOURS & 30 MINUTES	MAXIMUM MARKS: 80
NOTE: (i) First attempt PART-I (MCQs) on separate OMR Answer Sheet which shall be taken back after 30 minutes.		
(ii) Overwriting/cutting of the options/answers will not be given credit.		

PART-I ((MCQs) (COMPULSORY)

Q.1. (i) Select the best option/answer and fill in the appropriate Circle ● on the OMR Answer Sheet. (20x1=20)
(ii) Answers given anywhere, other than OMR Answer Sheet, shall not be considered.

- Metamerically segmented worms belong to phylum:
(a) Nematoda (b) Platyhelminthes (c) Annelida (d) None of these
- Which of the following is a multiflagellate Protozoa?
(a) Ceratium (b) Noctiluca (c) Leishmania (d) None of these
- Spicules are secreted by:
(a) Scleroblasts (b) Nematoblasts (c) Endoblasts (d) None of these
- Which of the following is a porous opening through which water enters the hydrocoel of an echinoderm?
(a) Pedicellaria (b) Tube feet (c) Madreporite (d) None of these
- The body cavity of most triploblastic animals formed by splitting the mesoderm into an outer and an inner layer is called:
(a) Coelentron (b) Coelom (c) Colon (d) None of these
- Compound eyes are found in:
(a) Platyhelminthes (b) Echinodermate (c) Mollusca (d) None of these
- Egg-laying mammals are placed in sub class:
(a) Metatheria (b) Prototheria (c) Theria (d) None of these
- Open circulatory system is found in:
(a) Birds (b) Earthworms (c) Cockroaches (d) None of these
- Bivalve molluscs are usually:
(a) Scavengers (b) Deposit feeder (c) Filter feeder (d) None of these
- The pillar or central axis around which the whorls of a gastropod shell are coiled is called:
(a) Columella (b) Collembola (c) Colloblasts (d) None of these
- The ninth vertebra of frog is known as:
(a) Cervical (b) Sacral (c) Urostyle (d) None of these
- The stage in an embryo in which the primary germ layers have been laid down is called:
(a) Gastrula (b) Blastula (c) Morula (d) None of these
- A fish which migrates down river to spawn in the sea is called:
(a) Anadromous (b) Catadromous (c) Dromiacea (d) None of these
- Which of the following has four-chambered heart?
(a) Dog fish (b) Frog (c) Pigeon (d) All of these
- Facets by which vertebrae articulate with one another are called:
(a) Metapophyses (b) Parapophyses (c) Zygapophyses (d) None of these

ZOOLOGY, PAPER-I

16. The inner membrane of the two foetal membranes in reptiles, birds and mammals is called:
(a) Amnion (b) Chorion (c) Peritoneum (d) None of these
17. Amphioxus is an example of:
(a) Urochordata (b) Cyclostomata (c) Hemichordata (d) None of these
18. Filarial worm (genus Wuchereria) belong to phylum:
(a) Nematoda (b) Platyhelminthes (c) Annelida (d) None of these
19. Notochord is formed from primary:
(a) Ectoderm (b) Mesoderm (c) Endoderm (d) All of these
20. Shell fish includes:
(a) Shrimp, Crabs and eel fish (b) Dog fish, crabs and lobsters
(c) Lobsters, crabs and shrimps (d) All of these

PART-II

- NOTE:** (i) **Part-II** is to be attempted on the separate **Answer Book**.
(ii) Candidate must write **Q. No.** in the **Answer Book** in accordance with **Q. No.** in the **Q. Paper**.
(iii) Attempt **ONLY FOUR** questions from **PART-II**, selecting **TWO** questions from **EACH SECTION**. **ALL questions carry EQUAL marks**.
(iv) Extra attempt of any question or any part of the attempted question will not be considered.

SECTION-A

- Q.2. (a) Give an account of life cycle of Fasciola hepatica. (10)
(b) Describe the various types of larval forms found in crustacea. (10)
- Q.3. (a) What is the difference between corallite and coral reef? Give a detailed account of the various forms of coral reefs. (10)
(b) Write an essay on parasitic adaptation in platyhelminthes. (10)
- Q.4. (a) Describe the morphology and microscopic structure of the shell of a gastropod mollusc such as Pila. (10)
(b) Describe the water vascular system of star fish. (10)
- Q.5. Write short notes on the following:- (5 each) (20)
(a) Binary fission in Paramecium (b) Flame cells
(c) Leishmaniasis (d) Spicules

SECTION-B

- Q.6. (a) Describe various types of heart found in the vertebrate. (10)
(b) Give an account of flight adaptation of birds. (10)
- Q.7. (a) Describe the pelvic girdle of frog with the help of labelled diagram. (10)
(b) Give a detailed structure of the eye of frog. (10)
- Q.8. Write short notes on the following:- (5 each) (20)
(a) Biting mechanism of snakes (b) Placenta
(c) Fish scales (d) Neuron

FEDERAL PUBLIC SERVICE COMMISSION



COMPETITIVE EXAMINATION FOR RECRUITMENT TO POSTS IN BS-17 UNDER THE FEDERAL GOVERNMENT, 2013

Roll Number

ZOOLOGY, PAPER-II

TIME ALLOWED:	(PART-I MCQs)	30 MINUTES	MAXIMUM MARKS: 20
THREE HOURS	(PART-II)	2 HOURS & 30 MINUTES	MAXIMUM MARKS: 80
NOTE: (i) First attempt PART-I (MCQs) on separate OMR Answer Sheet which shall be taken back after 30 minutes.			
(ii) Overwriting/cutting of the options/answers will not be given credit.			

PART-I ((MCQs) (COMPULSORY)

Q.1. (i) Select the best option/answer and fill in the appropriate Circle ● on the OMR Answer Sheet. (20x1=20)
(ii) Answers given anywhere, other than OMR Answer Sheet, shall not be considered.

- Which of these is a direct source of energy for muscle contraction?
(a) ATP (b) Creatine phosphate (c) Lactic acid (d) Glucose (e) None of these
- Muscle fatigue is caused by:
(a) CO₂ (b) Lactic acid (c) Fumaric acid (d) Ethyl alcohol (e) None of these
- The functional unit in a skeletal muscle is called:
(a) Actin filament (b) Sarcomere (c) Z line (d) Myosin filament (e) None of these
- We would describe the layered, flat, scaly epithelium of human skin as:
(a) Simple Squamous (b) Stratified Squamous (c) Stratified Columnar
(d) Pseudo Stratified Cuboidal (e) None of these
- Which of the following is not considered to be a tissue?
(a) Cartilage (b) Mucous membrane lining the stomach (c) Blood (d) Brain (e) All of these
- As a Zoologist you would look for looping movement in:
(a) Earthworms (b) Poly chaetes (c) Echinoderms (d) Leeches (e) None of these
- The elements of nervous system which help in co-ordination are:
(a) Receptors (b) Neurons (c) Effectors (d) All of these (e) None of these
- The distal ends of which of these neurons lie adjacent to blood stream:
(a) Afferent neurons (b) Efferent neurons (c) Inter neurons
(d) Neuro secretory neuron (e) All of these
- The electrical potential that exists across a cell membrane is:
(a) Resting membrane potential (b) Active membrane potential (c) Automatic potential
(d) All of these (e) None of these
- A nerve is a:
(a) Collection of neurons (b) Concentration of dendrites and axons
(c) Bundles of axons or dendrites of neurons
(d) Bundles of axons or dendrites bounded by connective tissues (e) None of these
- Which of these is a correct statement?
(a) All of the neurons are excitable (b) All of the neurons can transmit impulses across their membrane
(c) Transmission of nerve impulses is always unidirectional (d) All of these statements
(e) None of these
- Sodium-Potassium pump operates with the help of which of these enzymes:
(a) Na⁺ – K⁺ ATPase (b) Phosphatase (c) Isomerase (d) Hydrolase (e) None of these
- Name of the chemical messengers released to the exterior of one animal that affect the behaviour of another individual of the same species:
(a) Neuropeptides (b) Neurohormones (c) Pheromones (d) Neurotransmitters (e) None of these

ZOOLOGY, PAPER-II

14. Hormones that the Thyroid gland secretes are:
(a) Proteins (b) Amines (c) Steroids (d) Carbohydrates (e) All of these
15. Thyroxine is:
(a) An enzyme (b) A hormone (c) A vitamin (d) An excretory waste (e) None of these
16. Development of Secondary Sexual characters in a female is controlled by:
(a) STH (b) Androgens (c) TSH (d) Estrogens (e) None of these
17. Insulin is a hormone which is secreted by:
(a) Islet of langerhans and regulates glucose level in blood (b) Thyroid and regulates growth
(c) Adrenals and regulates heart beat (d) Pituitary and regulates reproduction (e) None of these
18. Hormone responsible for regulation of calcium and phosphorous is secreted by:
(a) Thyroid (b) Para-thyroid (c) Adrenals (d) Thymus (e) None of these
19. A hormone responsible for conversion of glucose into glycogen within the liver is called:
(a) Secretin (b) Gastrin (c) Pancreozymin (d) Insulin (e) None of these
20. Fibrinogen is found in the:
(a) Bile and produced in liver (b) Blood and produced by RBCS
(c) Blood and produced in liver (d) Bone and produced in bone marrow (e) None of these

PART-II

- NOTE:** (i) **Part-II** is to be attempted on the separate **Answer Book**.
(ii) Candidate must write **Q. No.** in the **Answer Book** in accordance with **Q. No.** in the **Q. Paper**.
(iii) Attempt **ONLY FOUR** questions from **PART-II**, selecting **TWO** questions from **EACH SECTION. ALL questions carry EQUAL marks.**
(iv) Extra attempt of any question or any part of the attempted question will not be considered.

SECTION-A

- Q.2.** Describe the phenomenon of Mitotic Cell division in animals. (20)
- Q.3.** Define an allele. Explain Mendel's principle of Independent assortment with examples. (20)
- Q.4.** What do you know about sex-linked inheritance? Explain with examples. (20)

SECTION-B

- Q.5.** Do you believe in "Evolution". Give evidences in favour of the theory. (20)
- Q.6.** Define bio-geochemical cycles. Explain 'Nitrogen' cycle diagrammatically. (20)
- Q.7.** What is Darwinism? Differentiate it from Lamarkism. What do you know about the synthesis of Darwinian theory with population genetics? (20)
- Q.8.** Describe various interactions among animal populations (20)



FEDERAL PUBLIC SERVICE COMMISSION
COMPETITIVE EXAMINATION FOR
RECRUITMENT TO POSTS IN BS-17
UNDER THE FEDERAL GOVERNMENT, 2014
ZOOLOGY, PAPER-I

Roll Number

TIME ALLOWED:	(PART-I MCQs) 30 MINUTES	MAXIMUM MARKS: 20
THREE HOURS	(PART-II) 2 HOURS & 30 MINUTES	MAXIMUM MARKS: 80

- NOTE:**(i) **Part-II** is to be attempted on the separate **Answer Book**.
(ii) Attempt **ONLY FOUR** questions from **PART-II**, selecting **TWO** questions from EACH SECTION. **ALL questions carry EQUAL marks**.
(iii) Candidate must write **Q. No.** in the **Answer Book** in accordance with **Q. No.** in the **Q. Paper**.
(iv) No Page/Space be left blank between the answers. All the blank pages of Answer Book must be crossed.
(v) Extra attempt of any question or any part of the attempted question will not be considered.

PART-II

SECTION-I

- Q. No. 2.** (a) Write an essay on parasitic zoonosis. **(10 each) (20)**
(b) Describe protozoan parasites of public health importance.
- Q. No. 3.** (a) Describe parasitic adaptation in platyhelminthes. **(10 each) (20)**
(b) Compare the structure and function of water vascular system of asteroids, Ophiuroids and crinoids.
- Q. No. 4.** (a) What is torsion and shell coiling? Describe their effects on gastropod structure and function. **(10 each) (20)**
(b) Describe digestive system of insects with the help of suitable labelled diagram.
- Q. No. 5.** Write short notes on the followings: **(5 each) (20)**
(a) Toxoplasmosis (b) Metamorphosis
(c) Parthenogenesis (d) Parasitasis

SECTION-II

- Q. No. 6.** (a) Describe types of vertebrate neurons with the help of suitable labelled diagrams(s). **(20)**
(b) Discuss various types of fish scales. **(10 each)**
- Q. No. 7.** (a) Describe biting apparatus of a poisonous snake and explain the biting mechanism. **(20)**
(b) Describe various types of primitive vertebrate heart. Illustrate answer with labelled diagram. **(10 each)**
- Q. No. 8.** Write short notes on the followings: **(5 each) (20)**
(a) Birds Migration and Navigation (b) Crocodiles and Alligators
(c) Turtles and Tortoises (d) Marsupials and Monotremes



FEDERAL PUBLIC SERVICE COMMISSION
COMPETITIVE EXAMINATION FOR
RECRUITMENT TO POSTS IN BS-17
UNDER THE FEDERAL GOVERNMENT, 2014
ZOOLOGY, PAPER-II

Roll Number

TIME ALLOWED: THREE HOURS	(PART-I MCQs)	30 MINUTES	MAXIMUM MARKS: 20
	(PART-II)	2 HOURS & 30 MINUTES	MAXIMUM MARKS: 80

- NOTE:**(i) **Part-II** is to be attempted on the separate **Answer Book**.
(ii) Attempt **ONLY FOUR** questions from **PART-II**, selecting **TWO** questions from each Section. **ALL questions carry EQUAL marks.**
(iii) Candidate must write **Q. No.** in the **Answer Book** in accordance with **Q. No.** in the **Q. Paper**.
(iv) No Page/Space be left blank between the answers. All the blank pages of Answer Book must be crossed.
(v) Extra attempt of any question or any part of the attempted question will not be considered.

PART-II

SECTION-I

- Q. No. 2.** (a) Describe in detail the process of fat absorption in the small intestine. **(10 each) (20)**
(b) Name and describe the major roles of the hormones secreted by Anterior and Posterior Pituitary glands.
- Q. No. 3.** (a) Describe the structure and Function of Mitochondria. **(10 each) (20)**
(b) Discuss the Fluid Mosaic Model of cell membrane.
- Q. No. 4.** (a) Explain the law of Independent Assortment with the help of suitable examples.
(b) Write a note on Genetic Engineering. **(10 each) (20)**
- Q. No. 5.** (a) Explain the composition and important roles of plasma in the human body. **(10 each) (20)**
(b) Discuss the physiology of glomerular filtration and composition of the glomerular filtrate.

SECTION-II

- Q. No. 6.** Write an essay on sources of environmental pollution and their impacts on biodiversity and human health. **(20)**
- Q. No. 7.** (a) Elaborate the modern concept of natural selection with suitable examples. **(10 each) (20)**
(b) Discuss the Lamark's theory of Evolution.
- Q. No. 8.** Describe the physiologic anatomy of synapse. Discuss also special characteristics of synaptic transmission. **(20)**
