

# FEDERAL PUBLIC SERVICE COMMISSION

## COMPETITIVE EXAMINATION FOR RECRUITMENT TO POSTS IN B UNDER THE FEDERAL GOVERNMENT, 2004.

### ZOOLOGY, PAPER-I

**TIME ALLOWED: THREE HOURS**

**MAXIMUM MARKS: 100**

**NOTE:** Attempt FIVE questions in all, including QUESTION NO. 7 which is **COMPULSORY**. Select TWO questions from each of the SECTIONS I AND II. All questions carry EQUAL marks. Write clearly.

#### SECTION - I

1. (a) Give a brief account of Pathogenic Protozoa. (7)  
(b) Describe different types of Canal System found in Sponges. (7)  
(c) "In Tapeworm True Segmentation is absent". Comment. (6)
2. (a) "Polyp and Medusa are strictly homologous structures". Justify the statement. (7)  
(b) Tracheal apparatus of insects and those of Arachnids are essentially different. Discuss the above statement. (6)  
(c) Give an account of Podium in Mollusca. (7)
3. Write short notes on the following: (5 each)  
(a) Schizocoel (b) SECONDARY Segmentation  
(c) Echinoderm Larvae (d) Water Vascular System in Echinoderms

#### SECTION - II

4. (a) "Hemichorda" should not be included in Chordata. Justify the statement. (8)  
(b) "Amphioxus" is certainly related to Ancestral vertebrates. Comment upon the statement. (12)
5. (a) Discuss the Evolution of Aortic Arches in different vertebrate groups. (8)  
(b) Discuss Birds as a flying Machine. (12)
6. (a) Briefly describe the structure, formation and function of "Placenta" in Mammals. (12)  
(b) Amplify the statement that Monotremes show a mixture of Mammalian and Reptilian characters. (8)

#### COMPULSORY QUESTION

7. Write only the correct answer in the Answer Book. Do not reproduce the question.
  - (1) Despite the structural diversities they are characterized by having soft body protected by calcareous shell developing from the mantle layer.  
(a) Corals (b) Foraminiferous  
(c) Molluscs (d) None of these
  - (2) The members of the phylum are exclusively Marine:  
(a) Porifera (b) Coelenterata  
(c) Echino-dermata (d) None of these
  - (3) How many paired legs are present in Arachnids:  
(a) 2 pairs (b) 3 pairs (c) 4 pairs (d) None of these
  - (4) A true Coelom is absent in:  
(a) Platy helminthes (b) Mollusca  
(c) Insecta (d) None of these
  - (5) A single aperture is present in:  
(a) Nematoda (b) Cnidaria (c) Annelida (d) None of these

**ZOOLOGY, PAPER I:**

- (6) The following represents Enterocoelous phylum:  
(a) Annelida (b) Mollusca  
(c) Echinodermata (d) None of these
- (7) It is exclusively a Parasitic group:  
(a) Ciliata (b) Mastigophora (c) Phizopoda (d) Sporozoa  
(c) None of these
- (8) Most species of Animal Kingdom belong to this Class:  
(a) Acazina (b) Hexapoda (c) Crustacea (d) None of these
- (9) Insect mouth parts are serially homologous:  
(a) Claspers (b) Sting apparatus (c) Cerci  
(d) legs (e) None of these
- (10) The only groups of animals which are diploblastic in nature:  
(a) Platy helminthes (b) Coelentrata  
(c) Porifera (d) None of these
- (11) The phenomenon in which larva becomes sexually mature:  
(a) Retrogressive Metamorphosis (b) Neoteny  
(c) Both (a) and (b) (d) None of these
- (12) Amphibians have the following number of chambers in their heart:  
(a) Two (b) Three (c) Four (d) Five  
(e) None of these
- (13) The Young are born in less developed condition:  
(a) Monotremes (b) Marsupials  
(c) Placentals (d) None of these
- (14) Limbs of Sea Cows and Sea loins are the product of:  
(a) Convergent Evolution (b) Divergent Evolution  
(c) Parallel Evolution (d) None of these
- (15) In these animals the teeth are reduced to molars without enamel or no teeth are present:  
(a) Moles (b) Bats (c) Sloths (d) None of these
- (16) Only hind limbs are lost in:  
(a) Snakes (b) Whales (c) Bats (d) None of these
- (17) Among the following which snake is non-poisonous:  
(a) Krait (b) Python (c) Viper (d) None of these
- (18) Which one is excluded from the Phylum Chordata:  
(a) Urochordata (b) Hemichordata  
(c) Cephalochordata (d) None of these
- (19) The earliest known species of birds is:  
(a) Archaeopteryx (b) Hesperornis  
(c) Ichthyornis (d) None of these
- (20) A muscular diaphragm helps to move air into and out of the lungs in:  
(a) Amphibians (b) Reptilians  
(c) Avians (d) Mammalians  
(e) None of these

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# FEDERAL PUBLIC SERVICE COMMISSION

## COMPETITIVE EXAMINATION FOR RECRUITMENT TO POSTS IN BPS-17 UNDER THE FEDERAL GOVERNMENT, 2004.

### ZOOLOGY, PAPER-II

**TIME ALLOWED: THREE HOURS**

**MAXIMUM MARKS: 100**

NOTE:

Attempt **FIVE** questions in all, including **QUESTION NO. 8** which is **COMPULSORY**. All questions carry **EQUAL** marks. Write clearly.

1. (a) Give a diagrammatic representation of the structure of the mitochondrion and its molecular skeleton to show its association with ELECTRON TRANSPORT and OXIDATIVE PHOSPHORYLATION. (12)
- (b) Define "Respiration", and "EXTERNAL" and "INTERNAL" RESPIRATION. HOW THE AIR CONDUCTING PASSAGE WAYS and the Respiratory MEMBRANES function to achieve these goals. (8)
2. (a) How "GENETIC MAPS" OF CHROMOSOMES are constructed in *Drosophila*. What techniques should be used in man for this purpose? (12)
- (b) Could "NATURAL SELECTION" alone produce "SPECIATION" in natural populations. (8)
3. (a) Differentiate between physical and chemical regulation of body temperature (8)
- (b) Explain the meaning of "Conduction", "Convection" and radiation in relation to the loss of heat from the body. (12)
4. (a) Is there any truth in "NEO LAMARCKISM"? HOW "BALDWIN EFFECT" fits in this concept? (12)
- (b) Briefly describe Polyploidy as a method of origin of species. (8)
5. (a) Differentiate between Immunity against a disease and Resistance against a pesticide in natural populations. (12)
- (b) Define "INDUSTRIAL MELANISM". Explain why in a polluted area near Birmingham, U.K., most of the specimens of peppered moth are melanic but in countryside these are typical light coloured. (8)
6. (a) Define "PESTICIDAL POLLUTION". In how many ways does it effect the human health? (8)
- (b) Show as to how complementary interactions of two independent pairs of ALLELES in seed colour in corn or coat colour in RODENTS modify the "MENDELIAN RATIO" of independent assortment. Do these modified ratios in fact disprove "Mendelian Second Law of Independent Assortment"? (12)
7. Write short notes on the following: (5 each)
  - (a) Genetic drift
  - (b) Aggressive Mimicry
  - (c) Acid rain
  - (d) Chemogeny

### COMPULSORY QUESTION

8. Write only the correct answer in the Answer Book. Do not reproduce the question.
  - (1) "Chiasma" formation could be seen first time in the following stage/sub stage of Meiosis:
    - (a) Leptotene
    - (b) Zyototene
    - (c) Pachytene
    - (d) Diplotene
    - (d) None of these
  - (2) In protein synthesis each triplet code binds itself with one:
    - (a) Phosphate molecule
    - (b) enzyme
    - (c) amino acid molecule
    - (d) lipid molecule
    - (d) None of these

**ZOOLOGY, PAPER-II:**

- (3) For the rapid production of antibody in the precipitance test involving a rabbit one of the following animals could be used:  
(a) Frog (b) Lizard (c) Fowl (d) None of these
- (4) In *Drosophila* very rarely father transmit his sex-linked trait to his normal son (in a cross of white-eyed female with red-eyed male):  
(a) in the case of primary non-disjunction.  
(b) in the case of secondary non-disjunction  
(c) in the case of a normal cross  
(d) None of these
- (5) 13 : 3 Ratio in "F<sub>2</sub>" is obtained in the case of:  
(a) Complementary genes for colours in corn (b) Coat colours in rodents  
(c) In epistatic genes (d) None of these
- (6) Crossing over rarely or never takes place in the male of:  
(a) mice (b) poultry (c) man  
(d) *Drosophila* (e) None of these
- (7) XXY individual in *Drosophila* is phenotypically:  
(a) Male (b) Female (c) Inter sex (d) None of these
- (8) Fossils of which of these first living organisms were found:  
(a) Protozoan (b) Algae (c) Virus (d) None of these
- (9) Which of these are exclusively functional proteins:  
(a) Hormones (b) Enzyme (c) Plasma (d) None of these
- (10) Phylogeny represents the history of an organism:  
(a) Evolutionary (b) Embryonic  
(c) Both (a) and (b) above (d) None of these
- (11) Sickle Cell trait is found in:  
(a) Homozygous (b) Heterozygous  
(c) Both (a) and (b) above (d) None of these
- (12) The first living and respiring organism on earth were:  
(a) aerobes (b) anaerobes  
(c) Both (a) and (b) above (d) None of these
- (13) The major portion of digestion takes place in the:  
(a) Stomach (b) In the small intestine  
(c) In the large intestine (d) None of these
- (14) Practically all absorption of digested food occurs in:  
(a) large intestine (b) small intestine  
(c) Both (a) and (b) above (d) None of these
- (15) Sibling species are produced as a result of:  
(a) Allopatric speciation (b) Sympatric speciation  
(c) Both (a) and (b) above (d) None of these
- (16) In the days just after its formation the earth had:  
(a) Reducing atmosphere (b) Oxidative atmosphere  
(c) Both (a) and (b) above (d) None of these
- (17) Zygotes containing "XY" are females in:  
(a) *Drosophila* (b) in moths  
(c) in grasshoppers (d) None of these
- (18) The "Y" Chromosome is sexually neutral in:  
(a) man (b) in *Drosophila*  
(c) in moth (d) None of these
- (19) Marsupials are found in:  
(a) Only Australian region (b) in Near arctic and Neotropical regions  
(c) in both (a) and (b) above (d) None of these
- (20) In which stage of Meiosis Centromeres of each dyad divides:  
(a) Metaphase I (b) Metaphase II  
(c) Anaphase I (d) Anaphase II  
(e) None of these

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