

# RAJASTHAN PRE MEDICAL TEST 2008

## Syllabus

### ZOOLOGY

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#### UNIT- I

##### **Evolution and Systematic:**

Origin of life (Oparin-Haldane theory, Muller-Urey experiment), Concept of evolution, Pre Darwinian theories of evolution including theory of special creation, Greek theories, theory of spontaneous generation or abiogenesis, hypothesis of panspermia or cosmozoic theory and theory of catastrophism, Modern theory of evolution, Evidences in Favor of Organic Evolution, Process of Evolution (Variation, Isolation, Natural selection, Origin of species), Evolution of Man.

**Systematic:** Basis of Classification, symmetry, grades of organization, germ layers, coelom, segmentation, embryogenesis, phylogenetic relationship. Modern concept of species, taxonomic hierarchy, Nomenclature (Binomial and Trinomial), Two, three and five kingdom systems of classification.

#### UNIT – II

##### **Diversity of Life – Non Chordates:-**

Characters and classification of Non-Chordata up to classes and brief idea of the habit, habitat, structure and physiology of the common representative examples wherever indicated:-

<b>Protozoa</b>	:	<i>Euglene, Amoeba, Entamoeba, Paramecium, Plasmodium</i>
<b>Porifera</b>	:	<i>Sycon</i>
<b>Coelenterata</b>	:	<i>Hydra</i>
<b>Platyhelminthes</b>	:	<i>Fasciola, Taenia</i>
<b>Aschelminthes</b>	:	<i>Ascaris</i>
<b>Annelida</b>	:	<i>Pheretima</i>
<b>Arthropoda</b>	:	<i>Periplanata</i>
<b>Mollusca</b>	:	General account
<b>Echinodermata</b>	:	General account
<b>Hemichordata</b>	:	General account

#### UNIT – III

##### **Diversity of Life – Chordates:-**

Characters and classification of Chordata up to classes and brief idea of the habit, habitat, structure and physiology of the common representative examples wherever indicated:-

<b>Protochordata</b>	:	General account
<b>Pisces</b>	:	General account
<b>Amphibia</b>	:	Frog
<b>Reptilia</b>	:	Lizard, Snakes
<b>Aves</b>	:	Flightless and flying Birds
<b>Mammal</b>	:	General account.

## UNIT- IV

### **Ecology and Environment:-**

Concept, meaning and scope of Ecology, Biotic and abiotic components of environmental, Interactions between the organism and the environment, Ecological adaptations, Inter and intra-specific relationships, Concept of species and population, Community, Ecosystem and biosphere, Structure and functions of an ecosystem: energy flow, productivity, biogeochemical cycles, food chain, food web, ecological pyramids, Natural resources and their over-exploitation. Succession- General process, Hydrosere, Lithosere, concept of climax.

**Environmental Pollution:** Source, types (Air, Water, Soil, Noise, Radiation), Consequences and mitigation measures, Acid Rain, Global Warming, Green house effect and Ozone layer depletion.

**Natural Resource:** Their uses and conservation.

## UNIT V

### **Biochemistry:**

**Cell Energetics:** Laws of thermodynamics, Entropy and Enthalpy, Concept of free energy, Redox Reactions, Redox Potential, Electron transport pathway in living cell, oxidative phosphorylation, high energy compounds and energy coin of cell.

**Biochemistry of proteins:** Amino acids, structure of Protein. Enzyme- active sites, substrate specificity, enzyme classification, coenzymes, prosthetic groups, enzyme kinetics, inhibition, regulation of enzyme activity (Feed back control, Allosteric inhibitors and activators, Proteolysis).

**Biochemistry of Carbohydrates:** Aldoses and ketoses, stereoisomerism, Fischer's projection, Haworth projection or ring structures. Mono, Di and Polysaccharides, Glycogen, Starch, Cellulose. Glycolysis and Krebs's cycle. Glyconeogenesis, Hexose monophosphate pathway.

**Biochemistry of Lipids:** Structure, nomenclature and properties. Role of lipids in biological system. Cholesterol.

## UNIT VI

### **Genetics :**

Heredity, Mendel's laws of inheritance. Recent advances in Mendelism. Chromosomal basis of inheritance, Mendelian factors versus genes, Interaction of genes, Linkage, crossing over, sex linked inheritance, human ideogram, variations in chromosome number and form, mutation, Chromosomal aberrations, Genetic Disorder, Eugenics, Human Genome Project (brief introduction and significance).

## UNIT VII

### **Anatomy and Physiology:**

Anatomy and Physiology of digestive system (Including glands i.e. liver, pancreas, gall bladder), respiratory, circulatory, excretory, nervous and musculo- skeletal system, sense organs, integumentary system. Endocrine glands and their hormones (Pituitary, Thyroid, Parathyroid, Pancreas, Adrenal, Ovary, Testes, Placenta). Mechanism of Hormone Action.

## UNIT VIII

### **Anatomy and physiology of reproductive system and Developmental Biology:**

Structure and physiology of human male and female reproductive systems, reproductive cycles in human and non-human females, puberty, menarche and menopause; hormonal status of these life stages, implantation, pregnancy, parturition, lactation and its control.

Growth rate and growth curves, Hormonal control of growth.

Introduction and history of developmental biology, types of reproduction (asexual and sexual), concept of blastogenesis and embryogenesis, gametogenesis, types of eggs and egg membrane, fertilization – Cellular, physical and chemical events, parthenogenesis, cleavage and blastulation, fate-maps, gastrulation, development up to three germinal layers, differentiation and organogenesis, fate of germ layers, extra-embryonic membranes, placenta and its functions.

Aging and growth, regeneration, advance techniques in developmental biology – amniocentesis, IVF, ET, GIFT, ZIFT, ultrasound etc.

## UNIT IX

### **Animal Cell biology and biotechnology:**

Discovery of cell, microscopy in cell biology, ultra structure of typical animal cell, protoplasm and its significance, Recombinant-DNA technology, cloning vectors, Gene library, C-DNA library, Stem cell technique, animal cloning techniques and application, Transgenic Animals, Interferon, Hybridoma technique, Monoclonal Antibody formation, DNA fingerprinting. Bio-patent.

## UNIT X

### **Applied Zoology and Immunology:**

Apiculture, Sericulture, Pisciculture, Pearl culture, Poultry, Wool, Lac culture, Dairy industry. Human disease with reference to viral, bacterial, parasitic protozoan and helminthes. Insect affecting human health and crop insect pest management. Snake venom, AIDS (its prevention and possible cure), Hepatitis, Cancer and Oncogene.

**Immunology:** Definition, type, general defense against pathogens, Antigen, Antibody, Vaccination, Immune disorders, tissue/organ transplantation, Human population growth and population explosion, age and sex ratio, Human reproductive health, population as a resource, Addiction and addictive disorders, mental health. Biomedical tools and techniques in diagnosis and treatment.

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## Model Test Paper - Zoology

1. Which of the following gases was absent in free form when life originated on the earth?

- (a) Oxygen (b) Hydrogen  
(c) Methane (d) Ammonia, ( a )

निम्न में से कौनसी गैस पृथ्वी पर जीवन के उद्भव के समय स्वतंत्र रूप में अनुपलब्ध थी ?

- (क) आक्सीजन (ख) हाइड्रोजन  
(ग) मिथेन (घ) अमोनिया, ( क )

2. The small green alga that lives inside *Hydra* is called

- (a) Zoochlorella (b) Chlamydomonas  
(c) Euglena (d) Chlorella, ( a )

हाइड्रा के अन्दर पाए जाने वाले हरित शैवाल को कहते हैं -

- (क) जूक्लोरैला (ख) क्लैमाइडोमोनास  
(ग) युग्लिना (घ) क्लोरैला, ( क )

3. Ornithorhynchus is a

- (a) Dinosaur (b) Reptile  
(c) Fossil Bird (d) Monotremate mammal, ( d )

ओर्निथोर्किंस है एक -

- (क) डाइनोसौर (ख) सरीसर्प  
(ग) जीवाश्म पक्षी (घ) मोनोट्रिमेट स्तनधारी, ( घ )

4. Pedology is the science of

- (a) Human Diseases (b) Fossils  
(c) Soil (d) Crop Diseases, ( c )

पिडोलोजी, किससे सम्बन्धित विज्ञान है -

- (क) मानव रोग (ख) जीवाश्म  
(ग) मृदा (घ) फसल रोग, ( ग )

5. Ascorbic acid is a

- (a) Protein (b) Vitamin  
(c) Enzyme (d) Lipid, ( b )

एस्कॉर्बिक अम्ल है -

- (क) प्रोटीन (ख) विटामिन  
(ग) एन्जाइम (घ) वसा, ( ख )

6. The science of improving hereditary characters in human being is known as

- (a) Eugenics (b) Epigenesis  
(c) Metagenesis (d) Genetics, ( a )

विज्ञान की शाखा, जिसमें मनुष्य के आनुवंशिक गुणों का उन्नयन किया जाता है, को कहते हैं -

- (क) यूजैनिक्स (ख) एपीजिनिसिस  
(ग) मेटाजिनिसिस (घ) जैनेटिक्स, ( क )

7. The metal associated with haemoglobin is

- (a) Copper (b) Magnesium  
(c) Manganese (d) Iron, ( d )

हीमोग्लोबिन से सम्बंधित धातु है -

- (क) तांबा (ख) मैग्नीशियम  
(ग) मैंगनीज़ (घ) लोहा, ( घ )

8. In mammal, the fertilization is

- (a) Internal (b) External  
(b) Self (d) None of these, ( a )

मनुष्य में निषेचन का प्रकार है -

- (क) आंतरिक (ख) बाह्य  
(ग) स्वनिषेचन (घ) उपरोक्त में से कोई नहीं, ( क )

9. The term Mitochondria is coined by

- (a) Porter (b) Palade  
(c) De Duve (d) Benda, ( d )

माइटोकॉन्ड्रिया शब्द किसने दिया -

- (क) पोर्टर (ख) पैलाड  
(ग) डि डुवे (घ) बेन्डा, ( घ )

10. Interleukins are secreted by

- (a) T - lymphocyte (b) RBC  
(c) Macrophages (d) Platelets, ( a )

इन्टरल्यूकिन का स्रवण किससे होता है -

- (क) टी - लिम्फोसाइट से (ख) लाल रक्त कणिकाओं से  
(ग) भक्षक कोशिकाओं से (घ) प्लेटलेट्स से । ( क )