

**3/EH-63 (iii) (Syllabus-2015)**

**2016**

**( October )**

**ZOOLOGY**

**( Elective/Honours )**

**( Animal Physiology, Endocrinology  
and Biochemistry )**

**Marks : 56**

**Time : 3 hours**

*The figures in the margin indicate full marks  
for the questions*

Answer Question No. **1** and *any four* from the rest

**1.** Write in brief on any *three* of the following :

**4×3=12**

- (a) Significance of carbohydrates
- (b) Hormones of endocrine pancreas
- (c) Reflex action and reflex arc
- (d) Structure of mammalian heart
- (e) Induced-fit hypothesis of enzyme—  
Koshland to define the mechanism of  
enzyme-substrate binding

2. What is digestion? Discuss the mechanism of digestion and absorption of carbohydrates in mammals. 2+5+4=11
3. Describe the structure of a nephron with a suitable diagram. Explain the mechanism of urine formation in mammals with the help of a suitable diagram. 4+7=11
4. Describe the structure of the adrenal gland. Name the hormones secreted by this gland and state their important functions. 3+3+5=11
5. Briefly discuss the mechanism of transportation of long-chain fatty acids from the cytosol into the mitochondrial matrix for oxidation. Explain the pathway of  $\beta$ -oxidation of fatty acids and calculate the ATP yield from the oxidation of one mole of palmitic acid ( $C_{16}H_{32}O_2$ ). 3+7+1=11
6. What are vitamins? Write down the composition, source and functions of fat-soluble vitamins. 2+9=11
7. Write a note on sliding filament theory of skeletal muscle contraction with suitable diagrams. 3+8=11

8. Write short notes on any two of the following :  $5\frac{1}{2} \times 2 = 11$
- (a) Double-helical structure of DNA
- (b) Functions of mammalian blood
- (c) Important properties of enzymes
- (d) Ultrastructure of a neuron

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**( October )**

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**THIRD PAPER**

**( Animal Physiology, Endocrinology and  
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*Marks : 56*

*Time : 3 hours*

*The figures in the margin indicate full marks  
for the questions*

Answer Question No. **1** and *any four* from the rest

**1.** Write in brief on any *three* of the following :

$4 \times 3 = 12$

(a) Double-helical structure of DNA

(b) Water-soluble vitamins

(c) Reflex action

(d) Cofactors and coenzymes

(e) Functions of blood

2. Discuss with suitable diagrams the role of tracheal system of vertebrate lung in gaseous exchange. Explain the mechanism of carbon dioxide and oxygen transport in mammals.  $5+6=11$
3. Describe the structure of a synapse in vertebrate neural system. Explain the mechanism of synaptic transmission through a nerve in vertebrate.  $4+7=11$
4. Describe the structure of adrenal gland. What are the hormones secreted by this gland? Mention their functions. Discuss the diseases associated with abnormal secretion of adrenal hormones.  $3+4+4=11$
5. Describe the steps involved in tricarboxylic acid cycle, and name the enzymes and coenzymes involved in each step. What is the energy gain for each acetyl CoA oxidized by this cycle?  $10+1=11$
6. What is an active site of an enzyme? Describe the mechanism of enzyme action. Add a note on the factors affecting enzyme activity.  $1+6+4=11$
7. Classify proteins with suitable examples. Add a note on the significance of proteins.  $7+4=11$

8. Write short notes on any *two* of the following :  $5\frac{1}{2}\times 2=11$
- (a) Nucleotides and polynucleotides
- (b) Ultrastructure of skeletal muscle
- (c) Functions of gonadal hormones
- (d) Structure of mammalian heart

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for the questions*

Answer Question No. **1** and *any four* from the rest

**1.** Write in brief on any *three* of the following :

**4×3=12**

- (a) Neuroendocrine system in insects
- (b) Different types of RNA
- (c) Structure of nephron
- (d) Mechanism of gaseous exchange in a vertebrate lung
- (e) Physicochemical factors that affect enzyme activity

( 2 )

2. Describe the ultrastructure of skeletal muscle. Explain the mechanism of skeletal muscle contraction. 4+7=11
3. Classify carbohydrates with examples. Add a note on its significance. 7+4=11
4. Define hormone. Name the hormones secreted by pituitary gland and discuss their functions. 1+4+6=11
5. Mention the six major classes of enzymes. Explain each class of enzyme with examples. 4+7=11
6. What is glycolysis? Describe the sequential steps of glycolytic pathway mentioning the enzymes and coenzymes involved in each step. How many ATPs are produced after glycolysis? 1+9+1=11
7. Describe the composition and functions of mammalian blood. 6+5=11
8. Write short notes on any *two* of the following : 5½×2=11
  - (a) Cofactors and coenzymes
  - (b) Synaptic transmission
  - (c) Functions of thyroid hormones and the disease caused by abnormal secretions of the hormones

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**3/EH-63 (iii) (Syllabus-2015)**

**2019**

(October)

**ZOOLOGY**

( Elective/Honours )

THIRD PAPER

**( Animal Physiology, Endocrinology and  
Biochemistry )**

Marks : 56

Time : 3 hours

*The figures in the margin indicate full marks  
for the questions*

Answer Question No. **1** which is compulsory and  
**any four** from the rest

**1.** Write in brief on any **three** of the following :

4×3=12

- (a) Different types of RNA
- (b) Double-helical structure of DNA
- (c) Ultrastructure of a neuron
- (d) Functions of blood
- (e) Physico-chemical factors that affect enzyme activity

**2.** Define vitamin. Give a brief account of the fat-soluble vitamins, \* their sources and functions.

1+6+2+2=11

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( Turn Over )

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3. With labelled diagrams, describe the structure of a nephron and its role in the formation of urine.  $2+3+6=11$
4. Explain the ultrastructure of skeletal muscle. Elaborate the mechanism of contraction of skeletal muscle with suitable diagrams.  $5+6=11$
5. Define hormone. Name the gonadal hormones and discuss their functions.  $1+4+6=11$
6. Classify carbohydrates with suitable examples. Add a note on the significance of carbohydrates.  $7+4=11$
7. Name the six major classes of enzymes. Explain each class with appropriate examples.  $4+7=11$
8. Write short notes on any *two* of the following :  $5\frac{1}{2}\times 2=11$ 
  - (a) Cofactors and coenzymes
  - (b) Neuroendocrine system in insects
  - (c)  $\beta$ -oxidation of fatty acids
  - (d) Synaptic transmission