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[This question paper contains 4 printed pages.]

Your Roll No. 2024

Sr. No. of Question Paper : 1615

Unique Paper Code : 2232012303

Name of the Paper : Human Physiology: Life
Sustaining Systems / Discipline
Specific Core-9

Name of the Course : B.Sc. (Hons) Zoology Exam-
2023

Semester : II (NEP-UGCF)

Duration : 2 Hours

Maximum Marks : 60

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt **ANY FOUR** questions in all and Question no. 1 is compulsory.
3. Draw neat and well labelled diagrams wherever necessary.

1. (a) Define the following : (4)

- (i) Haldane effect
- (ii) Starling's law of heart
- (iii) Macula Densa
- (iv) Portal triad

(b) Expand the following abbreviations : (2)

- (i) MALT
- (ii) ENS
- (iii) Tm
- (iv) RDS

(c) Give the location and function of the following : (3)

- (i) Intercalated discs
- (ii) Mesangial cells
- (iii) Type II cells

(d) Fill in the blanks : (4)

- (i) ADH causes the insertion of _____ in the membrane of principal cells.

(ii) Endothelium derived relaxation factor is the other name for _____, a vasodilator produced by endothelial cells.

(iii) Action potential in cardiac muscle cells spreads by way of _____.

(iv) The percentage of total blood volume occupied by RBCs is called the _____.

(e) Give reasons/significance for the following: (2)

(i) Cardiac muscle cells don't get fatigued

(ii) Liver receives blood through a portal vein

2. (a) How are fats digested and absorbed in the alimentary canal? (9)

(b) Name the different enzymes from the pancreas along with their functions in detail. (6)

3. (a) Explain various mechanisms that control the regulation of blood pressure. (9)

(b) Depict the process of blood coagulation in the form of a self-explanatory flow chart. (6)

4. (a) How does the counter-current exchange mechanism help in the formation of dilute urine?
(8)
- (b) How do kidneys contribute to the acid-base balance of the body?
(7)
5. (a) How is oxygen transported by the blood? Write a note on Bohreffect.
(10)
- (b) What are the physiological adaptations to high altitude?
(5)
6. Write short notes on **any three** of the following :
(5×3=15)
- (i) Regulation of respiration
 - (ii) Conduction system of the heart
 - (iii) Salivary glands in Human
 - (iv) Juxtaglomerular apparatus

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Jun 2024

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Your Roll No.....



Sr. No. of Question Paper : 4164

Unique Paper Code : 2232011203

Name of the Paper : Human Physiology: Control
and Coordination Systems/
Discipline Specific Core- 6

Name of the Course : B.Sc (Hons) Zoology Exam-
2023

Semester : II – (NEP-UGCF)

Duration : 2 Hours

Maximum Marks : 60

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt any **FOUR** QUESTIONS in all and Question No. 1 is **COMPULSORY**.

1. (a) Define the following terms (**Any four**) : (4)

(i) Sertoli cells

(ii) Hyperpolarization

P.T.O.

- (iii) Sarcomere
 - (iv) Trigger zone
 - (v) Perimysium
- (b) Differentiate between the following : (4)
- (i) Myelinated vs Unmyelinated nerve fibre
 - (ii) Follicular phase vs Luteal phase
- (c) Give the location and function of the following : (3)
- (i) Islet of Langerhans
 - (ii) Sarcoplasmic reticulum
 - (iii) Nissl granules
- (d) Expand the following : (2)
- (i) PNS
 - (ii) FSH
 - (iii) EPSP
 - (iv) Ach

(c) Fill in the blanks : (2)

(i) _____ cells form the myelin sheath around the neurons of the PNS.

(ii) The mature and dominant follicle in the ovary is known as _____.

2. (a) What is action potential? Explain the generation of action potential in a neuron. (10)

(b) Explain the all or none principle of action potential. (5)

3. (a) What is Spermatogenesis? Explain the process of spermatogenesis. (10)

(b) Draw a well-labelled diagram of the mature mammalian sperm. (5)

4. (a) How does pancreas regulate the normal level of glucose in the blood? (10)

(b) Describe the negative feedback regulation of secretion of a hormone. (5)

5. (a) Discuss the role of ATP and calcium ions in the excitation-contraction coupling in a skeletal muscle [Th fibre with help of diagrams. (10)
- (b) Give a brief account of the physiological effect of Sr. the hormones secreted by the thyroid gland. (5) Un
6. Write short notes on any **three** of the following : Na (3×5=15) Na
- (a) Oogenesis
- (b) Sliding Filament mechanism Ser
- (c) Hypothalamo-hypophyseal portal system Du
- (d) Implantation In
- (e) Neuromuscular junction 1.

2.

3.

1.

(8)

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Your Roll No.



Sr. No. of Question Paper : 4126

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Unique Paper Code : 2232011202

Name of the Paper : Fundamentals of Biomolecules

Name of the Course : **B.Sc. (Hons) Zoology**
(DSC)

Semester : II

Duration : 2 Hours

Maximum Marks : 60

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt any **four** question including. Question No. 1 which is compulsory.
3. Draw well-labelled diagrams wherever necessary.

1. (a) Define the following (**Any five**) : (1×5)

(i) Isozymes

(ii) Trans fats

P.T.O.

(iii) RNA world hypothesis

(iv) C-value paradox

(v) Hyperchromic shift

(vi) Cofactor

(b) Expand the following (**Any five**) : (1×5)

(i) PUFA

(ii) GAG

(iii) siRNA

(iv) ADH

(v) LPS

(vi) IUBMB

(c) Differentiate between (**Any five**) : (1×5)

(i) Homotropic and heterotropic enzymes

(ii) Hydrolase and lyase

(iii) Configuration and conformation

(iv) Saturated and unsaturated fatty acids

(v) Glycoproteins and proteoglycans

(vi) Anomers and Epimers

2. Describe the salient structural features of B-DNA. Explain how reducing the water content around this molecule to about 75% would change its structure. Compare the two structures. (15)
3. Describe how Michaelis-Menten model can be modified in presence of different types of reversible inhibitors. Illustrate with suitable graphs. (15)
4. (a) Explain the various levels of structural organization of proteins with suitable illustrations. (10)
(b) Explain the physiological significance of derived lipids. (5)
5. (a) Discuss isomerism in carbohydrates with suitable examples. (12)
(b) Add a note on physiological importance of essential and non-essential amino acids. (3)

6. Write short notes on **any three** : (5×3)

- (a) Cot curves and their significance
- (b) Allosteric regulation
- (c) Membrane lipids
- (d) Ramachandran plot