

3 Hours

(100 Marks)

Instructions: Please check that you have got the CORRECT paper.

- (i) All questions are compulsory. Choice is internal
- (ii) Figures to the right indicate full marks.
- (iii) Draw structures and diagrams wherever necessary.

Q1A) State True or False:**(04)**

- (i) Smooth muscles exhibits auto-rhythmicity.
- (ii) A sarcomere extends from one M line to another M line.
- (iii) Apistrophe is an autonomic movement of locomotion.
- (iv) Insectivorous plants exhibit phototropic movement.

Q1 B) Answer any three of the following:**(09)**

- (i) Justify: Growth hormones cause hypertrophy and not hyperplasia in the skeletal muscle tissue.
- (ii) Briefly explain the myogram of a twitch contraction.
- (iii) Write a short note on nyctinastic movements in plants.
- (iv) A chilli plant sapling is fixed onto a clinostat. After 4-weeks the plant is uprooted. What would be the expected result of this particular experimental set-up and why?
- (v) Explain with an example how turgor pressure changes influence plant movements.
- (vi) Explain how the skeletal muscle fibre gets energy for a marathon?

Q1 C) Answer any two of the following:**(12)**

- (i) Write a detailed note on the role of different proteins in muscle contraction.
- (ii) Describe **any two** paratonic directional movements in plants.
- (iii) Discuss in detail the sliding filament model of muscle contraction.
- (iv) A plant always bends towards sunlight. Give detailed reasons/theories to support this kind of movement.

Q.2 A) State true or false:**(04)**

- (i) Nissl's granules are present in the axon.
- (ii) Sympathetic nervous system causes calming.
- (iii) Efferent nerves carry signal from sensory organ to brain
- (iv) Nerves extending from brain are spinal nerves

Q.2 B) Write short notes on any three of the following:**(09)**

- (i) Leak channels
- (ii) Autonomus nervous system
- (iii) Metabotropic receptor
- (iv) Saltatory conduction of nerve impulse
- (v) Myelin sheath
- (vi) Bipolar neurons

Q.2 C) Answer the any two of the following:**(12)**

- (i) Justify: The brain comprises of other cells besides the neuron.
- (ii) Describe the propagation of action potential.
- (iii) Write an elaborative note on biogenic amines as neurotransmitters.
- (iv) Describe the various types of synapses.

Q3 A) Name of the following:**(04)**

- (i) Precursor molecule for bile acid.
- (ii) Fraction of proteins to which immunoglobulins belong.
- (iii) Blood vessel in which lymph fluid drains.
- (iv) Substance that is reabsorbed in the thick segment of ascending limb of loop of Henle.

Q3 B) Answer any three of the following:**(09)**

- (i) Justify: "Counter current mechanism is responsible for the homeostasis of electrolytes".
- (ii) Elaborate on any two fractions of proteins separated during electrophoresis.
- (iii) Compare and contrast between hepatic bile and gall bladder bile.
- (iv) Why do burn patients suffer from edema? Elaborate on the hypothesis that explains the same.
- (v) With the help of a schematic diagram explain clot formation.
- (vi) Enumerate the functions of bile acids.

Q3 C) Answer any two of the following:**(12)**

- (i) State **two roles** of each: (a) Proximal convoluted tubule (b) Distal convoluted tubule and (c) Glomerulus.
- (ii) What are the three forces that drive the rate and direction of exchange of body fluids in the tissues?
- (iii) Elaborate on-'Urine as body fluid'.
- (iv) Write an informative note on gall stones.

Q4 A) Define any five of the following:**(10)**

- (i) Bile pigment (ii) Enterohepatic circulation (iii) Plasma (iv) Epinasty
- (v) Motor Unit (vi) Axon hillock (vii) Motor neurons

Q.4 B) Answer any three of the following:**(15)**

- (i) Compare and contrast: Isometric and Isotonic contractions.
- (ii) Elaborate on taxis movements in plants.
- (iii) Write a note on the two types of ion channels present on a neuron.
- (iv) Justify: Speed of nerve transmission is governed by many factors.
- (v) Elaborate on acidosis and alkalosis.
- (vi) Differentiate between lymph and blood.