

**Note:**

1. All the questions are compulsory. Choice is internal.
2. Figures to the right indicate full marks.
3. All questions carry equal marks.
4. Draw flowcharts/diagrams wherever necessary.

**Q.1A) State True or false:****(04)**

- (i) Histamine protein is a constituent of the nucleosome.
- (ii) RNA is a genetic material of prokaryotic organisms.
- (iii) In eukaryotic cells, DNA is found in linear form.
- (iv) Prokaryotic chromosomes contain single *ori* origin.

**Q.1B) Write short notes on: (Any three)****(09)**

- (i) Histone protein.
- (ii) Chromatin
- (iii) Telomere
- (iv) Nitrogen base
- (v) Kinetochore
- (vi) Solenoid model

**Q.1C) Answer of the following: (Any two)****(12)**

- (i) Explain in detail DNA supercoiling.
- (ii) Draw a neat and labelled diagram of centromere and explain about it.
- (iii) Explain in detail transformation in *S. pneumoniae*.
- (iv) Discuss in detail on chromosomal comparison of eukaryotic and prokaryotic.

**Q.2A) State True or False:****(04)**

- (i) Movement of plants near sunlight is called hydrotropism.
- (ii) Chloroplast plays a major role in muscle contraction.
- (iii) Isotonic and isotactic are types of muscle contractions.
- (iv) Movement of locomotion is where plants show slight bending and have fixed movement.

**Q.2B) Answer the following: (Any three)****(09)**

- (i) What is nutational movement?
- (ii) What is seismonastic movement? Explain with the help of an example.
- (iii) Which movement is shown by the dancing plant and why?
- (iv) What is the clinostat model? Explain with the help of a diagram.
- (v) What is the movement of muscles important?
- (vi) What is tetanus?

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

- (i) Explain geotropic movement in detail.
- (ii) Write a detailed note on types of muscle contractions.
- (iii) With the help of a diagram explain sliding movement of muscles.
- (iv) Draw and explain phototropism.



**Q.3A) State True or False:****(04)**

- (i) PNS consist of the brain and spinal cord.
- (ii) In action potential, polarization occurs through Na ion movement.
- (iii) The maximum potential difference in action potential is +30mv.
- (iv) Glutamate is an inhibitory neurotransmitter.

**Q.3B) Write short notes on: (Any three)****(09)**

- (i) Ligand gated ion channel.
- (ii) Neuron
- (iii) CNS
- (iv) Synaptic cleft
- (v) Repolarizing Phase
- (vi) Satellite cells

**Q.3C) Answer the following: (Any two)****(12)**

- (i) Explain in detail resting membrane potential.
- (ii) What is neuroglia? Explain its types.
- (iii) What is a neuron? Explain its classifications.
- (iv) Explain in detail inactivation of neurotransmitters..

**Q.4A) Define and explain: (Any five)****(10)**

- (i) Z-line
- (ii) Nucleoid
- (iii) Gene
- (iv) Impulse
- (v) Ion channel
- (vi) Isotonic muscle contraction
- (vii) Diffusion

**Q.4B) Write Short notes on: (Any three)****(15)**

- (i) \* Topoisomerase
- (ii) Centromere
- (iii) With the help of diagrams explain the structure of muscle.
- (iv) Distinguish between movement of locomotion and movement of curvature.
- (v) Electrical synaptic transmission
- (vi) Action potential

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