Control and Coordination

58. Write the main functions of the following:
(*a*) Sensory neuron (*b*) cranium (*c*) Vertebral column (*d*) motor neuron

2014/2015/2016 [2 Marks]

(*a*) **Sensory neuron**: It carries sensory impulse from the receptor like skin to the central nervous system.
(*b*) **Cranium**: It is the bony case around the brain which protects it from mechanical injury and shock.
(*c*) **Vertebralcolumn**: It is the protective bony covering around the spinal cord.
(*d*) **Motor neuron**: It carries motor impulse from the central nervous system to specific effectors (muscle fibres or gland cells etc.).

---

59. What are reflex actions? Give two examples. Explain a reflex arc.

2010/2012/2015 [3 Marks]

A reflex action is defined as an unconscious (without will) and involuntary response of effectors (muscles or glands) to a sudden stimulus. For example, we suddenly remove our hand on touching a very hot plate or if we accidentally step on something sharp, we move our foot away at once. In reflex arc, the message from a receptor is relayed by a sensory nerve to the spinal cord. The spinal cord sends orders through motor nerves to the concerned muscles. This is called a reflex arc. The muscles, on receiving orders, contract and the hand is removed in case our hand happens to touch a hot utensil.

---

60. State the function of the plant hormones. Name four different types of plant hormones.

2012/2013/2015/2016 [3 Marks]

In plants, some chemicals stimulate growth while some others retard the rate of growth. Such chemicals are termed as plant hormones.
The name and functions of different plant hormones are as follows:
(*i*) *Auxins* promote cell elongation, root formation, cell division, etc. They also promote fruit growth.
(*ii*) *Gibberellins* stimulate stem elongation, seed germination, and flowering.
(*iii*) *Cytokinins* help in breaking the dormancy of seeds and buds. They delay ageing in leaves. They also promotes the opening of stomata.
(*iv*) *Abscisicacid* promotes falling of leaves and fuits.
(*v*) *Ethylene* promotes ripening of fruits.

---

61. How dos feedback mechanism regulate the hormone secretion?

2010/2011/2013/2015/2016 [2 Marks]

The feedback mechanism regulates the timing and amount of hormone to be secreted, *e.g.*, if a person has more sugar in his blood, it is detected by the cells of the pancreas. As a result, more insulin will be secreted to control the sugar level. In the reverse situation, the secretion of insulin will be depleted.

---

62. Explain how the human body responds when adrenaline is secreted into the blood.

2010/2011/2012/2014/2016 [2 Marks]

When an organism confronts any scary situation, adrenaline is secreted from the adrenal gland and sent directly into the blood which is then circulated to various parts of the body, resulting into the following:

(a) The heart starts beating faster. As a result, more amount of oxygen is supplied to the muscles.

(b) The blood supply to the digestive system and the skin is reduced due to contraction of muscles around small arteries. This divers the blood to the skeletal muscles.

(c) The breathing rate also increases because of the contractions of the diaphragm and rib muscles.
