

## Short Questions

**Q.1 Identify the two types of co-ordination in living organisms.** (Board 2013)

**Ans.** There are two types of coordination in organisms:

- (i) Nervous coordination brought about by nervous system.
- (ii) Chemical coordination brought about by endocrine system.

**Q2. Differentiate between modes of nervous and chemical coordination's.**

**Ans.**

Sr. No.	Components	Nervous Coordination	Chemical Coordination
1	Stimulus	Sense Organs	Body part
2	Sending of message	Neuron	Blood
3	Coordinators	Brain and spinal cord	Endocrine gland
4	Form of message	Nerve impulse	Chemical
5	Response	Muscle or gland (effectors)	Bones, liver etc

**Q3. What are the main components of coordination?** (Board 2013)

**Ans.** A coordinated action has five components:

- (i) Stimulus
- (ii) Receptor
- (iii) Coordinator
- (iv) Effector
- (v) Response

**Q4. Define reflex action and reflex arc.**

**Ans. Reflex action**

When the involuntary response produced by the CNS is very quick, such response is called reflex action.

**Reflex arc**

The pathway followed by the nerve impulse for producing a reflex action is called reflex arc.

**Q5. Trace the path of a nerve impulse in case of a reflex action.**

**Ans.** Stimulus → Receptor → Coordinator → Effector → Response

**Q6. Describe the pupil reflex in dim and bright light.** 12(053)

**Ans.** Pupil constricts in bright light when the circular muscles of iris contract. Similarly, pupil dilates in dim light when the radial muscles of iris contract.

**Q7. How would you associate the role of vitamin A with vision and effects on retina?**

**Ans.** Rods contain a pigment called rhodopsin. When light falls on rhodopsin it breaks for generating a nerve impulse. In the absence of light, the break down products are again converted into rhodopsin. Body synthesizes rhodopsin from vitamin A and that is why the deficiency of vitamin A causes poor night vision.

**Q8. Define the terms hormone and endocrine system.**

**Ans. Hormone**

A hormone is a specific messenger molecule synthesized and secreted by an endocrine gland.

**Endocrine system**

The system which regulates the activities of growth, reproduction, maintenance of glucose concentration in blood, reabsorption of water in kidneys is called endocrine system.

**Q9. What is hypothalamus?**

**Ans. Introduction**

It lies above midbrain and just below thalamus. In humans it is roughly the size of an almond.

**Functions**

- (i) It links the nervous system and endocrine system.
- (ii) It controls the secretions of pituitary gland.
- (iii) It also controls feelings such as rage, pain, pleasure and sorrow.

**Q10. What is iodopsin?**

**Ans.** Cone cells in retina of eye contains a pigment known as iodopsin. Three types of cones have specific iodopsin. Each cone helps in recognizing three primary colours, i.e. red, blue and green.

**Q11. Define islets of Langerhans.**

**Ans.** Some portions of pancreas serve as ductless (endocrine) gland. This portion contains groups of endocrine cells referred to as islets of Langerhans. These islets secrete two hormones i.e. insulin and glucagon which maintain amount of glucose in the blood.

**Q12. What is nerve impulse?**

**Ans.** In nervous coordination, brain and spinal cord receive information and send messages through neurons in the form of nerve impulses. A nerve impulse is wave of electrochemical changes that travels along the length of neurons.

**Q13. What is tympanum?**

**Ans.** In the ear, auditory canal ends in tympanum (eardrum). This thin membrane separates external ear from middle ear.

**Q14. What is vitreous humour? (Board 2014)**

**Ans.** The iris divides the cavity of eye into two chambers. The posterior chamber is between iris and retina and contains a jelly-like fluid known as vitreous humour.

**Q15. Define Acromegaly.**

**Ans.** Abnormal growth due to excessive production of growth hormone after **growing age**, the internal organs and body extremities alone grow large and affected persons have large hands, feet and jawbones.

**Q16. Define Antidiuretic hormone.**

**Ans.** The hormone of the posterior pituitary which promotes the reabsorption of water in renal tubules.

**Q17. Define Aqueous humour.**

**Ans.** The fluid present in the anterior chamber of the eye i.e. between the cornea and the iris.

**Q18. Define Axon.**

**Ans.** A long fibre of neuron that carries nerve impulse away from the cell body of a neuron.

**Q19. Define Cell body.**

**Ans.** The part of the nerve cell that contains nucleus and cytoplasm.

**Q20. Define Cerebellum.**

**Ans.** The part of the hindbrain which controls muscle movements.

**Q21. Define Cerebral hemispheres.**

**Ans.** The division of the cerebrum of the brain into two parts called cerebral hemispheres.

**Q22. Define Cerebrospinal fluid (CSF).**

**Ans.** The fluid in the ventricles of the brain and in the central canal of the spinal cord is called CSF.

**Q23. Define Cerebrum.**

**Ans.** The largest part of the forebrain; controls many sensory and motor functions.

**Q24. Define Cochlea.**

**Ans.** The part of the inner ear; consists of three ducts wrapped in the form of a coiled tube, contains sound receptors.

**Q25. Define Colour blindness.**

**Ans.** Genetic disorder in which person fails to recognize the basic colours; blue, green and red.

**Q26. Define Cones.**

**Ans.** The photosensitive cells in the retina of the eye; sensitive to bright light and so distinguish different colours.

**Q27. What is choroid?**

**Ans.** The middle layer of eye is called choroid. It contains blood vessels and gives the eye a dark colour which prevents disruptive reflections within eye.

**Q28. Define Cornea.**

**Ans.** The transparent part of sclera that forms in the front of the eye through which light enters the eye.

**Q29. What are Cranial nerves?**

**Ans.** Nerves that arise from or lead to the brain.

**Q30. Define dendrites.**

**Ans.** Short and branched projections of neuron's cell body which transmit nerve impulse towards cell body are called Dendrites.

**Q31. What is Diabetes mellitus?**

**Ans.** More than normal level of glucose in blood, a condition caused by insufficient concentration of insulin in blood, is called diabetes mellitus.

**Q32. What is the cause of dwarfism?** (Board 2014)

**Ans.** Less than normal body growth; a condition caused when growth hormone is insufficient during the growing age.

**Q33. What is Ear drum or Tympanic membrane?**

**Ans.** Tympanic membrane; A membrane stretched across the inner end of the auditory canal of the ear is called eardrum.

**Q34. What are Effectors?**

**Ans.** The parts of the coordination system that respond when stimulated by nerve impulses or hormones.

**Q35. Define Endocrine gland.**

**Ans.** A ductless gland produces secretions which release directly into the blood stream is called endocrine gland.

**Q36. What is Epilepsy?**

**Ans.** A nervous disorder characterized by recurrent unprovoked seizures (convulsions).

**Q37. What is Epinephrine?**

**Ans.** It is also called adrenaline or emergency hormone it is secreted by adrenal gland.

**Q38. Define Estrogen.**

**Ans.** A hormone secreted by the ovaries; promotes development of female secondary sex characteristics and regulates the reproductive cycle.

**Q39. Define Eustachian tube.**

**Ans.** The tube between middle ear and the nasal cavity that equalizes the pressure on both sides of the eardrum.

**Q40. Define Exocrine gland.**

**Ans.** A gland that discharges its secretion into a duct e.g. digestive glands, skin glands.

**Q41. What is Ganglion?**

**Ans.** The aggregation of the cell bodies of neurons is called ganglion.

**Q42. Define Grey matter.**

**Ans.** The nervous tissue containing cell bodies and non myelinated processes of the neurons.

**Q43. Define Hormone.**

**Ans.** A substance that is secreted by an endocrine gland directly into blood and that produces a specific effect on a particular tissue. E.g., vasopressin, oxytocin, thyroxin etc.

**Q44. What is Hypermetropia?**

**Ans.** The condition in which a person is not able to see nearer objects clearly; the eyeball shortens and image is formed behind the retina.

**Q45. What is Hyperthyroidism?**

**Ans.** The over-production of thyroxin results in increase of energy production, increased heart-beat, frequent sweating and shivering of hands.

**Q46. What is Insulin?**

**Ans.** The hormone produced by the Islets of Langerhans; lowers the blood glucose level is called insulin.

**Q47. What is difference between sensory neurons and interneurons? (B-2014)**

**Ans. Sensory Neurons:**

Conduct sensory information (nerve impulse) from receptors towards the CNS, sensory neurons have one dendrites and one axon.

**Interneurons**

The neurons present in the brain and spinal cord are called Interneurons. They receive information, interpret them and stimulate motor neurons. They have many dendrites and axons.

**Q48. Define Iris.**

**Ans.** A muscular ring formed by the bending of the choroid behind the cornea of the eye.

**Q49. What is Medulla oblongata?**

**Ans.** Part of the hindbrain; on the top of the spinal cord; controls breathing, heart rate, blood pressure and many reflexes.

**Q50. What are Meninges?**

**Ans.** Three layers around the brain and the spinal cord; protect them and provide nutrients and oxygen through their capillaries.

**Q51. Define Mixed nerves.**

**Ans.** The nerves containing axons of both the sensory and motor neurons are called mixed nerves. e.g. all spinal nerves are mixed in nature.

**Q52. Define Motor nerves.**

**Ans.** The nerves which contain the axons of motor neurons only are called motor nerves.

**Q53. Define Myelin sheath.**

**Ans.** The insulating sheath around the axons of some neurons is called myelin sheath.

**Q54. What is Myopia.**

**Ans.** The condition in which a person is not able to see distant objects clearly; happens due to elongation of the eyeball and image is formed in front of retina.

**Q55. Define Nerve.**

**Ans.** The union of several axons that are enveloped by a covering made of lipid.

**Q56. Define Neuron.**

**Ans.** Nerve cell or neuron the unit of the nervous system; able to conduct nerve impulses is called neuron.

**Q57. What are nodes of Ranvier?**

**Ans.** The non-myelinated points between the areas of myelin on the axons of neurons.

**Q58. Define Optic disc.**

**Ans.** It is also called blind spot. It is a point on the retina of the eye where the optic nerve enters the retina; no photosensitive cells exist at this point.

**Q59. What is Oxytocin?**

**Ans.** The hormone secreted by the posterior lobe of pituitary gland; stimulates the contraction of uterus walls in females for child birth; necessary for ejection of milk from the breasts.

**Q60. What is Paralysis?**

**Ans.** Complete loss of function by one or more muscle groups due to damage in the nervous system is called Paralysis.

**Q61. Define Parathormone.**

**Ans.** This hormone of the parathyroid glands increases the level of calcium ions in the blood.

**Q62. Define Parathyroid gland.**

**Ans.** The endocrine glands located on the posterior sides of the thyroid gland secrete parathormone.

**Q63. Define Pituitary gland.**

**Ans.** The endocrine gland attached to the hypothalamus that controls many other endocrine glands in the body.

**Q64. What are Pons?**

**Ans.** Part of the hindbrain; present on top of the medulla; assists the medulla in controlling breathing and serves as a connection between the cerebellum and the spinal cord.

**Q65. Define Progesterone.**

**Ans.** A hormone secreted by ovaries that maintains the uterus during pregnancy is called progesterone.

**Define Pupil.**

The opening in the centre of the iris of the eye is called pupil.

**Define Receptors.**

The organs, tissues or cells which detect particular type of stimuli. e.g. eyes, ear etc.

**What is Reflex arc?**

The nerve pathway over which the nerve impulses travel in a reflex action.

**Define Retina.**

The innermost and the sensitive layer in the eye is called retina.



**Q70. Define Rhodopsin.**

**Ans.** A pigment present in the rods of the retina.

**Q71. What are Rods?**

**Ans.** The photosensitive cells present in the retina of the eye sensitive to dim light.

**Q72. What are Schwann cells?**

**Ans.** The supporting cells around neurons, form the myelin sheath.

**Q73. Define Sclera.**

**Ans.** The tough, white outer layer of the eye which protects the eye.

**Q74. What are Semicircular canals?**

**Ans.** The three canals present posterior to the vestibule in the inner ear.

**Q75. What are sensory nerves?**

**Ans.** The nerves which contain only the axons of sensory neurons.

**Q76. Define Somatotrophin.**

**Ans.** It is also called growth hormone. A hormone of the anterior lobe of pituitary gland promotes the growth of the body.

**Q77. What are Spinal nerves?**

**Ans.** The nerves which arise from the spinal cord.

**Q78. Define Suspensory ligament.**

**Ans.** The ring that attaches the lens of the eye to the ciliary muscles.

**Q79. What is Testosterone?**

**Ans.** The male sex hormone secreted by testis; stimulates the development of male reproductive system and the male secondary sex characteristics.

**Q80. Define Thalamus.**

**Ans.** The part of the forebrain; serves as a relay centre between various parts of the brain and spinal cord.

**Q81. What is Thyroid?**

**Ans.** The endocrine gland located in front of the trachea; secretes hormones, thyroxin and calcitonin.

**Q82. Define Thyroxin.**

**Ans.** The hormone of the thyroid gland increases the breakdown of food and release of energy; also responsible for the growth of body.

**Q83. What is Vasopressin?**

**Ans.** Antidiuretic hormone; the hormones secreted by the posterior lobe of pituitary gland; responsible for the reabsorption of water from renal tubules of the nephron.

**Q84. What is Vestibule?**

**Ans.** Part of the inner ear, helps to maintain balance of the body.

**Q85. Define Brain stem.**

**Ans.** The medulla oblongata, pons and midbrain connects the rest of brain to spinal cord. This is called brain stem.

**Q86. What is nerve-growth factor?**

**Ans.** Unlike ordinary cells, mature neurons never divide. But a protein called nerve-growth factor promotes the regeneration of broken nerve cells. The degenerating brain cells could be repaired by using embryonic stem cells.

**Q87. What do you know about deafness?**

**Ans. Introduction**

It is a state in which hearing is not possible.

**Causes**

- (i) The defect of ear drum, cochlea, middle ear, ossicles or auditory nerve may cause deafness.
- (ii) Infection in Eustachian tube may spread to middle ear too.
- (iii) Ear drum may be damaged by an infection in auditory canal.
- (iv) Excessive noise, strong blows on cheek, pointed objects entering auditory canal and attack from insects may also affect hearing.

**Q88. How thundering and lightning is produced?**

**Ans.** A thunderstorm is characterized by the presence of lightning and a thunder.

**(a) Lightning**

The lightning is caused by an electrical charge due to the movement of water droplets or crystals carried by wind.

**(b) Thunder**

The sudden increase in pressure and temperature from lightening produces a sound of thunder.

**Q89. Why the flash of lightning is followed after some seconds by a roar of thunder?**

**Ans.** This time difference is due to the fact that sound travels slower than light.

**Q90. What are the functions of hormones in animals?**

**Ans.** Following are the functions of hormones in animals:

- (i) Stepwise process of metamorphosis
- (ii) Cell division in invertebrates
- (iii) Migration in birds

**Q91. Why the urine output is low in summer?**

**Ans.** Due to increased sweating, the water level of blood is lowered. As a result, pituitary gland releases more Antidiuretic hormone (ADH) into blood which lowers the amount of urine.

**Q92. What is Tetany?**

**Ans.** It is marked by sharp flexion of the wrist and ankle joints, muscle twitching, cramps and convulsions. It is due to decreased blood calcium level.



**Q93. What is BGC test?**

**Ans.** The amount of glucose in blood is measured by BGC (Blood Glucose Concentration test). It is used to diagnose diabetes. The blood glucose concentration is maintained at the rate of 80 to 120 mg per 100 ml of blood.

**Q94. Why the eyes of cat and dog shine in the night?**

**Ans.** The reason for this is the presence of tapetum behind the eye which is a layer capable of reflecting light.



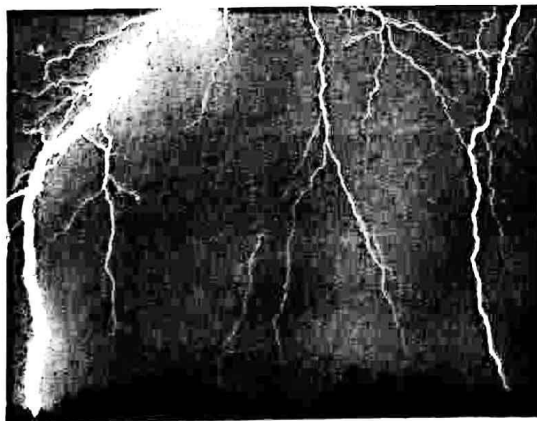
**Q 95. Why Owl is not able to see during day time?**

**Ans.** The reason for this is the deficiency of cones which receive and sense the bright light. But the presence of more rods gives it greater power of vision during night. All animals that search for prey during night have this characteristic.



**Q96. What do you know about lightening and thunder?**

**Ans.** Lightening is caused by an electrical charge due to the movement of water droplets or crystals carried by the wind. The sudden increase in pressure and temperature from lightening produces rapid expansion of the air. This expansion of air produces a sound of thunder.



**Q97. Define coordination and give example.**

(Board 2013)

**Ans. Definition:** The coordination is developed when body works as one unit in which its different organs and systems co-operates and work in harmony with each other.

**Example:**

When we are writing something, our hands and fingers work in collaboration with our muscles, eyes, thoughts etc. and then very intricate movements result.

**Q98. Write names of three main parts of brain.**

(Board 2013)

**Ans.** Three main parts of brain are:

- a. Forebrain      b. Midbrain      c. Hindbrain

**Q99. What is salutatory impulse?**

(Board 2013)

**Ans.** In a neuron, impulses 'jump' over the areas of myelin going from node to node. Such impulses are called salutatory impulses. This increases the speed of nerve impulse.

**Q100. Define coordinators. Give an example also.**

(Board 2014)

**Ans. Definition:**

These are the organs that receive information from receptors and send messages to particular organs for proper action.

**Examples:**

- i. In nervous co-ordination, brain and spinal cord are coordinators.
- ii. In chemical coordination, various endocrine glands play the role of coordinators.

**Q101. Define Reflex action with example.**

(Board 2014)

**Ans. Definition:**

Sometimes the involuntary action produced by the CNS is very quick. Such a response is called reflex action.

**Example**

The most common example of reflex action is the withdrawal of hand after touching a hot object.