PRESIDENCY HR. SEC. SCHOOL, REDDIARPALAYAM

XI- ZOOLOGY

10.Neural control and coordination

2 MARKS

1. Do you know how it is coordinated and controlled ?

The neural system of our body coordinates all the other system to work together effectively and smoothly.

2. What is neurons ?

The neural system comprises of highly specialized cells called neurons, which can detect, receive, process and transmit different kinds of stimuli.

3. What is called neuroglia ?

The non-nervous special cells called neuroglia form the supporting cells of the nervous tissue.

4. What is called afferent neuron ?

The afferent neurons that take sensory impulses to the Central Neural system (CNS) from the sensory organs.

5. What is called efferent and interneurons ?

The efferent neurons that carry motor impulses from the CNS to the effector organs; and interneurons that lie entirely within the CNS between the afferent and efferent neurons.

6. What are the major parts composed of neuron ?

A neuron is a microscopic structure composed of three major parts namely cell body (soma), dendrites and axon.

7. What is called neurilemma ?

The plasma membrane covering the neuron is called neurilemma and the axon is axolemma.

8. What is called dendrites ?

The repeatedly branched short fibres coming out of the cell body are called dendrites, which transmit impulses towards the cell body.

9. What is called nissl's granules ?

The cell body and the dendrites contain cytoplasm and granulated endoplasmic reticulum called Nissl's granules.

10. What is called axon hillock ?

An axon is a long fibre that arises from a cone shaped area of the cell body called the Axon hillock and ends at the branched distal end.

11. What is called nodes of ranvier ?

Schwann cells are not continuous along the axon; so there are gaps in the myelin sheath between adjacent cells. These gaps are called nodes of ranvier.

12. What is called synaptic knob ?

Each branch at the distal end of the axon terminates into a bulb like structure called synaptic knob which possesses synaptic vesicles filled with neurotransmitters.

13. What are the different types of neurons ?

Multipolar neurons: It have many processes with one axon and two or more dendrites.They are mostly interneurons.

Bipolar neurons: It have two processes with one axon and one dendrite. These are found on the retina of the eye, inner ear and the olfactory area of the brain.

Unipolar neurons: It have single short process and one axon. Unipolar neurons are located in the ganglia of cranial and spinal nerves.

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14. Define intercellular fluid ?

Inner to the axolemma, the cytoplasm contains the intracellular fluid (ICF) with large amounts of potassium and magnesium phosphate along with negatively charged proteins and other organic molecules.

15. What is knows as extra cellular fluid ?

The extra cellular fluid (ECF) found outside the axolemma contains large amounts of sodium chloride, bicarbonates, nutrients and oxygen for the cell; and carbon dioxide and metabolic wastes released by the neuronal cells.

16. What is called resting potential ?

The electrical potential difference across the plasma membrane of a resting neuron is called the resting potential during which the interior of the cell is negative due to greater efflux of K+ outside the cell than Na+ influx into the cell.

17. What is knows as depolarization ?

The axolemma becomes positively charged inside and negatively charged outside. This reversal of electrical charge is called Depolarization.

18. What is called threshold potential ?

During depolarization, when enough Na+ ions enter the cell, the action potential reaches a certain level, called threshold potential [-55mV].

19. What is called threshold stimulus ?

The particular stimulus which is able to bring the membrane potential to threshold is called threshold stimulus.

20. What is called spike potential ?

Due to the rapid influx of Na+ ions, the membrane potential shoots rapidly up to +45mV which is called the Spike potential.

21. What is called repolarization ?

The reversal of membrane potential inside the axolemma to negative occurs due to the efflux of K+ ions. This is called Repolarisation.

22. What is called hyperpolarization ?

If repolarization becomes more negative than the resting potential -70 mV to about -90 mV, it is called Hyperpolarization.

23. What is called lazy gates ?

During this, K+ ion gates are more permeable to K+ even after reaching the threshold level as it closes slowly; hence called Lazy gates.

24. What is called saltatory conduction?

As a result, the impulse jumps node to node, rather than travelling the entire length of the nerve fibre. This mechanism of conduction is called Saltatory Conduction.

25. What is called synapse?

The junction between two neurons is called a Synapse through which a nerve impulse is transmitted.

26. What is known as synaptic cleft?

A small gap between the pre and postsynaptic membrane is called synaptic cleft that forms a structural gap and a functional bridge between neurons.

27. What is called cerebral cortex?

The superficial region of the cerebrum is called cerebral cortex, which looks grey due to the presence of unmyelinated nerve cells.

28. What is called corpus callosum?

The hemispheres are connected by a tract of nerve fibres called corpus callosum.

29. What is called mammillay bodies?

The hypothalamus contains a pair of small rounded body called mammillary bodies that are involved in olfactory reflexes and emotional responses to odour.

30. What is called corpora quadrigemina?

The dorsal portion of the midbrain consists of four rounded bodies called corpora quadrigemina which acts as a reflex centre for vision and hearing.

31. What is called cerebro spinal fluid?

Choroid plexus is a network of blood capillaries found in the roof of the ventricles and forms cerebro spinal fluid (CSF) from the blood.

32. What is called cauda equine?

The thick bundles of elongated nerve roots within the lower veretebral canal is called the cauda equine because of its appearance.

33. What are region of vertebral column of spinal nerves?

*cervical nerves (8 pairs)
*thoracic nerves(12 pairs)
*lumbar nerves (5 pairs)
*Sacral nerves (5 pairs)
*coccygeal nerves (1 pair)

34. What is called sensory receptor?

The specialized structure that helps to respond to changes in the environment i.e. stimuli are called sensory receptor which triggers nerve impulses along the afferent fibres to CNS.

35. What is intervertebral foramina ?

31 pairs of spinal nerves emerge out from the spinal cord through spaces called the intervertebral foramina.

36. What is exteroceptors ?

Exteroceptors are located at or near the surface of the body. These are sensitive to external stimuli and receive sensory inputs for hearing, vision, touch, taste and smell.

37. What is called interoceptors?

Interoceptors are located in the visceral organs and blood vessels. They are sensitive to internal stimuli.

38. What is called properioceptors?

Properioceptors are also a kind of a interoceptors. They provide information about position and movements of the body.

39. What are the six extrinsic muscles of eye?

The six muscles are superior, inferior, lateral, median, rectus muscles, superior oblique and inferior oblique.

40. What are the accessory structures useful in protecting the eyes?

Eyelids , eye lashes and eye brows are the accessory structures useful in protecting the eyes.

41. What is called ciliary glands?

Sebaceous glands at the base of the eyelashes are called ciliary glands which secrete a lubricating fluid into the hair follicles.

42. Which gland secrete tears?

Lachrymal glands located in the upper lateral region of each orbit secrete tears. Tears are secreated at the rate of 1 mL/day and it contains salts, mucus and lysozyme enzyme to destroy bacteria.

43. What is called aqueous humor?

The anterior compartment has two chambers, first one lies between the cornea and iris and the second one lies between the iris and lens. These two chambers are filled with watery fluid called aqueous humor.

44. What is called vitreous humor?

The posterior compartment lies between the lens and retina and it is filled with a jelly like fluid called vitreous humor.

45. What are the three layers of eye ball ?

The wall of the eye ball consists of three layers fibrous sclera, vascular choroid and sensory Retina.

46. What is called canal of schlemm ?

At the junction of the sclera and the cornea, is a channel called 'canak of schlemm' which continuously drains out the excess of aqueous humor.

47. Define accommodation ?

The ability of the eyes to focus objects at varying distances is called accommodation which is achieved by suspensory ligament, ciliary muscle and ciliary body.

48. What is macula lutea ?

The yellow flat spot at the centre of the posterior region of the retina is called macula lutea which is responsible for sharp detailed vision.

49. What is mean by fovea centrallis ?

A small depression present in the centre of the yellow spot is called fovea centralis which contains only cones.

50. What is blind spot ?

The optic nerves and the retinal blood vessels enter the eye slightly below the posterior pole, which is devoid of photo receptors ; hence this region is called blind spot.

51. Define cataract ?

Due to the changes in nature of protein, the lens becomes opaque. It can be corrected by surgical procedures.

52. What is ceruminous glands ?

There are very fine hairs and wax producing sebaceous glands called ceruminous glands in the external auditory meatus.

53. What are the three types of ossicles ?

The middle ear consists of three ossicles

1.Malleus (hammer bone)
2.incus (anvil bone)
3.stapes (stirrup bone).

54. Define basilar membrane ?

The chambers scala vestibule and scala media are separated by a membrane called reisner's membrane whereas the scala media and scala tympani are separated by a membrane called basilar membrane.

55. What is stereocilia ?

Protruding from the apical part of each hair cells is hair like structures known as stereocilia.

56. What is tectorial membrane ?

During the conduction of sound wave, stereocilia makes a contact with the stiff gel membrane called tectorial membrane .

57. What are the defects of ear ?

1. The blockage of ear canal with earwax,
2. Rupture of eardrum
3. Middle ear infection with fluid accumulation
4. Restriction of ossicular movements.

58. Define maculae ?

The utricle and saccule are membranous sacs, found nearest the cochlea and contains equilibrium receptor regions called maculae that are involved in detecting the linear movement of the head.

59. Define otoliths ?

These hair cells are embedded in a gelatinous otolithic membrane that contains small calcareous particles called otoliths.

60. Define ampulla and crista ampullaris ?

At one end of the each semicircular canal, at its lower end has a swollen area called ampulla . Each ampulla has a sensory area known as crista ampullaris which is formed of sensory hair cells and supporting cells.

61. What is papillae ?

The tongue is provided with many small projections called papillae which gives the tongue an abrasive feel.

62. What is gustatory hairs ?

Gustatory epithelial cells (taste cells)and basal epithelial cells (repairing cells) long microvilli called gustatory cells and extends through a taste pore to the surface of the epithelium where they are bathed by saliva.

63. What are the different fuctions of neurons ?

• Sensory functions- It receives sensory input from internal and external environment.
• Motor functions- It transmits motor commands from the brain to the skeletal and muscular system.
• Autonomic functions- Reflex actions.

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XI- ZOOLOGY
11.CHEMICAL COORDINATION AND INTEGRATION
2 MARKS

1) Define Homeostasis .

- Maintennance of constant internal enviorment of the body by the different coordinating system .

2) write the role of oestrogen in ovulation .

- The hormone oestrogen is secreted by the ovaries .
- It operates with L.H.to encourage the development of the small follicles in the ovaries .
- FSH also stimulates the production of the ovarian hormone oestrogen.
- It stimulates ovulation and the development of the corpous luteum .

3) Specify the symptoms of acromegaly .

over growth of hand bones , feet bone , jaw bones , mal -functioning of gonads , enlargement of viscera , tongue, lungs, heart , liver , spleen and endocrine gland like thyroid , adrenal etc., are the symtoms of arcomegaly .

4) Write the symptoms of cretinism.

- bloated face ,
- low BMR ,
- slow pulse rate,
- subnormal body temperature .

5)differentiate hyperglycemia from hypoglycemia?

S. NO	Hyperglycemia	Hypoglycemia
1)	Blood gulcose level increases	Blood gulcose level lowers than normal fasting index
2)	Glucagon is hypetglycaemic	Insulin is hypoglycaemic hormone

6)write the functions of CCK .

- **CHOLECYCYSTOKININ (CCK)** IS secreted by duodenum in response to the presence of fat and cid in the diet .
- It acts on the gall bladder to release bile into duodenum and stimulates the secretion of pancreatic enzymes and its discharge .

7) enumerate the role of kidney as an endocrine gland .

- **Renin** is secreted by juxta glomerular cells (JGA) , which increase blood pressure when angiotensin is formed in blood .
- **Erythropoietin** is also secreated by the JGA cells of the kidney and stimulates erythropoiesis (formation of RBC) in bone narrow .
- **Calcitriol** is secreted by proximal tubles of nephorn

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8) What is exocrine glands ?

- the exocrine glands secrete enzymes , saliva and sweat and have ducks that carry their substances to the membrane surfaces .
- Example : salivary gland and gastric gland .

9) What is Rathke's pouch ?

- the anterior lobe originates from the embryonic invigation of phoryngeal epithelium called Rathke's pouch and the posterior lobe is originates from the base of the brain as an out - growth of hypothalamus.

10) list out the six hormones secreted by the anterior lobe of pituitary?

- the anterior lobe of pituitary secretes six tropic hormones such as growth hormone (GH),thyroid stimulating hormone(TSH),adrenocorticotropic hormone(ACTH),follicle stimulating hormone(FSH), luteinizing hormon(LH),luteotropic hormone (LTH)and melanocytes stimulating hormone(MSH).

11)what are the function of pineal gland?

- it secretes our body and maintains the normal sleep wake cycle.
- timing of sexual maturation of gonads.
- in addition melatonin also influences metabolism, pigmentation, menstrual cycle and defence mechanism of our body.

12)what is acini?

- each lobe of thyroid glands is made up of many lobules.
- the lobules consist of follicles called acini(acinus in singular).

13)what is leydig cells?

- a pair of testis is present in the scrotal sac of males .
- the testis function as a sex oragan and also as an endocrine gland
- the leydig cells secrete several male sex hormones, collectively called androgens, mainly testosterone.

14)what is dwarfism? mention its symptoms.

- dwarfism is due to hyposecretion of growth hormone(GH) in children , skeletal growth and sexual maturity is arrested.
- they attain a maximum height of 4 feet only.

15)what is gigantism? mention its symptoms.

- Gigatism is due to hypersecretion of growth hormone (GH) in children .
- overgrowth of structure occurs (UP TO 8 FEET) and the viscerat growth is not approprite with that of limbs .

16) what is Acromelogaly ? Mention its symptons .

- Acromegaly is due to exessive secretion of growth hormone in adult.
- over growth of hand bones , jaw bones , malfunctioning of gonads , enlargement of viscera , tongue , lungs , heart , liver ,spleen and endocrine gland like thyroid , adrenal etc.., are the symptons of acromegaly .

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17) what is cretinism ? mention its symptoms .

- in infants ,hypothyroidism causes cretinism .
- a certin shows retarded skeletel growth , absence of sexual maturity , retarded mental ability , thick wrinkled skin , protureded enlarge tongue , bloated face , thick and limbs occurs .
- the other symptoms are low BMR,slow pulse rate , subnormal body temparature and elevated blood cholesterol level .

18) what is Gulls 's disease or myxodema ? Mention its symptoms .

- hyposecretion of thyroid in adults causes myxodema .
- It is otherwise called Gull's diesease .
- This disease is characterised by decreased mental activity , memory loss, slowness of movement ,speech , and general weakness of body ,dry coarse skin , scarce hair , puffy appearance , disturbed sexual function , low BMR , poor appetite , and subnormal body temperature .

19) what is Grave's disease? MMention its symptoms .

- Grave's disease also called as thyrotoxicosis or exophthalmic goitre.
- this disease is caused due to hypetr secretion of thyroid .
- Tt is characterised by enlargement of thyroid gland , increased BMR **(50% -100%) ,**elevated
- increased TSH secretion .

21) what is tetany ? Mention its symptoms .

- Tentany caused due to the hyposecretion of parathyroid hormone (PTH) .
- due to hyposecretion of(PTH) serum calcium level decreases (hypocalcemia) , as result serum phosphate excretion level decreases .
- Generalized convulsion , locking of jawsincreasedheart beat rate , increased body temperature muscular spasm are the major symptoms of tetany .

22) what is cushing ' s syndrome? Mention its symptoms.

- Cushing's syndrome is caused due to excess secretion of cortisol .
- Obesity of the face and trunk , redness of face , hand, feet , thin skin, excessive hair growth ,loss of minerals from bone 9osteoporosis) systolic hypertension are features of Cushig 's syndrome. Supperssion of sexual function like atrophy of gonads are the other symptoms of Cushing 's syndrome .

23) what is Hypoglycamemia ? metion its symptoms .

- hypoglycaemia is due to increased secretion of insulintherby blood glucose level descrease
- In this disorder blood glucose levels lowers that normal fasting index .
- Increased heartbeat , weakness, nervousness , headache , confusion , lack of co-ordination , slurred speech , serious brain defects like epilepay and coma occurs .

24) what is diabates mellitus ? mention its symptoms .

- type type 1 diabates is also known Insulin dependent diabetes , caused by the lack of insulin secretion due to illness or viral infections .
- Type 2 diabates is also know as NON - Insulin dependent diabates , caused due to reuced sensitivity to insulin , often called as insulin resistance .

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25) what is diabates insipidus ? Mention its symptoms .

- **Diabates insipidus** is caused due to hyposecretion of vasopressin (ADH) from neurohypophysis.
- the symptom includes frequent urination (polyurea) and excessive consumption of liquids due to thirst (polydipsia).

26) what is basal metabolic rate (BMR) ?

The amount of energy needed to keep the body rest .

27) Name the layer of adrenal cortex and mention their secretion .

- **Zonaglomerulosa** an outer thin layer constitutues about 15% of adrenal`cortex and secrects mineralocorticoids .
- **Zonafasciculata,** the middle widest layer constitutes about 75% of adrenal cortex and secretes glicocortcoids such as cortisol , corticosterone and trace amounts of adrenal androgen and oestrogen .
- **Zonareticularis ,** an inner zone of adrenal cortex and secretes the adrenal androgen , trace amount of oestogen and glucocorticoids .

28) what is addison 's disease ? Mention its symptoms .

- **hyperparthyroidism** is caused due to excess PTH in blood .
- **Addison 's disease** is caused to hyposecretion of glucocorticoids and minerlocarticoids from the adrenal cortex .
- Muscular weakness , low BP., loss of appetite, vomiting , hypre pigmentation of skin ,etc..,

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