

8

INSTRUCTIONS

- 1- All objective questions are to be attempted on the paper and returned to the invigilator within 20 minutes.
- 2- Any cutting and overwriting in objective part will not be accepted.

Special senses

28

Which of the following is true about the olfactory pathway all is true

the olfactory pathway terminates in the hypothalamus
lateral olfactory area goes to the olfactory bulb and pyriform cortex plus olfactory nuclei
newer pathway to dorsomedial nucleus and then to the posterior part of the orbitofrontal cortex
pathway involves in conscious perception of odor
projection to Hippocampus is responsible for like and dislike of food on odor basis.
mechanism of stimulation of olfactory receptor in olfactory membrane involves all of the following except

binding of odorant substance with a G protein receptor
activation of G protein
rise of cAMP
opening of Na channels in the membrane of olfactory cell
binding of non-volatile substance can be sniffed

Which of the following is true about bitter taste all is true except
organic containing substances and amino acids trigger bitter taste
lowest threshold
located at the back of the tongue
bitterness threshold for sensing other tastes increases
bitterness threshold for sensing other tastes decreases

Which of the following is true about otolith organs and the vestibular system all is true except

located in utricle and saccule
responsible to detect linear acceleration
also called organs of static equilibrium
conduct their impulses through cochlear nerve

Which of the following is true about the vestibular system all is true except
responsible for judging the angular acceleration
each contains two pairs of canals
contain macula as their sense organ

D. Get stimulated when hair cells in cupula in crista ampullaris are stimulated

E. Both a and d

Q6. Endocochlear potential is the potential of endolymph in scala media. It is

- A. 10mv with respect to perilymph generated by continuous secretion of potassium ions
- C. It is +150 millivolts with respect to the hair cells
- D. Makes the hair cells very sensitive
- E. All of the above

Q7. Tympanic membrane and ossicular system provide impedance matching between the sound waves in air and the sound vibrations in the fluid of the cochlea by

- A. Decreasing the total force to be exerted on the fluid of the cochlea increasing the movement distance of the stapes
- B. Increasing the total force to be exerted on the fluid of the cochlea
- C. Is due to different surface areas of tympanic membrane and foot plate of stapes
- D. Both C and D

Q8. Regarding the sensation of smell all is true except

- A. It is a chemical sensation
- B. It is rapidly adaptable
- C. It has affective quality either pleasant or unpleasant
- D. Anosmia means the increased sensation of smell
- E. It can be elicited by a minute amount of odorant in the air

Q9. Regarding vision which statement is true?

- A. Protanopes cannot distinguish between red and green because they lack the pigment for detecting green light
- B. Full color vision is possible in dim light
- C. Full dark adaptation takes nearly 30 minutes
- D. In a dark-adapted eye, the visual acuity is best at the centre of the visual field
- E. None of the above

base of the basilar membrane in high-frequency sound waves occurs

basal part of from base of the tip of the cochlea at the spiral ganglion of above

Basal part

the ossicular system and tympanic sound waves enter the cochlea via

oval window round window tensor tympani muscles stapedius muscles none of above

oval window round window

Horner's Syndrome there is one sided to cervical sympathetic chain and following change on the side of lesion

pupil remains persistently constricted periorbital eyelid droops blood vessels of the face and head become persistently dilated sweating cannot occur on the side of the face

All of the above

rod cells are stimulated when become desensitized by temporary blockade of channels and sodium entry inside the cell change is triggered by

lumirhodopsin metarhodopsin I metarhodopsin II scotopsin and all-trans retinal 11-cis retinal and scotopsin

11-cis retinal scotopsin

accommodation reflex the near response is meiosis, increased convexity of lens and convergence of visual axes. Centers involved are

Primary visual cortex area 19 Prefrontal nuclei of mid brain 3rd nerve nucleus All a, b and c All a, b and c plus visual fixation area

The basic reason of consensual light reflex

- A. Decussation of nasal fibers from retina at optic chiasm
- B. Crossing of fibers from pretectal to opposite Edinger Westphal nucleus
- C. Fanning of optic radiations to secondary visual area
- D. Communication of two hemisphere by corpus callosum
- E. None of the above

Q16. Regarding the taste buds all is true except

- A. Circumvallate papillae, form a V line on the surface of the posterior tongue.
- B. fungiform papillae are over the flat anterior surface of the tongue
- C. foliate papillae are located in the folds along the lateral surfaces of the tongue.
- D. each taste bud usually responds to one type of taste

(E) These is not rapidly adaptable

Q17. Fibers of optic nerve giving to superior colliculus are concerned with:

- A. Dimlight vision
- B. Light reflexes, accommodation reflex
- C. Color vision
- D. Detection of lines of specific lengths, angles or shapes

(E) Turning the Eyes and Head Toward a Visual Discrepancy

Q18. Lateral inhibition is essential for visual accuracy. This is acquired by which type of cell?

- A. Rods
- B. Amacrine Cells
- C. Horizontal cells
- D. Bipolar cells
- E. Ganglionic cells

Q19. Myopia is caused by which of the following?

- A. Opacity of lens
- B. Detachment of retina
- C. More than normal anteroposterior diameter of eye ball
- D. Increased intraocular pressure
- E. Opacity development in lens

Q20. Which structure of human eye can focus objects at different distances by adjusting the focal length of the eye lens?

- A. Pupil
- B. Cornea
- C. Ciliary muscles
- D. Retina
- E. Lens

Pupil

cross of fibers from

Q11. Regarding auditory nervous pathway all is true except:

- A. The nerve fibers from the spiral ganglion of corti enters in upper medulla through 8th cranial nerve
- B. The second order neuron pass mainly to same side of the brain stem.
- C. Second order fibers pass to terminate mainly in the superior olivary nucleus
- D. All the auditory fibers synapse on inferior colliculus
- E. All the fibers synapse again at medial geniculate nucleus

Q12. According to place principle, resonance of the basilar membrane in response to high-frequency sound waves occurs at:

- A. The basal part
- B. Far from base
- C. Near the tip of the cochlea
- D. Near the spiral ganglion
- E. All of the above

Q13. Endocochlear potential is the potential of endolymph. It is:

- A. +80 millivolts with respect to perilymph
- B. Generated by continuous secretion of potassium ions
- C. It is +150 millivolts with respect to the hair cells
- D. Makes the hair cells very sensitive
- E. All of the above

Q14. From anterior 2/3rd of tongue taste impulses pass to tractus solitarius by:

- A. Vagus nerve
- B. Glossopharyngeal nerve
- C. Chorda tympani branch of facial nerve
- D. Vestibulochochlear nerve
- E. None of above

Q15. Regarding the olfactory pathway all is true except:

- A. The medial olfactory area is septal nuclei
- B. The lateral olfactory area is prepyriform and pyriform cortex plus amygdaloid nuclei
- C. The newer pathway goes to dorsomedial thalamic nucleus and then to the posterior part of the orbitofrontal cortex
- D. Older pathway involves in conscious analysis of odor
- E. Connection to Hippocampus is responsible for like and dislike of food on odor basis.

Q16. The mechanism of stimulation of olfactory cells present in olfactory membrane is the following except:

- A. Binding of odorant substance with a protein receptor
- B. Activation of G protein
- C. Release of cAMP
- D. Opening of Na channels in the membrane of olfactory cell
- E. Only non-volatile substance can be smelled

Q17. Regarding the bitter taste all is true except:

- A. Nitrogen containing organic substances and alkaloids trigger bitter taste
- B. It has lowest threshold
- C. Feels at the back of the tongue
- D. After bitterness threshold for sensing others increases
- E. After bitterness threshold for sensing others tastes decreases

Q18. In vestibular system about otolith organ macula, following is true except:

- A. It is present in utricle and saccule
- B. Responsible to detect linear acceleration
- C. Also called organs of static equilibrium
- D. Conduct their impulses through cochlear
- E. All of the above

Q19. Regarding the taste buds all is true except:

- A. Circumvallate papillae, form a V line on the surface of the posterior tongue.
- B. Fungiform papillae over the flat anterior part of the tongue
- C. Foliate papillae located in the folds along the lateral surfaces of the tongue.
- D. Each taste bud usually responds to one type of taste
- E. These are not rapidly adaptable

Q20. Taste sensations from circumvallate papillae of tongue are transmitted to tractus solitarius

- A. Vagus nerve
- B. Glossopharyngeal nerve
- C. Vestibulochochlear nerve
- D. Facial nerve
- E. Lingual nerve

Special senses

contrast is enhanced due to lateral inhibition by which retinal cells?

- A. Amacrine cells
- B. Bipolar cells
- C. Ganglion cells
- D. Horizontal cells ✓
- E. Photoreceptors

of the following conditions is caused by a lesion of the optic chiasm?

- A. Bitemporal hemianopsia ✓ *Bilateral optic chiasm*
- B. Blindness in both eyes
- C. Heteronymous hemianopsia
- D. Homonymous hemianopsia
- E. Scotomata

the condition of eye which can be corrected by using spectacles containing cylindrical lenses?

- A. Glaucoma
- B. Cataract
- C. Nystagmus
- D. Astigmatism ✓ *Astigmatism*
- E. None of above

of the following pairs of molecules combine to form rhodopsin?

- A. Bathorhodopsin and 11-cis retinal
- B. Bathorhodopsin and all-trans retinal
- C. Bathorhodopsin and scotopsin
- D. Scotopsin and 11-cis retinal ✓
- E. Scotopsin and all-trans retinal

owing are true about the lens:

- A. 90% of the weight of the lens is contributed by water.
- B. It has no sensory innervation ✓ *no sensory innervation*
- C. The capsule is thicker posterior than anteriorly
- D. It has an equatorial diameter of about 15 mm
- E. In eyes dilated with atropine, the thickness of the lens is increased

the flying bird is the example of

- A. Pursuit movement of eye ✓ *Pursuit movement of eye*
- B. Saccadic Movement of eye
- C. Strabismus
- D. convergence
- E. All of above

tal color vision is 20 times more common in men than women because most cases are caused by an abnormal

- A. dominant gene on the Y chromosome
- B. recessive gene on the Y chromosome
- C. dominant gene on the X chromosome
- D. recessive gene on the X chromosome ✓
- E. recessive gene on chromosome 22

of the eye

- A. has the lowest light threshold
- B. is the region of highest visual acuity ✓ *is the region of highest visual acuity*
- C. contains only red and green cones
- D. contains only rods
- E. is situated over the head of the optic nerve

accommodation depends on which structure of eye?

- A. Cornea
- B. Pupil
- C. Ciliary muscle ✓
- D. Vitreous
- E. lens

Connection to Hippocampus is responsible for like and dislike of food on odor basis.

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vestibular system about otolith organs and macula following is true except

- It is present in utricle and saccule
- Responsible to detect linear acceleration
- Also called organs of static equilibrium
- Conduct their impulses through cochlear nerve
- All of the above. ✓

typanic membrane and ossicular system provide impedance matching between the sound waves in air and the fluid of the cochlea by

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- None of the above

basic reason of consensual light reflex is

- Decussation of nasal fibers from retina at optic chiasma
- Crossing of fibers from pretectal to opposite Edinger Westphal nucleus ✓
- Passing of optic radiations to secondary visual area
- Communication of two hemisphere by corpus callosum
- None of the above

Regarding the taste buds all is true except:

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Which structure of human eye can focus objects at different distances by adjusting the focal length of the eye lens?

- Pupil
- Cornea
- Ciliary muscles ✓
- Retina
- Lens

Myopia is caused by which of the following?

- A. Opacity of lens
- B. Detachment of retina
- C. Decrease in focal length of eye lens
- D. Increased intraocular pressure
- E. Decrease intraocular pressure

Amacrine cells secrete which type of transmitters?

- A. GABA
- B. Glycine
- C. Dopamine and acetylcholine
- D. All of the above
- E. None of above

The range of normal intra ocular pressure is:

- A. 18 - 20 mmHg
- B. 12 - 20 mmHg
- C. 15 - 20 mmHg
- D. 10 - 15 mmHg
- E. 20 - 25 mmHg

Regarding amacrine cells which all is true except

- A. A direct pathway is from rod to bipolar cells to amacrine cells to ganglion cells.
- B. One type of amacrine cell responds strongly at the onset of a visual signals
- C. One type of amacrine cell responds strongly at the offset of visual signals
- D. Some cells respond to movement of light spot
- E. Do not act as interneurons that analyze visual signals

Regarding the phenomena of lateral inhibition

- A. It is present and important in all other sensory systems
- B. The horizontal cells are responsible due to their inhibitory output
- C. helps to enhance visual contrast
- D. horizontal cells in area of lateral inhibition cause bipolar cells to hyperpolarize and inhibit
- E. all of above

Q.4 Regarding primary visual cortex.

- A. lies in the calcarine fissure area having Brodmann no 17
- B. extends on the medial aspect of each occipital cortex
- C. is the terminus of direct visual signals from the eyes
- D. signals from the macular area terminates near the occipital pole
- E. all of above

Q.7. Regarding autonomic nerves to the eyes all of the following is true except

- A. eye is innervated by both sympathetic and parasympathetic nerve
- B. parasympathetic preganglionic fibers arise in the Edinger Westphal nucleus
- C. passes in third nerve to ciliary ganglion
- D. these nerves excites the ciliary muscle that control focusing the eye
- E. the sympathetic innervation of the eye originates in 2nd thoracic segment

Regarding transmission of sound waves in the cochlea all of the following is true except

- A. the foot of stapes moves inward against the oval window,
- B. the initial effect of a sound wave entering at the oval window is bending of basilar membrane at base of cochlea at round window
- C. the foot of stapes moves inward against the round window
- D. the elastic tension that is built up in the basilar fibers as they bend toward the round window initiates a fluid wave in the basilar membrane toward the helicotrema

Regarding auditory nervous pathway all is true except

- A. the nerve fibers from the spiral ganglion of cortex enters in upper medulla through 8th cranial nerve
- B. the second order neuron pass mainly to same side of the brain stem
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- C. Near the tip of the cochlea
- D. Near the spiral ganglion
- E. All of the above

Q.18 A 59 y old man presents with unilateral hearing loss. A lesion in which of the following structures could be responsible for this?

- A. Inferior colliculus
- B. Lateral lemniscus
- C. Medial geniculate body
- D. Medial lemniscus
- E. Organ of Corti

Which of the following provides about two third of the 59 diopters of refractive power of the eye?

- A. Anterior surface of cornea
- B. Posterior surface of lens
- C. Iris
- D. Anterior surface of lens
- E. Posterior surface of cornea

Which of the following mechanisms causes hyper polarization on excitation of rods?

- A. Activation of rhodopsin kinase
- B. Increased conductivity of rods for sodium ions
- C. Hydrolysis of cGMP to 5'-cGMP leading to closure of sodium channels
- D. Inactivation of transducin in disk membranes
- E. Slow conversion of rhodopsin to metarhodopsin

Q.22 Taste sensations from circumvallate papillae of tongue are transmitted to tractus solitarius by:

- A. Vagus nerve
- B. Glossopharyngeal nerve
- C. Vestibulochoclear nerve
- D. Facial nerve
- E. Lingual nerve

Q.23 From anterior 2/3rd of tongue taste impulses pass to tractus solitarius by:

- A. Vagus nerve
- B. Glossopharyngeal nerve
- C. Chorda tympani br. of facial nerve
- D. Vestibulochoclear nerve
- E. None of above

Q.24 In Argyll Robertson pupil there are/is:

- A. Pupil fails to respond to light
- B. Pupil responds to accommodation
- C. Pupil is very small
- D. Is an important diagnostic sign of neurosyphilis or alcoholism, encephalitis
- E. All of above

Q.25 In Horner's syndrome:

- A. Interruption of sympathetic nerve fibers to pupillary dilator muscles
- B. Pupil remain constricted
- C. Superior eyelid droops
- D. Blood vessels on corresponding side of head & face become dilated and sweating can occur on same side of head & face
- E. All of above

Q1. Regarding the olfactory pathway all is true except:

- A. The medial olfactory pathway terminates into hypothalamus
- B. The lateral olfactory area goes to prepyriform and pyriform cortex plus amygdaloid nuclei
- C. The newer pathway to dorsomedial thalamic nucleus and then to the posterior part of the subfrontal cortex
- D. Older pathway involves in conscious analysis of odor



TEST: SPECIAL SENSES

INSTRUCTIONS

- 1. All objective questions are to be attempted on the paper and returned to the invigilator within 20 mins.
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Normal range of intra ocular pressure is:

- 20 mmHg
- 20 mmHg
- 20 mmHg
- 15 mmHg
- 25 mmHg

12-20 mmHg

20 mmHg

Basic reason of consensual light reflex is:

- Dissection of nasal fibers from retina at optic chiasma
- Crossing of fibers from pretectal to opposite side of optic tract
- Enger Westphal nucleus
- Truncation of optic radiations to secondary visual area
- Communication of two hemisphere by corpus callosum
- None of the above

Regarding primary visual cortex:

- It is in the calcarine fissure area having an area of 17 cm²
- It is located on the medial aspect of each occipital lobe
- It is the terminus of direct visual signals from the retina
- Visual signals from the macular area terminates near the posterior pole
- None of the above

RTI of nucleus

Myopia is caused by which of the following?

- Decrease in refractive index of lens
- Decrease in focal length of eye lens
- Increase in intraocular pressure
- Decrease in intraocular pressure

Decreased refractive index of lens

Which of the following conditions is caused by damage to the optic chiasma?

- Bilateral homonymous hemianopia
- Bilateral heteronymous hemianopia
- Unilateral homonymous hemianopia
- Unilateral heteronymous hemianopia

Q6. Name the condition of eye which can be corrected by using spectacles containing cylindrical lenses?

- A. Glaucoma
- B. Cataract
- C. Nystagmus
- D. Astigmatism
- E. None of above

Handwritten notes: 13/3/14, 25

Q7. Follow the flying bird is the example of:

- A. Pursuit movement of eye
- B. Saccadic Movement of eye
- C. Strabismus
- D. Convergence
- E. All of the above

Q8. Abnormal color vision is 20 times more common in men than women because most cases are caused by an abnormal:

- A. Dominant gene on the Y chromosome
- B. Recessive gene on the Y chromosome
- C. Dominant gene on the X chromosome
- D. Recessive gene on the X chromosome
- E. Recessive gene on chromosome 22

Handwritten note: Recessive gene

Q9. Regarding amacrine cells all is true except:

- A. A direct pathway is from rod to bipolar cells to amacrine cells to ganglion cells.
- B. One type of amacrine cell responds strongly at the onset of a visual signals
- C. One type of amacrine cell responds strongly at the offset of visual signals
- D. Some cells respond to movement of light spot
- E. Do not act as interneurons which analyze visual signals

Q10. The fovea of the eye:

- A. Has the lowest light threshold
- B. Is the region of highest visual acuity
- C. Contains only red and green cones
- D. Contains only rods
- E. As situated over the head of the optic nerve