Sense Organs

Improve your learning

Q. 1. A. Give reasons for: (AS 1)

We usually do not see bright colors in dim light.

Answer : This is because photoreceptors are sensitive to light. The photoreceptor rods, contain the pigment rhodopsin that allows us to see in dark/ dim light but they do not help in detecting color. The photoreceptor cones, contain the pigment iodeosin that allows us to detect different color but it works only in bright light. Hence, we usually do not see bright colors in dim light.

Q. 1. B. Give reasons for: (AS 1)

Removal of wax layer too often will raise incidence of ear infection

Answer : The removal of wax layer too often will raise incidence of ear infection because the wax layer, produced from sebaceous and ceruminous gland of ear pinna, keeps the ear canal well lubricated and prevents any dust particles rom entering into the ear canal. Hence, removal of the wax layer often will increase the chance and amount of dust particles entering into the ear canal thereby raising the incidence of ear infection.

Q. 1. C. Give reasons for: (AS 1)

During severe cough and cold we lose taste of food.

Answer : This is because the sense of smell and the sense of taste, both work in harmony. The recognition of the smell of the food and combination of taste buds make the brain detect the taste. Therefore, during severe cough and cold since the nose get blocked, the brain is unable to receive complete information of the taste and hence we lose taste of food.

Q. 1. D. Give reasons for: (AS 1)

While cutting onions our tears start flowing.

Answer : While cutting onions our tears start flowing because onions stimulate the lachrymal glands of the eyes by producing a chemical irritant/ gas known as Syn-Propanethial-S-oxide. This chemical irritant stimulates the lachrymal glands and thus our tears start to flow.

Q. 2. A. Find out the false statements and rewrite them as correct ones. (AS 1)

The rationale behind seeing is just the impression of the image in the retina.

Answer : True

The rationale behind seeing is just the impression of the image in the retina. Retina, the light sensitive layer contains the photoreceptors rods and cones for vision. The eye collects light through the convex lens and focuses it to form image on the retina. The light signals from the photoreceptors are then converted to neuronal signals which the brain processes further.

Q. 2. B. Find out the false statements and rewrite them as correct ones. (AS 1)

Ear functions only to hear.

Answer : False

Ear functions not only to hear but also in balancing our body by maintaining the equilibrium of the body. The semi-circular canals of the inner ear are filled with the fluid endolymph, and hair cells. These tiny hair cells found in the cristae of semicircular canals sense movement and send nerve impulses to the brain. The brain then maintains the posture and balance of the body with relation to gravity.

Q. 2. C. Find out the false statements and rewrite them as correct ones. (AS 1)

Iris patterns are like finger prints used in identifying individuals.

Answer : True

Iris is the colored part of the eye. It regulates the amount of light entering the eyes by adjusting the size of pupil. Iris pattern are complex and differ in each eye of an individual. Thus, iris patterns are like finger prints used in identifying individuals because every individual has different pattern of iris for each eye.

Q. 2. D. Find out the false statements and rewrite them as correct ones. (AS 1)

Saliva helps the taste buds in taste sensation.

Answer : False

Saliva does not help the taste buds in taste sensation. Saliva only works as a liquid medium that helps in transporting food from mouth to the stomach via esophagus. When we eat something, we press the food against the palate with our tongue which releases chemicals in food thus triggering the taste buds to carry the sensation to brain which detects the taste.

Q. 2. E. Find out the false statements and rewrite them as correct ones. (AS 1)

We are not able to adapt to sensations.

Answer : False

We are able to adapt to sensations. This is because our senses have the ability to adjust to constant level of stimulation. For example- on entering a darkened movie theatre, we are unable to see things at first but after a constant time we are able to see our surroundings clearly because our brain adapts to the stimulus by adjusting the sensitivity to that stimulus.

Q. 3. A. State the difference between the two (AS 1)

Rods and cones

Answer :

RODS	CONES
1. Rods are sensitive to low light. They help us to see in dark or at night.	1. Cones are sensitive to high light and they help us to detect color.
2. They are not present in fovea and blind spot of the retina.	2. They are concentrated in the fovea.

Q. 3. B. State the difference between the two (AS 1)

Iris and Pupil

Answer :

IRIS	PUPIL
1. Iris is the colored part of the eye.	1. The dark center in the middle of the iris is pupil.
2. It regulates the amount of light entering the eye by adjusting the size of pupil.	2. It determines the amount of light entering into the eye.

Q. 3. C. State the difference between the two (AS 1)

Pinna and Tympanum

Answer :

PINNA	TYMPANUM
1. Flap like visible part of the ear on either side of our face is the pinna. 2. It helps to locate the sound source and directs the sound into the ear canal. It is made up of cartilage.	1. The tympanum is about the size of individuals small fingernail. 2. It transmits sound waves to the tiny ossicles of middle ear that further transfer the waves to organ in inner ear.

Q. 3. D. State the difference between the two (AS 1)

Nasal cavity and ear canal

Answer :

NASAL CAVITY	EAR CANAL
1. Nasal cavity is a hollow space within nose that is lined with hairs and mucous membrane. 2. It filters the air entering the body before it reaches the lung and also warm and moisturize it.	1. Ear canal, also called Auditory meatus, is the part of external ear. Pinna leads to the ear canal. 2. It is the tube through which sound waves travel to the eardrum.

Q. 4. A. How do the following processes occur? (AS 1)

When we see an object, a real inverted image is formed on the retina.

Answer : When we see an object, the light enters through the cornea and is passed through the pupil. Iris determines the amount of light that passes through the pupil by adjusting the size of pupil. The converging lens of the eye then collects the light and refracts it to a focal point. The image is formed on the retina and is a real inverted image. The photoreceptors are then stimulated by this image to produce messages which are sent to the brain via the optic nerve. The brain interprets the image as an upright object.

Q. 4. B. How do the following processes occur? (AS 1)

The sound waves, collected by the pinna are changed as vibrations.

Answer : The sound waves enter the through the pinna (outer ear) and travel to the ear drum through the ear canal. These waves create pressure which vibrate the tympanum, and the vibrations are then sent to the tiny bones (ossicles) of the middle ear. These bones amplify the vibrations and send them to the inner ear which thereby vibrates the tiny hair cells in the cochlea at certain frequencies and the sound is then interpreted by the brain.

Q. 4. C. How do the following processes occur? (AS 1)

We move our hand away from a hot object.

Answer : When we come in contact with a hot object by touching it, the sensory receptors of our hand detect the hot object. The information is carried to the spinal cord in form of a nerve impulse by the sensory neurons, which is then passed to a motor neuron. The motor neuron carries the impulse to muscle which then contract and we move our hand away from the hot object.

Q. 4. D. How do the following processes occur? (AS 1)

A pungent odor, makes us close our nose.

Answer : Our nose being a sensitive sensory organ, functions to smell things and breath in dust free, fresh air. Upon smelling something pungent in odor, it sends signals to the brain and thus we close our nose to stop smelling the pungent odor.

Q. 5. A. Fill in the blanks with suitable words. Then give reasons why the words are suitable. (AS 1)

Choroid layer provides …… to the eye.

Answer : Choroid layer provides protection and nourishment to the eye.

Explanation-

Choroid layer is a black layer found between the sclera and the retina. It prevents reflection of light in the eye and consists of blood vessels that supply oxygen and nutrients to the eye.

Q. 5. B. Fill in the blanks with suitable words. Then give reasons why the words are suitable. (AS 1)

The relationship between the tongue and …… is more.

Answer : The relationship between the tongue and nose is more.

Explanation-

The sense of smell and the sense of taste, both work in harmony. The recognition of the smell of the food and combination of taste buds make the brain determine the taste of the food.

Q. 5. C. Fill in the blanks with suitable words. Then give reasons why the words are suitable. (AS 1)

Iris pattern is used for individual ……

Answer : Iris pattern is used for individual identification.

Explanation-

Iris pattern are complex and differ in each eye of an individual. Thus, iris patterns are like finger prints used in identifying individuals because every individual has different pattern of iris for each eye.

Q. 5. D. Fill in the blanks with suitable words. Then give reasons why the words are suitable. (AS 1)

Area where optic nerve leaves the eye is called the ……

Answer : Area where optic nerve leaves the eye is called the blind spot.

Explanation-

Blind spot is the area where the optic nerve leaves the eye. Any image that falls on this spot cannot be seen hence no photoreceptors (neither rods nor cone) are present at this spot; thus, the name blind spot.

Q. 5. E. Fill in the blanks with suitable words. Then give reasons why the words are suitable. (AS 1)

The ear drum is the …….

Answer : The ear drum is the tympanic membrane.

Explanation-

The eardrum is the tympanic membrane that transmits sound waves to the tiny ossicles of middle ear (from pinna) that further transfer the amplified waves to tiny hair cells in cochlea of inner ear and the sound is then interpreted by the brain.

Q. 6. A. Choose the correct option (AS 1)

This vitamin is essential for the health of eye.

Vitamin ‘A’

B. Vitamin ‘B’
C. Vitamin ‘C’
D. Vitamin ‘D’

Answer : Vitamin A is a fat-soluble vitamin found in yellow and orange fruits, vegetables, broccoli etc. Vitamin-A provides with good vision, healthy nerve function etc. Deficiency of vitamin A causes night blindness, poor vision, etc. Thus, vitamin A is essential for the health of eye.

Q. 6. B. Choose the correct option (AS 1)

Sensation is a complex pathway involving -
A. Sense organs

B. Sense organs and nerve impulses
C. Sense organs, nerve impulses, brain
D. Brain and nerve impulses

Answer : Sensation involves our sensory organs, nerve impulse and brain. Upon sensing something with our sense organs, our receptors of sensory organs get activated, and signals are sent to the brain via nerve impulses. For example- When we come in contact with something hot, the sensory receptors of our hand detect the hot object. The information is carried to the brain in form of nerve impulse by sensory neurons.

Q. 6. C. Choose the correct option (AS 1)

The sound waves if not focused by external pinna and ear canal will result in
A. Hearing several types of sound loudly
B. Not hearing anything
C. Slight hearing
D. Not being able to make out the type and origin of sound

Answer : The sound waves if not focused by external pinna and ear canal will result in not hearing anything. This is because the ear pinna (external ear) functions to collect sound waves and focusing them to the ear drum through the ear canal. If the sound waves are not focused by the pinna then the sound waves would pass us without reaching the inner ear.

Q. 6. D. Choose the correct option (AS 1)

The muscles of the eyeball of a person becomes non-functional, the invariable effect would be-

A. The person fails to close eyes
B. Fails to move eye and see colors clearly
C. Feels pain in the eye
D. The nerves reaching the muscles become nonfunctional.

Answer : Ophthalmoplegia is the condition when the muscles of eyes of a person becomes weak or non-functional. It can affect as many as 6 muscles that hold the eye in its place. People that get affected with this have blurred or sometimes double vision, difficulty in moving eyes in different directions and drooping of the eyelids.

Q. 6. E. Choose the correct option (AS 1)

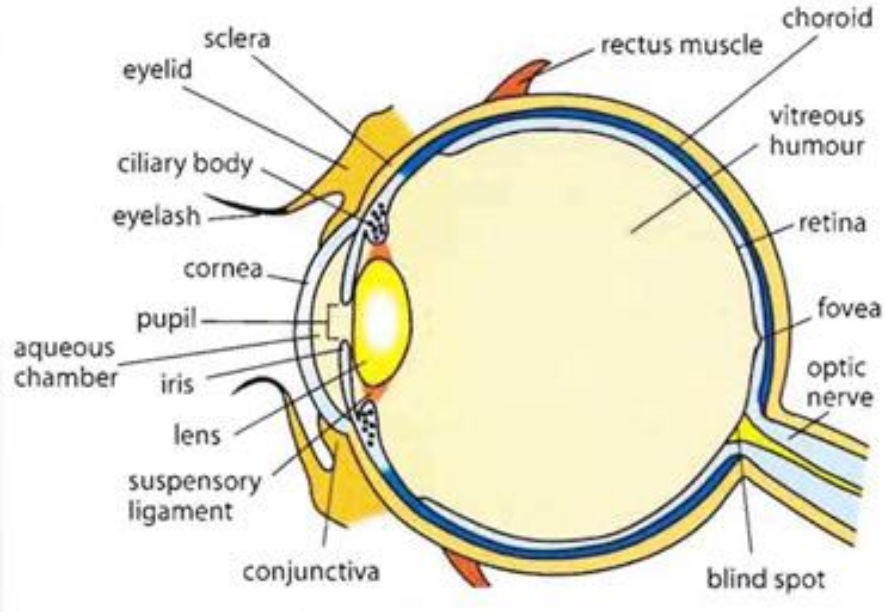
The tongue of a person is exposed to a high salty taste then:
A. The person learns to taste salty things better
B. Loves tasting salty things
C. Hates tasting salty things
D. Fails to taste a less salty thing just after the exposure.

Answer : If the tongue of a person is exposed to a high salty taste then the person loves tasting salty things. This is because of the pleasantness property of salt. Up to a certain point, the person loves tasting the salty food but after that point if more salt is added to the food, the pleasantness of the food gets reduced.

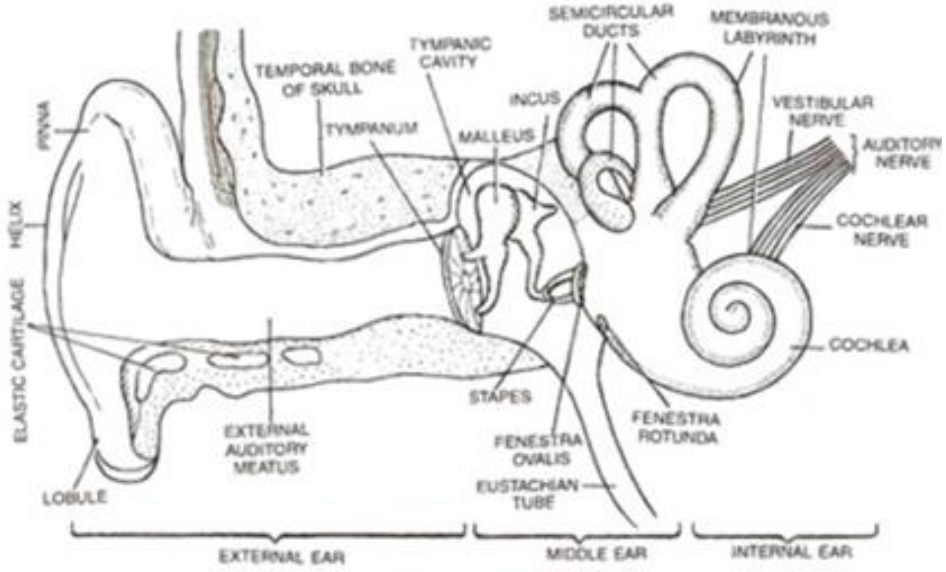
Q. 7. Draw and label the diagrams, showing the structure of the (AS 5)

1. Eye 2. Ear 3. Tongue

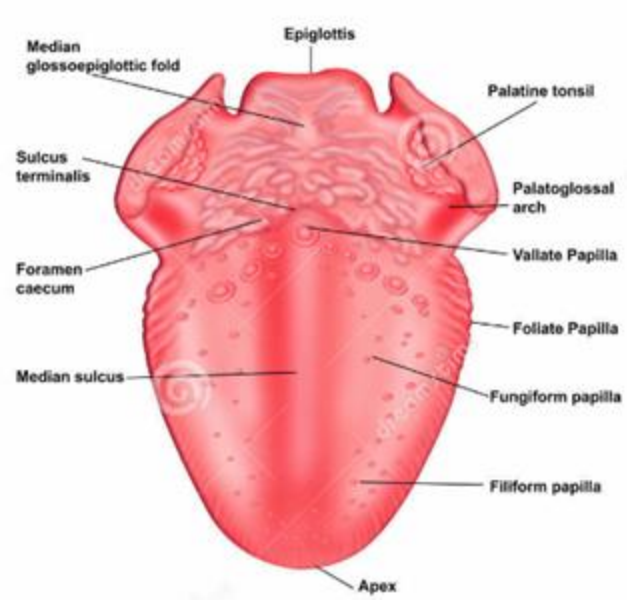
Answer : 1) Eye-



2) Ear-



3) Tongue



Q. 8. How would you pay concern towards disabled people who is lacking sensory organs?

Answer : Towards disabled people lacking sensory organs, I will be polite, kind and always ready for help to them. If ever I find a blind person on the road, I help him/her to cross the road. Whenever I meet a person who is hearing impaired, I try talking to the person with the help of actions. Thus, I behave humble and kind to people lacking any sensory organ.

Q. 9. How do you appreciate the functions of sensory organs which helps us to enjoy the beauty of nature? (AS 6)

Answer : When we travel to a place surrounded with nature on all sides, say a hill station, we are able to see the beautiful landscapes through our eyes, smell the fresh air through our nose, hear to the chirping of the sparrows. So, it is the functions of our sensory organs that allow us to enjoy the beauty of nature in different ways. I appreciate the same because I love nature and I feel blessed to have proper functioning sensory organs.

Q. 10. Form a group with five students in your class and collect eye diseases and its characteristics by talking with ophthalmic assistant. (AS 4)

Answer : a) Ophthalmoplegia- condition when the muscles of eyes of a person becomes weak or non-functional. It can affect as many as 6 muscles that hold the eye in its place. People that get affected with this have blurred vision, difficulty in moving eyes in different directions.

b) Cataract- it is the disease when the normal eye lens becomes cloudy. It occurs generally in old age due to ageing and results in decrease in vision. Cataract is a degenerative, age related eye disorder.

c) Glaucoma- It occurs when the eye produces more fluid than it drains thus causing a rise in the intraocular pressure. Enlarged eyeballs, lacrimation photophobia are few of the symptoms of the condition.

d) Conjunctivitis- the condition arises when the conjunctiva of the eye is exposed to irritants, bacteria etc. it results in swelling, burning, itching and redness of the eye. The treatment involves eye drops, ointments etc. to eliminate the infection.

e) Endophthalmitis- the condition is associated with inflammation of intraocular cavities- vitreous and aqueous humor. The condition usually arises upon infection. The treatment involves intravitreal injections, antibiotics and antifungals.

Q. 11. What happens if our skin loss its sensory nature? (AS 2)

Answer : Skin is the sense organ that plays a major role in detecting sensational stimuli. Upon losing the sensory nature, no signal (nerve impulse) will be sent to the brain for detecting any sensation. Hence, if our skin loses its sensory nature, we will not be able to feel any kind of sensation, be it cold, heat, pressure or pain.

Q. 12. Sagar is not able to listen things properly. Guess what would happen to him. What suggestions you would like give to him? (AS 7)

Answer : If Sagar is not able to listen things properly, it means there is some problem with his ear. Maybe the pinna is not able to focus sound to the ear drum via the ear canal or might be possible there is some internal injury. So, I would first suggest him that this might have happen to him, he should refrain from loud sound, not put pressure to hear things forcefully and finally I'll ask him to consult a ENT doctor and get his ears checked.