Unit 22 · Sense Organs

WORKSHEET

Full marks 32

Name _____ Class _____ Roll no. _____ Date _____ Marks _____ / 32

1 Key words [4]

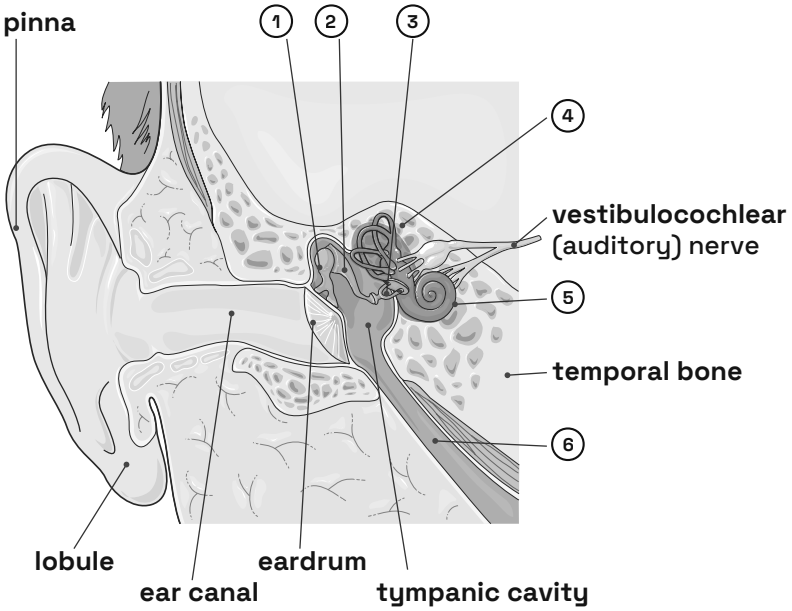
Fill in the blanks with words from the box. Two words in the box are not needed. Each blank carries 0.5 mark.

accommodation	**conjunctiva**	**Corti**	**endolymph**	**Eustachian**	**fovea**	**proprioceptors**
rhodopsin	**Schlemm**	**sclera**				

Receptors in the muscles and joints that sense the body's own position are _____. The clear membrane covering the front of the eye and lining the eyelids is the _____. The pigment of the rods is _____. The small pit in the retina with only cones, where vision is sharpest, is the _____. Aqueous humor drains out of the eye through the canal of _____. Changing the curvature of the lens to focus near and far objects is _____. The fluid inside the membranous labyrinth and the scala media is _____. The receptor for hearing, on the basilar membrane, is the organ of _____.

2 Label the diagram [3]

The diagram shows the human ear cut through. Write the names of the parts 1 to 6. Each carries 0.5 mark.



1. _____ 2. _____

3. _____ 4. _____

5. _____ 6. _____

3 Multiple choice [5]

Choose the correct option for each of the following questions.

i. Which part of the retina has only cones and gives the sharpest vision? [1]

a. the blind spot
b. the fovea centralis
c. the ora serrata
d. the optic disc

ii. Which receptor contains otoliths? [1]

a. the macula of the utriculus
b. the crista of a semicircular canal
c. the organ of Corti
d. the helicotrema

iii. When you look up from your book at a distant mountain, the ciliary muscle: [1]

a. relaxes, the ligaments tighten and the lens becomes flatter
b. contracts, the ligaments tighten and the lens becomes flatter
c. relaxes, the ligaments slacken and the lens becomes rounder
d. contracts, the ligaments slacken and the lens becomes rounder

iv. A person can read a newspaper comfortably but cannot read a bus number across the road. The defect, and the lens that corrects it, are: [1]

a. myopia, concave lens
b. myopia, convex lens
c. hypermetropia, concave lens
d. presbyopia, convex lens

v. High-pitched sounds make the basilar membrane vibrate most: [1]

a. near the base of the cochlea, by the oval window
b. near the tip of the cochlea, by the helicotrema
c. equally along its whole length
d. only in the semicircular canals

4 Short answers [9]

Write short answers to the following questions.

a. Write two differences between rods and cones. [2]

b. Why does everyone have a blind spot, and why don't we notice it? [2]

c. Your ears "pop" on a flight from Kathmandu to Lukla when you swallow. Explain why. [2]

d. What is cataract? How is it treated? **[3]**

5 Numerical problem **[4]**

Show your working.

In Pemba's ear the part of the eardrum that vibrates has an area of 60 mm^2, and the footplate of the stapes 3 mm^2. The ossicles' lever increases the force 1.3 times.

a. By what factor does the area ratio alone raise the pressure?
b. What is the total pressure gain from the eardrum to the oval window?
c. A quiet sound presses on his eardrum with 0.02 Pa. What pressure does it make at the oval window?
d. Why is this gain needed?

Answer:

6 Long answer **[4]**

Write a long answer to the following question.

Describe the mechanism of hearing.

7 Think [3]

After spinning round on the spot many times, you stop suddenly and feel the room spinning the other way. Explain this with the semicircular canals.

8 Activity: Find your near point (not marked)

Hold this sheet at arm's length and close one eye. Bring it slowly towards your open eye until the words just begin to blur. Ask a partner to measure the distance from your eye to the page. Do the same with the other eye, and then ask an adult over 45.

Whose eye	Near point (cm)
my right eye	
my left eye	
an adult over 45	

Why is the adult's near point farther away?