1 JAM **AKTIVITI PERBINCANGAN**

Sistem saraf manusia
The human nervous system Praktis Kendiri

PBD Masteri

Buku teks m/s 4 – 5

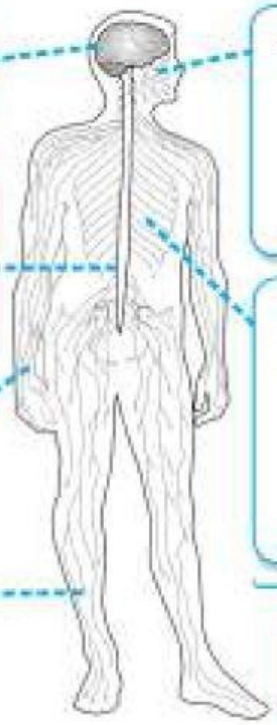
Labelkan sistem saraf manusia di bawah. SP1.1.1 TP1
Label the human nervous system below.

Saraf tunjang	Saraf spina	Sistem saraf pusat	Saraf kranium	Otak	Sistem saraf periferi
Spinal cord	*Spinal nerves*	*Central nervous system*	*Cranial nerves*	*Brain*	*Peripheral nervous system*

(c) _____ (pusat kawalan badan *body control centre*)

(a)

(b)



(d) _____
- 12 pasang saraf ini menghubungkan otak dengan organ deria.
  12 pairs of nerves connect the brain with the sensory organs.

(e) _____
- 31 pasang saraf ini menghubungkan saraf tunjang dengan otot rangka.
  31 pair of nerves connect the spinal cord to the skeletal muscle.

Sel saraf/*Nerve cell*

(f)

Baca perbualan di bawah. Kemudian, tulis jawapan yang mungkin diberikan oleh murid itu dalam ruang yang disediakan dalam rajah di bawah. SP1.1.3 TP4/KB/ΔΔ
Read the conversation below. Then, write the possible answers given by the student in the space provided in the diagram below.

Sistem saraf manusia mengawal dan mengkoordinasi organ dan bahagian badan supaya berfungsi secara harmoni dan cekap. Apakah kepentingan lain sistem saraf manusia?
The human nervous system controls and coordinates the organs and body parts to work harmoniously and efficiently. What are the other importances of the human nervous system?

Maklumat/*Information*
Rangsangan/*Stimuli*
Gerak balas/*Response*
Impuls/*Impulses*
Mentafsir/*Interpret*

Sistem saraf manusia dapat:/*The human nervous system is able to:*
(a) mengesan _____/*detect* _____.
(b) menghantar _____ dalam bentuk _____.
send _____ *in the form of* _____.
(c) _____ impuls./_____ *impulses.*
(d) menghasilkan _____ yang sesuai.
produce an appropriate _____

LIVEWORKSHEETS

Tarikh:

1.2 AKTIVITI PERBINCANGAN

Tindakan terkawal dan luar kawal
Voluntary and involuntary actions Praktis Kendiri

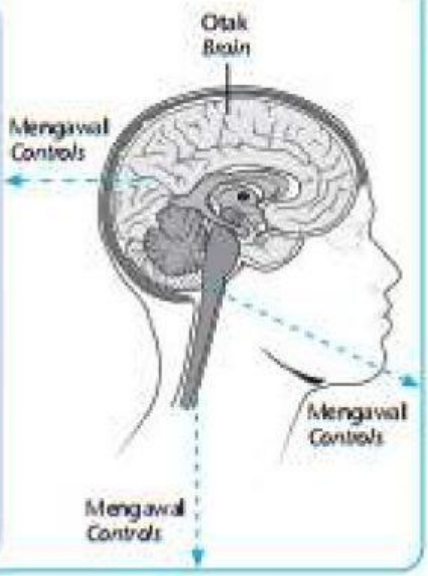
PBD Mastery

SP1.1.2 Buku teks m/s 6 – 8

1 Bezakan tindakan terkawal dan luar kawal di bawah. TP2
Differentiate the voluntary and involuntary actions below.

Membaca *Reading*	Tidak sedar *Without conscious*	Tersentuh *In contact*	Bercakap *Talking*	Tangan *Hand*
Menulis *Writing*	Sedar *With conscious*	Pernafasan *Breathing*	Peristalsis *Peristalsis*	Denyutan jantung *Heartbeat*

(a) **Tindakan terkawal**
Voluntary actions
(i) Tindakan yang dilakukan secara _____.
Actions that are taken _____ *control.*
(ii) **Contoh tindakan:**
Examples of actions:
_____
_____
_____
_____



(b) **Tindakan luar kawal**
Involuntary actions
(i) Tindakan yang berlaku secara _____.
Actions that occur _____ *control.*
(ii) **Contoh tindakan:**
Examples of actions:
• Medula oblongata:
Medulla oblongata:
_____
_____
_____
_____

• **Saraf tunjang/*Spinal cord:***
Menarik _____ apabila _____ cerek panas
Withdrawing of _____ *when* _____ *with a hot kettle*

2 Lengkapkan peta alir tentang urutan aliran impuls dalam tindakan terkawal dan luar kawal. TP1
Complete the flow map with the sequences on the pathway of an impulse in voluntary and involuntary actions.

Saraf tunjang *Spinal cord*	Efektor *Effector*	Afektor (reseptor) *Affector (receptor)*	Otak *Brain*

(a) **Tindakan terkawal/*Voluntary action***

Rangsangan *Stimulus* (bunyi/ *sound*) → (i) _____ (telinga/ *ear*) → impuls *impulse* → (ii) → impuls *impulse* → (iii) _____ (otot/ kelenjar *muscle/ gland*) → Gerak balas *Response* (lari/ *run*)

(b) **Tindakan luar kawal/*Involuntary action***

Rangsangan *Stimulus* (objek tajam/ *sharp object*) → (i) _____ (kulit/ *skin*) → impuls *impulse* → (ii) → impuls *impulse* → (iii) _____ (otot/ *muscle*) → Gerak balas *Response* (jari teralih/ *finger moves away*)

LIVEWORKSHEETS

Tarikh:

1.3 KBAT EKSPERIMEN INKUIRI

Gerak balas tindakan terkawal dan luar kawal
The response of voluntary and involuntary actions

PBD Penemuan Inkuiri

SP1.1.2 Buku teks m/s 6 – 8

Tujuan

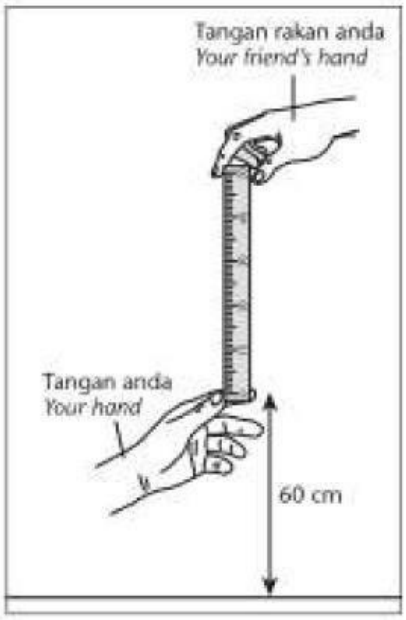
Mengkaji tindakan terkawal dan luar kawal
To study voluntary and involuntary actions

Bahan dan Radas

Pembaris setengah meter, lampu suluh
Half meter ruler, torch

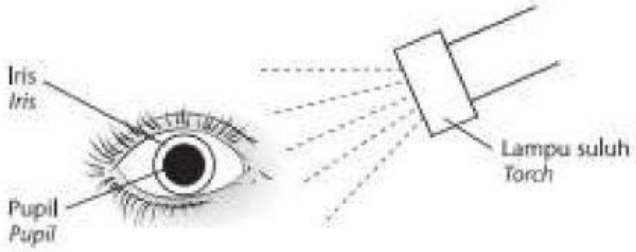
Prosedur

Aktiviti A: Tindakan terkawal
Activity A: Voluntary action



1. Minta rakan anda pegang sebatang pembaris setengah meter pada hujung tanda 50 cm dan tanda sifar berada pada ketinggian 60 cm dari permukaan meja.
   Ask your friend to hold the half meter ruler at the end of the 50 cm mark and the zero mark is at a height of 60 cm from the surface of the table.
2. Letakkan tangan anda di hujung pembaris pada tanda sifar tanpa menyentuhnya.
   Place your hand at the end of the ruler on the zero mark without touching it.
3. Rakan anda akan melepaskan pembaris itu secara tiba-tiba dan anda hendaklah cuba menangkap pembaris tersebut secepat yang mungkin.
   Your friend will release the ruler suddenly and you must try to catch the ruler as fast as possible.
4. Rekodkan jarak x, yang dilalui oleh pembaris, iaitu skala pada pembaris semasa anda menangkap pembaris tersebut. Jarak, x, merupakan ukuran masa gerak balas anda.
   Record the distance x, passed by the ruler based on the scale on the ruler when you catch it. Distance, x is the measurement of your response time.
5. Ulang langkah 1 hingga 4 sebanyak dua kali. Kemudian, hitung purata jarak x.
   Repeat step 1 to 4 twice . Then, calculate the average distance x.

Aktiviti B/*Activity B*: Tindakan luar kawal/*Involuntary action*



1. Halakan cahaya lampu suluh ke arah mata seorang murid dari tepi.
   Shine the torch light towards a student's eye from the side.
2. Minta ahli kumpulan untuk memerhatikan perubahan saiz pupil pada mata murid tersebut.
   Ask the group members to observe the change in pupil size of the student's eye.

Keputusan

Aktiviti A/*Activity A*

Masa gerak balas (s) ***Response time (s)***	1	2	3	**Purata/*Average***

(Jawapan murid/*Student's answer*)

Aktiviti B/*Activity B*

Pupil _____ apabila cahaya dihalakan ke arahnya.
The pupil becomes _____ when light is shone toward

LIVEWORKSHEETS

Perbincangan

Aktiviti A/*Activity A*

1 Apakah gerak balas dalam aktiviti ini? TP1
What is the response in this activity?

_____

2 Adakah gerak balas ini merupakan tindakan terkawal atau luar kawal? Terangkan.
Is this response a voluntary or an involuntary action? Explain. TP2

Tindakan _____. Tindakan ini dilakukan secara _____.

A _____ action. This action is done _____.

3 Apakah organ badan yang mengawal tindakan ini? TP1
What is the organ of the body which controls this action?

_____

4 Apakah kepentingan masa gerak balas dalam kehidupan harian? TP2
What is the importance of the response time in everyday life?

Untuk _____ dan _____ organ-organ badan supaya berfungsi secara cekap pada _____ yang diperlukan.

To _____ and _____ body organs to function efficiently in the _____ required.

Aktiviti B/*Activity B*

5 Apakah rangsangan dan gerak balas dalam aktiviti ini? TP1
What are the stimulus and response in this activity?

Rangsangan/*Stimulus*: _____

Gerak balas/*Response*: _____ pupil/*The _____ of the pupil*

6 Adakah gerak balas ini merupakan tindakan terkawal atau luar kawal? Terangkan.
Is this response a voluntary or an involuntary action? Explain. TP2

Tindakan _____. Tindakan ini dilakukan secara _____.

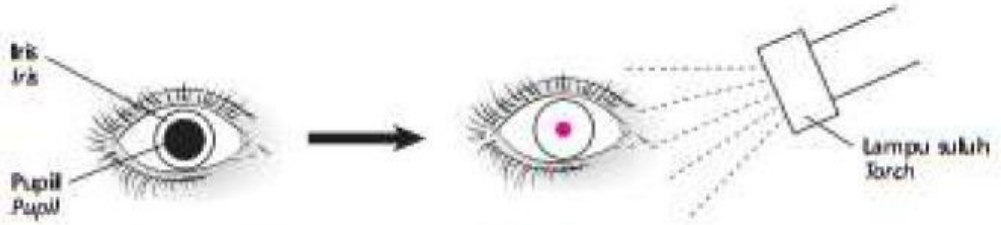
An _____ action. This action is conducted _____.

7 Mengapakah pupil perlu bergerak balas terhadap cahaya terang? TP2
Why do the pupils need to respond to bright light?

Untuk _____ jumlah cahaya yang _____ mata.

To _____ the amount of light _____ the eye.

8 Lukiskan keadaan pupil yang diperhatikan dalam aktiviti ini.
Draw the condition of the pupil observed in this activity.



9 Apakah kepentingan gerak balas ini? TP2
What is the importance of this response?

_____ menghalang _____ yang berlebihan daripada memasuki mata.

_____ excessive _____ from entering the eye.

Kesimpulan

Tindakan menangkap pembaris merupakan tindakan _____ manakala pupil mengecil merupakan tindakan _____.

The action of catching the ruler is a _____ action while the constriction of pupil is an _____ action.

LIVEWORKSHEETS

1.4 AKTIVITI PERBINCANGAN

Struktur mata manusia dan fungsinya

Structure of the human eye and its functions Nota Ekstra Praktis Kendiri

PBD Masteri

Buku teks m/s 11 – 12

1 Labelkan struktur mata manusia /*Label the structure of the human eye.* SP1.2.1 TP1

Iris *Iris*	Koroid *Choroid*	Gelemair *Aqueous humour*	Kanta mata *Eye lens*	Bintik kuning *Yellow spot*
Sklera *Sclera*	Kornea *Cornea*	Gelemaca *Vitreous humour*	Otot silia *Ciliary muscles*	Bintik buta *Blind spot*
Retina *Retina*	Pupil *Pupil*	Konjunktiva *Conjunctiva*	Ligamen penggantung *Suspensory ligaments*	Saraf optik *Optic nerve*

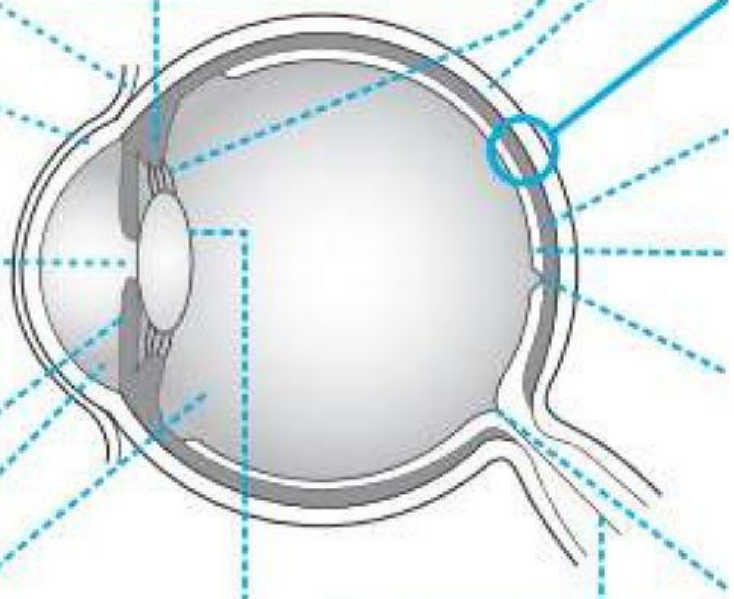
(a) _____
- Membran lut sinar yang melindungi bahagian hadapan sklera.
  Transparent membrane that protects the front part of the sclera.

(b) _____
- Membias dan memfokuskan cahaya ke atas retina.
  Refracts and focuses light onto the retina.

(c) _____
- Mengawal kuantiti cahaya yang memasuki mata.
  Controls the quantity of light entering the eye.

(d) _____
- Mengawal saiz pupil.
  Controls the size of the pupil.

(i) _____
- Mengubah ketebalan kanta mata melalui pengecutan dan pengenduran.
  Changes the thickness of the eye lens through contractions and relaxations.



(e) _____ (f) _____
- Mengekalkan bentuk bola mata dan membantu untuk membias serta memfokuskan cahaya ke atas retina.
  Maintains the shape of the eyeball and helps to refract and focus light onto the retina.

(g) _____
- Memfokuskan cahaya ke atas retina.
  Focuses light onto the retina.

(h) _____
- Menghantar impuls saraf ke otak untuk ditafsir.
  Sends nerve impulses from the retina to the brain to be interpret.

3 Lengkapkan peta alir tentang laluan lintasan cahaya dalam mekanisme penglihatan manusia.
Complete the flow map about the path of light in the human sight mechanism. SP1.2.2 TP2

Kornea *Cornea* → (a) → (b) → (c) →

LIVEWORKSHEETS

(j) _____

_____

- Memegang kanta mata pada kedudukannya.
  Hold the eye lens in its position.

(k) _____

- Melindungi dan mengekalkan bentuk mata.
  Protects and maintains the shape of the eye.

(l) _____

- Mengelakkan pantulan cahaya dalam mata dan membekalkan oksigen serta nutrien kepada mata.
  Prevents reflection of light in the eye and supplies oxygen and nutrients to the eye.

(m) _____

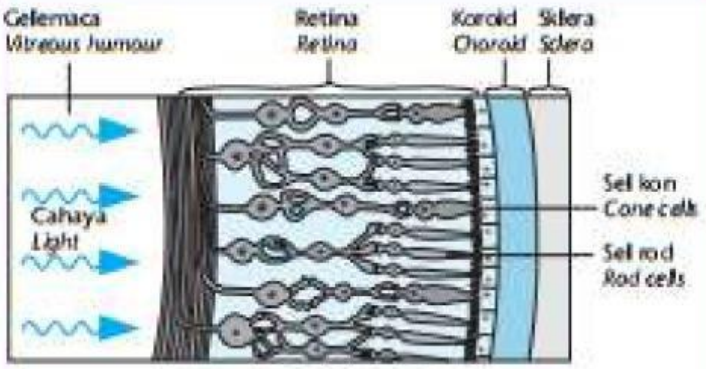
- Mengandungi fotoreseptor yang mengesan cahaya dan menghasilkan impuls saraf.
  Contains photoreceptors that detect light and produce nerve impulses.

(n) _____

- Bahagian mata (retina) yang paling peka terhadap cahaya.
  The part of the eye (retina) that is the most sensitive to light.

(o) _____

- Bahagian pada retina yang tidak peka kepada cahaya kerana tiada fotoreseptor.
  Part of the retina which is not sensitive to light as there is no photoreceptors.



2 (a) Namakan **dua** fotoreseptor pada retina.
Name two photoreceptors on the retina. TP1

_____

_____

(b) Apakah fungsi sel rod dan sel kon? TP2
What are the functions of the rod cells and the cone cells?

Samar *Dim*	Keamatan *Intensity*	Berwarna *Coloured*

(i) Sel kon/*Cone cell*

Peka kepada cahaya _____ dalam keadaan bercahaya.

Sensitive to _____ *lights in bright condition.*

(ii) Sel rod/*Rod cell*

Peka kepada _____ cahaya yang berbeza termasuk cahaya _____ tetapi tidak peka kepada cahaya _____.

Sensitive to different _____ *of light including* _____ *light but not sensitive to* _____ *lights.*

Galeri Info

Anak mata membesar dalam keadaan gelap untuk membolehkan lebih banyak cahaya memasuki mata.
The pupil dilates in the dark to allow more light to enter the eye.

(d) → (e) _____ (fotoreseptor/*photoreceptor*) → impuls *impulse* → (f) → impuls *impulse* → Otak *Brain*

LIVEWORKSHEETS

BAB 1

1.5 KBAT AKTIVITI PERBINCANGAN

Struktur telinga manusia dan mekanisme pendengaran

Structure of the human ear and hearing mechanism Praktis Kendiri

PBD Masteri

Buku teks m/s 13, 14 & 17

1 Labelkan struktur telinga manusia. SP1.2.1 TP1
Label the structure of the human ear.

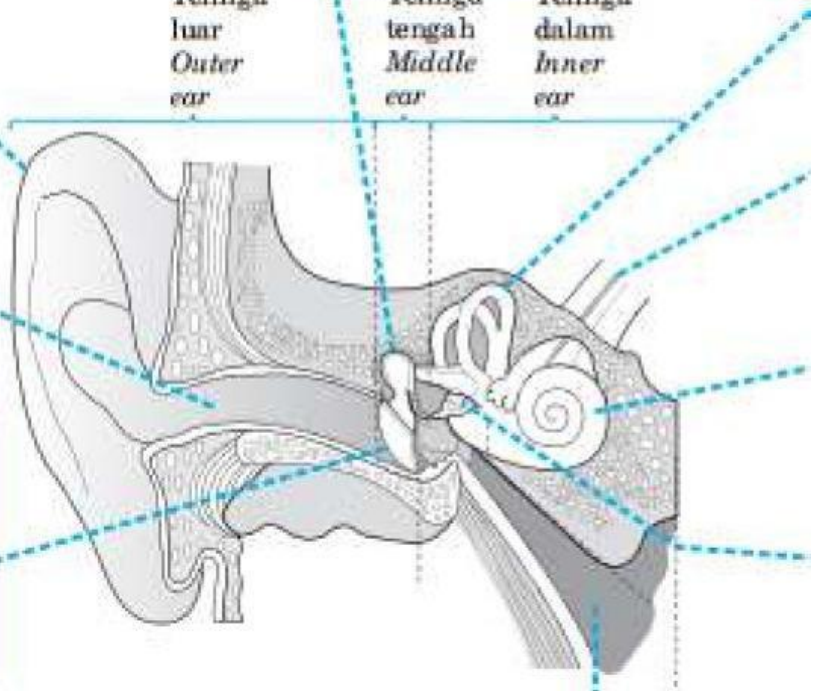
Cuping telinga *Pinna*	Koklea *Cochlea*	Salur separuh bulat *Semicircular canals*	Saraf auditori *Auditory nerve*	Osikel *Ossicles*
Tiub Eustachio *Eustachian tube*	Salur telinga *Ear canal*	Gegendang telinga *Eardrum*	Jendela bujur *Oval window*	

(a) _____
- Mengumpul dan menghantar gelombang bunyi ke dalam salur telinga.
Collects and directs sound waves into the ear canal.

(b) _____
- Menyalurkan gelombang bunyi ke gegendang telinga.
Channels sound waves to the eardrum.

(c) _____
- Bergetar apabila gelombang bunyi mengenainya dan memindahkan getaran ke osikel.
Vibrates when it is hit by sound waves and sends vibrations to ossicles.

(d) _____
- Menguatkan getaran bunyi dan memindahkannya ke jendela bujur.
Amplify sound vibrations and send them to the oval window.



(e) _____
- Mengimbangkan tekanan udara di kedua-dua belah gegendang telinga.
Equalises the air pressure on both sides of the eardrum.

4 Lengkapkan peta alir tentang laluan gelombang bunyi dalam mekanisme pendengaran. SP1.2.2 TP2
Complete the flow map about the path of the sound wave in the hearing mechanism.

Sumber bunyi
Source of sound

→ (a) —bunyi / *sound*→ (b) —bunyi / *sound*→ (c) —getaran / *vibration*

LIVEWORKSHEETS

Galeri Info

Salur telinga juga dikenal sebagai salur auditori.
Ear canal is also known as auditory canal.

(f) _____

- Mengesan kedudukan kepala dan mengawal keseimbangan badan.
  Detects the position of the head and controls the body balance.

(g) _____

- Menghantar impuls saraf ke otak untuk pentafsiran.
  Sends nerve impulses to the brain for interpretation.

(h) _____

- Mengesan dan menukarkan getaran bunyi kepada impuls saraf.
  Detects and converts sound vibrations into nerve impulses.

(i) _____

- Menghantar getaran bunyi dari osikel ke koklea.
  Sends sound vibrations from the ossicles to the cochlea.

Galeri Info

Selain bertindak sebagai organ pendengaran, telinga juga bertindak sebagai organ pengimbangan badan.
Besides functioning as an organ of hearing, the ear also functions as an organ for balancing the body.

2 Nyatakan bahagian-bahagian telinga yang ....
State the parts of ear that SP1.2.1 TP2

(a) **tidak** memainkan peranan dalam pendengaran.
do **not** *play a part in hearing.*

_____

_____

(b) berisi udara/*contain air.*

_____

(c) berisi bendalir/*contain fluid.*

_____

(d) terganggu apabila seseorang mengalami mabuk laut atau selepas menggunakan lif?
is affected when a person suffers from seasickness or after using a lift.

_____

3 Namakan alat untuk mengatasi had pendengaran.
Name the equipment to overcome limitations of hearing. TP1

Pembesar suara/*Loadspeaker*
Stetoskop/*Stethoscope*
Alat bantu pendengaran/*Hearing aid*

(a)

_____ membantu kita mendengar denyutan jantung.
_____ *helps us to hear the heartbeats.*

(b)

_____ menguatkan bunyi
_____ *amplifies sound.*

(c)

_____ membantu pendengaran.
_____ *helps in hearing.*

(d) → getaran kuat / *strong vibration* → Jendela bujur / *Oval window* → getaran kuat / *strong vibration* → (e) → impuls / *impulse* → (f) → impuls / *impulse* → Otak / *Brain*

LIVEWORKSHEETS

1.6 KBAT AKTIVITI PERBINCANGAN

Struktur hidung dan pengesanan rangsangan

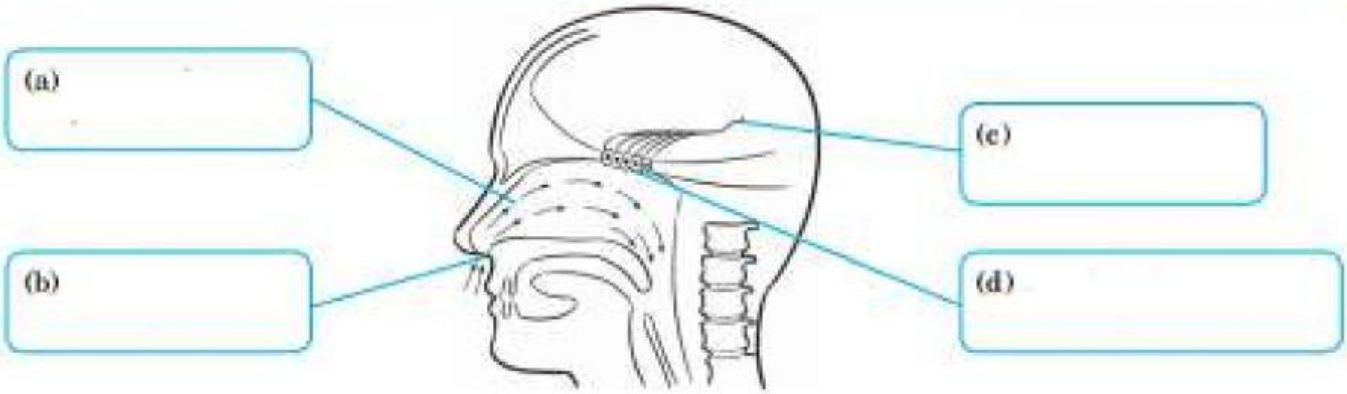
Structure of the nose and stimuli detection Praktis Kendiri

PBD Masteri

Buku teks m/s 14 & 15

1 Labelkan struktur hidung dan kenal pasti kedudukan reseptor bau.
Label the structure of the nose and identify the position of the smell receptor. SP1.2.1 TP1

Saraf *Nerve*	Rongga hidung *Nasal cavity*	Lubang hidung *Nostril*	Sel deria bau *Sensory cells of smell*



2 Apakah organ deria bau? TP1
What is the sensory organ of smell?

_____

3 Apakah nama lain bagi sel deria bau? TP1
What is the other name for the sensory cells of smell?

_____

4 Kim Seng menghidap selesema dan mendapati hidungnya **tidak** dapat menghidu bau makanan dengan baik. Berikan penjelasan anda. SP1.2.3 TP2
*Kim Seng is having a flu and he finds that his nose is **unable** to smell the food well. Give your explanation.*

Penjelasan/*Explanation*:

_____ dilitupi oleh satu lapisan tebal _____ yang menghalang _____ _____ daripada makanan merangsang _____.

_____ *are covered with a thick layer of* _____ *that prevents* _____ *from the food from stimulating the* _____.

5 Nyatakan laluan impuls setelah bahan kimia dalam udara diterima oleh reseptor di dalam rongga hidung.
State the path of an impulse after a chemical substance in the air is received by the receptor in the nose. SP1.2.2 TP2

Otak/*Brain*	Saraf/*Nerve*	Reseptor bau/*Smell receptor*

Bahan kimia melarut dalam mukus *Chemical substances dissolve in mucus* (Rangsangan/*Stimulus*) → merangsang *stimulate* → (a) → impuls *impulse* → (b) → impuls *impulse* → (c) _____ (Mentafsir impuls) *(Interpret impulses)*

LIVEWORKSHEETS

1.7 AKTIVITI PERBINCANGAN

Struktur lidah dan deria rasa
The structure of the tongue and the sense of taste

PBD Kontekstual

Buku teks m/s 15

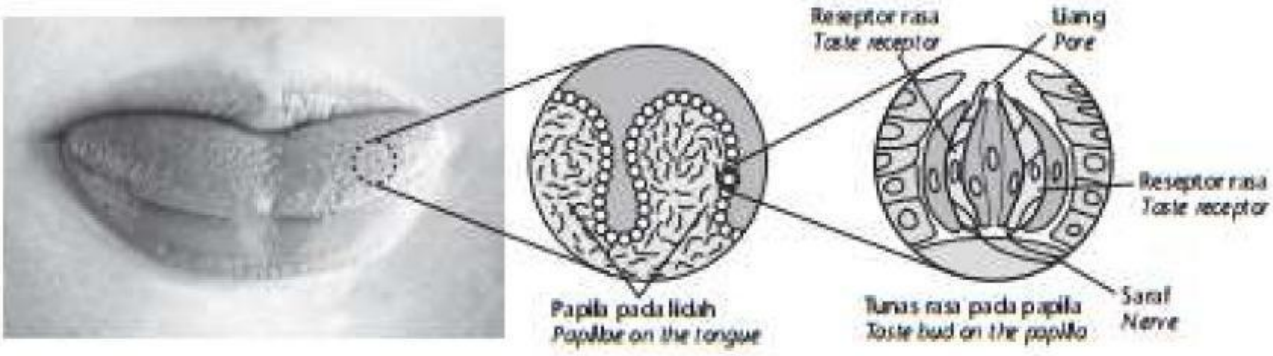
1 Labelkan bahagian lidah yang peka terhadap rasa berlainan. Kemudian, padankan jenis makanan yang dirasa paling baik di bahagian itu/*Label the parts of the tongue which are sensitive to different tastes. Then, match the types of food that taste the best on those parts.* SP1.2.1 TP2

Masin/*Salty*	Masam/*Sour*	Manis/*Sweet*	Umami/*Umami*	Pahit/*Bitter*

Rasa/*Taste*	**Makanan/*Food***
P:	Cuka, lemon *Vinegar, lemon*
Q:	Madu, gula *Honey, sugar*
R:	Peria, hempedu *Bitter gourd, bile*
S:	Ikan masin, garam *Salted fish, salt*
T:	Daging, MSG *Meat, MSG*

2 Kaji rajah struktur lidah di bawah dan lengkapkan pernyataan yang berikut. SP1.2.1 TP2
Study the diagram of the structure of tongue below and complete the following statement.

Manis *Sweet*	Masin *Salty*	Masam *Sour*	Pahit *Bitter*	Reseptor rasa *Taste receptor*	Papila *Papillae*	Tunas rasa *Taste buds*	Umami *Umami*



_____ (bintik kecil) pada permukaan lidah dilapisi beratus-ratus _____ yang mengandungi _____. _____ ini dapat mengesan lima jenis rasa asas, iaitu _____, _____, _____, _____ dan _____. Rasa _____ dikaitkan dengan rasa lazat seperti rasa daging dalam sup atau mononatrium glutamat (MSG).

The _____ (small spots) on the surface of the tongue are covered by hundreds of _____ containing _____. These _____ can detect the five basic types of taste, namely _____, _____, _____, _____ and _____. The taste of _____ is associated with a delicious taste like meat in a soup or monosodium glutamate (MSG).

3 Lengkapkan peta alir di bawah untuk menunjukkan bagaimana lidah mengesan rasa. SP1.2.2 TP2
Complete the flow map below to show how the tongue detects tastes.

Bahan kimia dalam makanan melarut dalam air liur
The chemical substance in food dissolves in saliva

→ merangsang / *stimulates* → (a) → impuls / *impulse* → (b) → impuls / *impulse* → (c)

LIVEWORKSHEETS

1.8 EKSPERIMEN INKUIRI KBAT

Struktur lidah dan pengesanan rangsangan
Structure of the tongue and stimuli detection

PBD Penemuan Inkuiri

SP1.2.3 Buku teks m/s 21

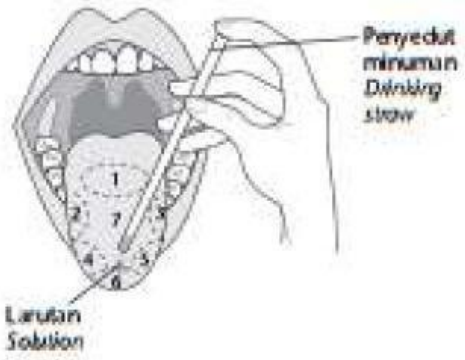
Tujuan Mengenal pasti bahagian berbeza pada lidah yang terlibat dalam pengesanan rasa
To identify the different parts of the tongue that are involved in the detection of taste

Bahan dan Radas Jus peria, cuka, larutan gula, larutan garam biasa, sup cendawan segera, penyedut minuman, cawan/*Bitter gourd juice, vinegar, sugar solution, common salt solution, instant mushroom soup, drinking straw, cup*

Prosedur

1 Minta rakan anda berkumur dengan air suling sebelum memulakan aktiviti ini untuk mengeluarkan semua sisa makanan di dalam mulut.
Ask your friend to gargle with distilled water before conducting this activity to remove all the food remains in the mouth.

2 Titiskan setitik jus peria pada bahagian yang berlainan lidah rakan anda seperti yang ditunjukkan dalam rajah./*Place a drop of bitter gourd juice onto different parts of your friend's tongue as shown in the diagram.*



3 Rekod bahagian lidah yang paling peka terhadap rasa jus itu dalam jadual di bawah.
Record the part of the tongue that is the most sensitive to the taste of the juice in the table below.

4 Ulang langkah 1 hingga 3 dengan menggunakan cuka, larutan gula, larutan garam biasa dan sup cendawan segera./*Repeat steps 1 to 3 by using vinegar, sugar solution, common salt solution and instant mushroom soup.*

Keputusan

Jenis larutan *Type of solution*	Bahagian lidah *Part of the tongue*	Jenis rasa *Type of taste*
Jus peria *Bitter gourd juice*		
Cuka *Vinegar*		
Larutan gula *Sugar solution*		
Larutan garam biasa *Common salt solution*		
Sup cendawan segera *Instant mushroom soup*		

Perbincangan

1 Berikan **lima** rasa yang dapat dikesan oleh tunas rasa pada lidah. TP1
*Give the **five** tastes which can be detected by the taste buds on the tongue.*

_____

2 Yogen mengelap kering lidahnya dengan kertas tisu. Dia mendapati bahawa rasa makanan kering **tidak** dapat dikesan dengan baik oleh lidahnya yang kering. Bagaimanakah anda dapat menjelaskan kejadian ini? TP3/KBAT
*Yogen wiped his tongue with a tissue paper. He found that the taste of dry food could **not** be properly detected by his dry tongue. How can you explain this incident?*

_____ dalam makanan perlu _____ dalam air liur untuk merangsang tunas rasa.

_____ *in food need to* _____ *in saliva to trigger the taste buds.*

Kesimpulan _____ ialah organ deria rasa./*The* _____ *is the sensory organ of taste.*

LIVEWORKSHEETS

1.9 EKSPERIMEN INKUIRI

Hubung kait antara deria bau dengan deria rasa
Relationship between the sense of smell and the sense of taste Praktis Kendiri

PBD Penemuan Inkuiri

SP1.2.3 Buku teks m/s 22 – 23

Tujuan

Mengkaji hubung kait antara deria bau dengan deria rasa
To study the relationship between the sense of smell and the sense of taste

Bahan dan Radas

Betik, nanas, pisang, limau, jalur kain hitam, pisau dan garpu bersih
Papaya, pineapple, banana, lime, strip of black cloth, clean knife and fork

Prosedur

1 Sediakan potongan kecil betik, nanas, pisang dan limau.
Prepare small pieces of papaya, pineapple, banana and lime.

2 Minta rakan anda menyatakan jenis buah yang telah dirasa dengan mata ditutup.
Request your friend to state the types of fruit tasted with the eyes blindfolded.

3 Rekod keputusan dalam jadual di bawah/*Record the results in the table below.*

4 Ulang langkah 1 hingga 3 dengan meminta rakan anda memicit hidungnya.
Repeat steps 1 to 3 by requesting your friend to pinch his/her nose.

Keputusan

Tandakan (✓) untuk tekaan yang betul dan (✗) bagi tekaan yang salah.
Tick (✓) the correct guess and (✗) the wrong guess.

Jenis buah *Type of fruit*	Dapat mengenal pasti jenis buah *Able to determine the type of fruit*	
	Hidung tidak dipicit *Nose is not pinched*	Hidung dipicit *Nose is pinched*
Betik/*Papaya*		
Nanas/*Pineapple*		
Pisang/*Banana*		
Limau/*Lime*		

(Jawapan murid/*Student's answer*)

1 Dapatkah rakan anda mengenal pasti dengan tepat rasa semua jenis buah yang diberikan dengan hidung dipicit?/*Can your friend determine accurately the tastes of all the fruits given with the nose pinched?* TP1

_____

2 Namakan deria (deria rasa atau deria bau) yang digunakan untuk mengesan makanan
Name the sense/senses (sense of taste or sense of smell) used to detect food TP2
(a) ketika hidung dipicit/*when the nose is pinched.*

_____

(b) ketika hidung tidak dipicit/*when the nose is not pinched.*

_____

3 Mengapakah seseorang yang menghidap demam selesema kurang peka terhadap rasa makanan?/*Why does a person who has a cold or the flu is less sensitive towards the taste of food?* TP2

Lapisan _____ tebal yang terhasil menghalang _____ dalam makanan daripada merangsangkan reseptor _____.

The thick layer of _____ *produced prevents* _____ *in the food from stimulating the* _____ *receptors.*

Kesimpulan

Deria _____ dibantu oleh deria _____.

The sense of _____ *is helped by the sense of* _____

LIVEWORKSHEETS

1.10 AKTIVITI PERBINCANGAN

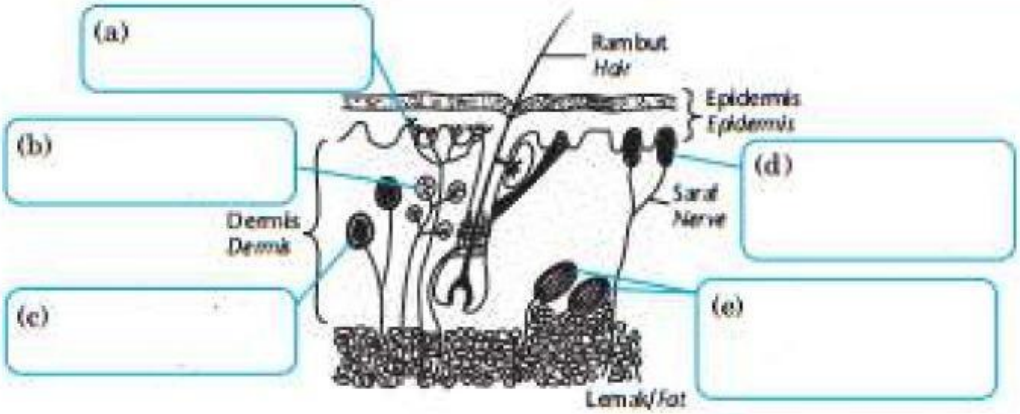
Struktur kulit dan pengesanan rangsangan
Structure of the skin and the detection of stimuli Praktis Kendiri

PBD Mastel

Buku teks m/s 16

1 Kenal pasti dan labelkan jenis reseptor berlainan yang terdapat dalam kulit. SP1.2.1
Identify and label the different types of receptors in the skin.

Reseptor sentuhan/*Touch receptor*	Reseptor sakit/*Pain receptor*
Reseptor sejuk/*Cold receptor*	Reseptor tekanan/*Pressure receptor*
Reseptor haba/*Heat receptor*	



2 Nyatakan reseptor yang terletak dalam../*State the receptors situated in the...* SP1.2.1 TP1

(a) epidermis/*epidermis* : _____

(b) dermis/*dermis* : _____

_____

(c) berdekatan lapisan lemak/*close to the fat layer* ; _____

3 Apakah lapisan kulit yang../*What is the skin layer which...* TP1

(a) melindungi permukaan luar badan?
protects the outer surface of the body?

_____

(b) mengandungi salur darah, kelenjar peluh dan reseptor? TP1
contains blood vessels, sweat glands and receptors?

_____

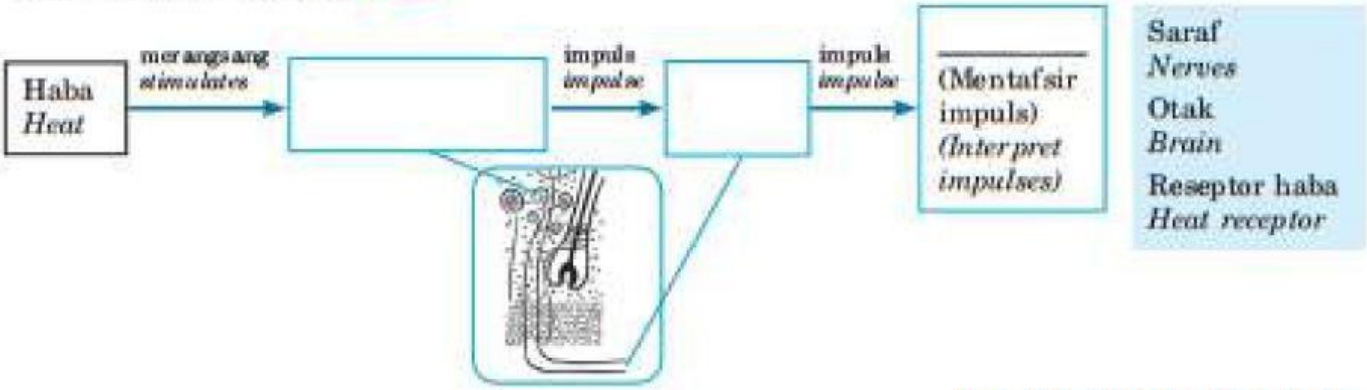
4 Tandakan (✓) fungsi lain kulit./*Tick (✓) other functions of the skin.* TP1

☐ Mengawal atur suhu badan
Regulates body temperature

☐ Mencegah kehilangan air berlebihan
Prevents excessive water loss

☐ Membasmi mikroorganisma
Destroys microorganisms

5 Lengkapkan peta alir tentang laluan impuls setelah rangsangan haba diterima oleh reseptor dalam kulit./*Complete the flow map about the path of an impulse after a heat stimulus is received by the receptor in the skin.* SP1.2.2 TP2



LIVEWORKSHEETS