

SULIT



**JABATAN PELAJARAN
NEGERI JOHOR**

PEPERIKSAAN PERCUBAAN SPM 2009

4551/1

BIOLOGI

Kertas 1

September

$1 \frac{1}{4}$ jam

Satu jam lima belas minit

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU

1. *Kertas soalan ini adalah dwibahasa.*
2. *Soalan dalam bahasa Inggeris mendahului soalan yang sepadan dalam bahasa Melayu.*
3. *Calon dikehendaki membaca maklumat di halaman belakang kertas soalan ini.*

Kertas soalan ini mengandungi 31 halaman bercetak dan 1 halaman tidak bercetak

- 1 Diagram 1 shows a typical plant cell.
Rajah 1 menunjukkan satu sel tumbuhan umum.

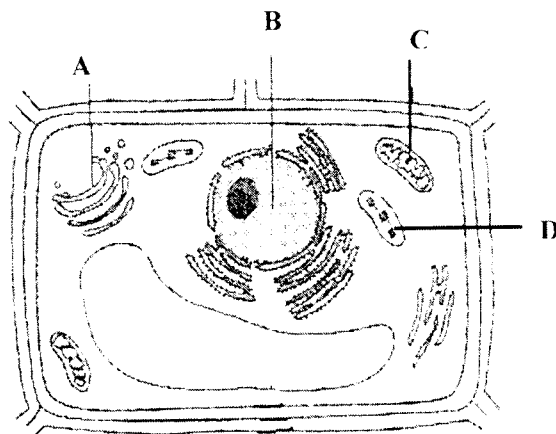


Diagram 1
Rajah 1

- Which of the structures labelled A, B, C or D absorb light energy to carry out photosynthesis?
Yang manakah antara struktur berlabel A, B, C atau D menyerap tenaga cahaya untuk menjalankan fotosintesis?
2. Which of the following information is **true** about the differences between a typical plant cell and an animal cell?
Antara maklumat berikut, yang manakah **benar** bagi perbezaan di antara sel tumbuhan dan sel haiwan?

	Plant cell <i>Sel tumbuhan</i>	Animal cell <i>Sel haiwan</i>
A	Cellulose cell wall present <i>Mempunyai dinding sel berselulosa</i>	Chitinous cell wall present <i>Mempunyai dinding sel berkitin</i>
B	Golgi body absent <i>Mempunyai jasad Golgi</i>	Golgi body present <i>Tiada mempunyai jasad Golgi</i>
C	Centrioles absent <i>Tidak mempunyai sentriol</i>	Centrioles present <i>Mempunyai sentriol</i>
D	Has small vacuole <i>Mempunyai vakuol bersaiz kecil</i>	Has large vacuole <i>Mempunyai vakuol bersaiz besar</i>

3. Diagram 2 shows the movement of mineral X into a root hair cell.
Rajah 2 menunjukkan pergerakan mineral X ke dalam satu sel akar rambut.

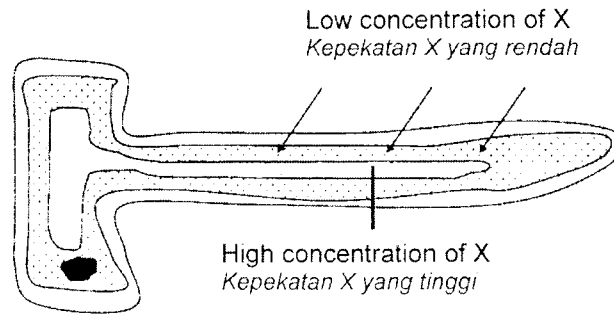


Diagram 2
Rajah 2

Which process allows X to enter the cell?
Apakah proses yang membenarkan X memasuki sel ini?

- A Osmosis
Osmosis
 - B Simple diffusion
Resapan ringkas
 - C Active transport
Pengangkutan aktif
 - D Facilitated diffusion
Resapan membantu
4. Diagram 3 shows an osmometer.
Rajah 3 menunjukkan satu osmometer.

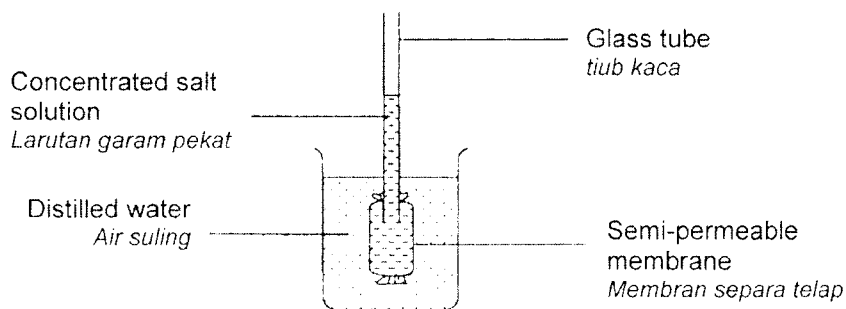


Diagram 3
Rajah 3

What will happen to the level of the concentrated salt solution in the glass tube after 60 minutes?

Apakah akan terjadi kepada aras larutan garam pekat di dalam tiub kaca selepas 60 minit?

- A** Increases and then decreases
Meningkat dan kemudian menurun
- B** Decreases and then increases
Menurun dan kemudian meningkat
- C** Increases and then stops
Meningkat dan kemudian berhenti
- D** Decreases and then stops
Menurun and kemudian berhenti

5. Diagram 4 shows the condition of a plant cell after being immersed in solution Y for 20 minutes.
Rajah 4 menunjukkan keadaan satu sel tumbuhan setelah direndam di dalam larutan Y selama 20 minit.

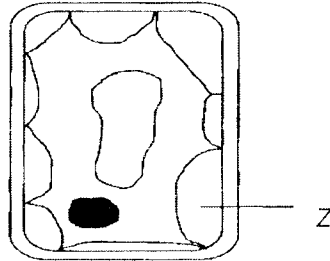


Diagram 4
Rajah 4

Which of the following is the correct answer for Z and solution Y?
Yang manakah antara berikut jawapan yang betul untuk Z dan larutan Y?

	Z	Solution Y <i>Larutan Y</i>
A	Air <i>Udara</i>	Isotonic solution <i>Larutan isotonik</i>
B	Water <i>Air</i>	Hypotonic solution <i>Larutan hipotonik</i>
C	Solution Y <i>Larutan Y</i>	Hypertonic solution <i>Larutan hipertonik</i>
D	Vacuum <i>Vakum</i>	Isotonic solution <i>Larutan isotonik</i>

6. Diagram 5 shows a protein structure.
Rajah 5 menunjukkan satu struktur protein.

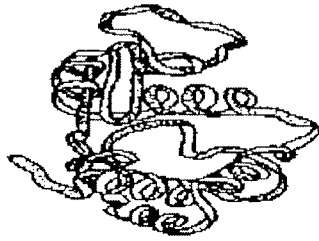


Diagram 5
Rajah 5

Which of the following are examples of this type of protein?
Yang manakah antara berikut contoh-contoh protein jenis ini?

- I Thyroxine
Tiroksina
- II Haemoglobin
Hemoglobin
- III Keratin
Keratin
- IV Pepsin
Pepsin
- A I and II only
I dan II sahaja
- B I and IV only
I dan IV sahaja
- C II and III only
II dan III sahaja
- D III and IV sahaja
III dan IV sahaja
7. Diagram 6 shows the 'lock and key hypothesis' of enzyme action.
Rajah 6 menunjukkan hipotesis 'mangga dan kunci' bagi tindakan enzim.

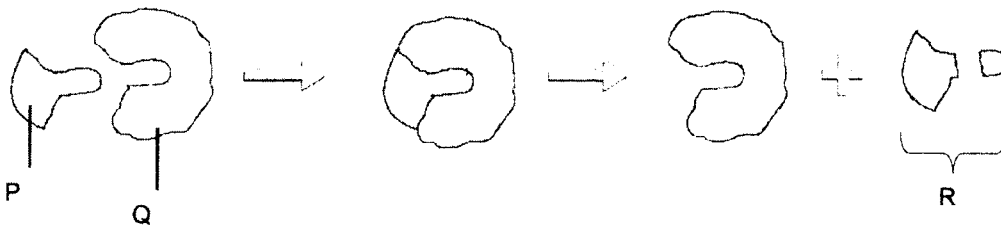


Diagram 6
Rajah 6

What is represented by P,Q and R?
 Apakah yang diwakili oleh P,Q dan R?

	P	Q	R
A	Enzyme <i>Enzim</i>	Substrate <i>Substrat</i>	Product <i>Produk</i>
B	Substrate <i>Substrat</i>	Enzyme <i>Enzim</i>	Product <i>Produk</i>
C	Product <i>Produk</i>	Enzyme <i>Enzim</i>	Substrate <i>Substrat</i>
D	Enzyme <i>Enzim</i>	Product <i>Produk</i>	Substrate <i>Substrat</i>

8. Diagram 7 shows the organelles in an animal cell.
 Rajah 7 menunjukkan organel-organel di dalam satu sel haiwan.

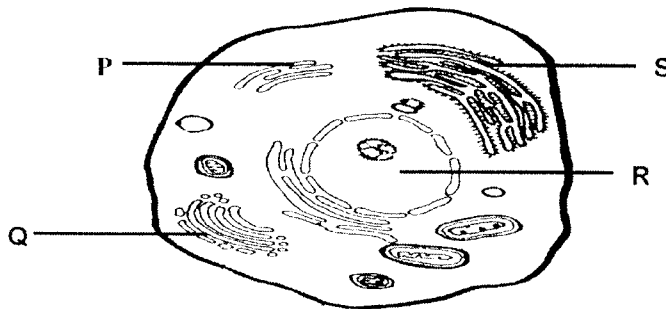


Diagram 7
 Rajah 7

Which of the organelles P,Q,R and S are involved in the synthesis and secretion of extracellular enzymes?
 Yang manakah antara organel P,Q,R dan S terlibat dalam sintesis dan perembesan enzim luar sel?

- A P,Q and R
P, Q dan R
- B P,Q and S
P, Q dan S
- C Q,R and S
Q, R dan S
- D P,R and S
P, R dan S

9. A housewife uses a few slices of unripe papaya to tenderize the meat she is cooking for dinner.

Which of the following sequences is correct?

Seorang suri rumah menggunakan beberapa keping hirisan buah betik muda untuk melembutkan daging yang dimasak untuk makan malam.

Yang manakah antara berikut urutan yang betul?

- P Add the raw papaya slices
Tambahkan hirisan betik muda
- Q Boil the meat
Rebus daging itu
- R Leave the meat for one and a half hour
Biarkan daging tersebut selama satu jam setengah
- S Cut the meat into small pieces
Potong daging kepada hirisan kecil
- A Q → R → S → P
- B S → P → R → Q
- C P → Q → R → S
- D R → S → Q → P

10. Diagram 8 shows four stages of meiosis.
Rajah 8 menunjukkan empat peringkat meiosis.

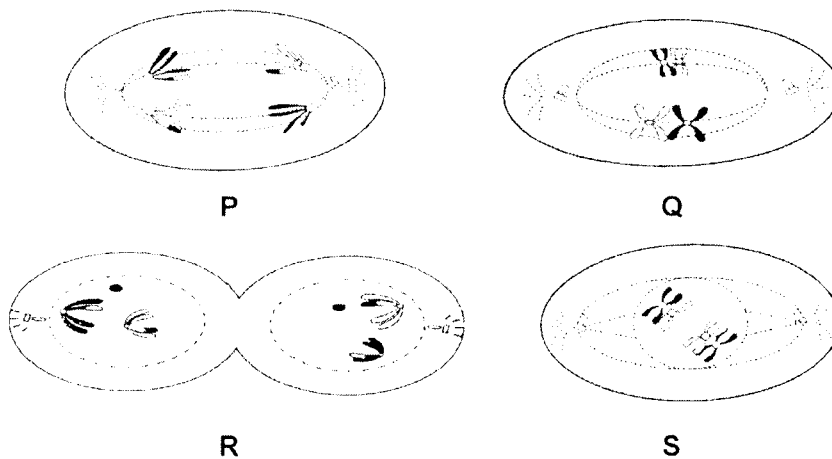


Diagram 8
Rajah 8

What is the correct sequence?
Apakah susunan yang betul?

- A R → P → Q → S
- B P → Q → R → S
- C S → Q → R → P
- D S → Q → P → R

11. Diagram 9 shows chromosomes of an animal cell during metaphase.
Rajah 9 menunjukkan kromosom di dalam satu sel haiwan semasa metafasa.

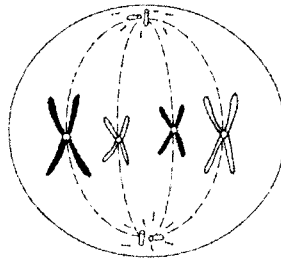


Diagram 9
Rajah 9

How many chromosomes are there in each of the daughter cells produced?
Berapakah bilangan kromosom dalam sel anak yang dihasilkan?

- A 2
B 4
C 6
D 8
12. Which of the following is the **correct** comparison between Meiosis I and meiosis II?
Manakah antara berikut perbandingan yang betul antara Meiosis I dan Meiosis II?

	Meiosis I	Aspect Aspek	Meiosis II
A	Synapsis does not occur <i>Sinapsis tidak berlaku</i>	Prophase	Synapsis occurs <i>Sinapsis berlaku</i>
B	Chromosomes line up at metaphase plate. <i>Kromosom beratur di satah khatulistiwa.</i>	Metaphase	Homologous chromosomes line up at metaphase plate. <i>Kromosom homolog beratur di satah khatulistiwa.</i>
C	Homologous chromosomes separate and pulled to the opposite poles. <i>Kromosom homolog berpisah dan tertarik ke kutub yang bertentangan.</i>	Anaphase	Centromeres separate and chromatids are pulled to the opposite poles. <i>Sentromer berpisah dan kromatid tertarik ke kutub yang bertentangan.</i>
D	Two daughter cells are produced. <i>Dua sel anak terhasil</i>	Telophase	Two daughter cells are produced <i>Dua sel anak terhasil.</i>

13. The diploid number of chromosomes in an animal cell is 24. During anaphase I, a pair of the homologous chromosomes fail to separate. What is the number of chromosomes in each daughter cell after meiosis I is completed?

Bilangan kromosom diploid pada satu sel haiwan ialah 24. Semasa anafasa I, sepasang kromosom homolog gagal berpisah. Berapakah bilangan kromosom di dalam setiap sel anak setelah meiosis I selesai?

	Daughter cell 1 <i>Sel anak 1</i>	Daughter cell 2 <i>Sel anak 2</i>
A	12	12
B	11	13
C	24	0
D	23	24

14. Which vitamin is required for blood clotting?
Vitamin manakah diperlukan untuk pembekuan darah?
- A Vitamin A
Vitamin A
- B Vitamin D
Vitamin D
- C Vitamin E
Vitamin E
- D Vitamin K
Vitamin K
15. Which organelle absorbs light energy during light reaction of photosynthesis?
Organel manakah menyerap tenaga cahaya semasa tindak balas cahaya fotosintesis?
- A Chloroplast
Kloroplas
- B Mitochondrion
Mitokondrion
- C Golgi apparatus
Jasad Golgi
- D Rough endoplasmic reticulum
Jalinan endoplasma kasar

16. Diagram 10 shows part of the human digestive system.
Rajah 10 menunjukkan sebahagian daripada sistem pencernaan manusia

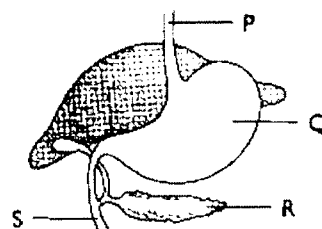


Diagram 10
Rajah 10

Which part has an acidic medium?

Bahagian manakah yang mempunyai medium berasid?

- A P
- B Q
- C R
- D S

- 17 Table 1 shows the result of a food test on one food sample.
Jadual 1 menunjukkan keputusan ujian makanan bagi satu sampel makanan.

Solution <i>Larutan</i>	Observation <i>Pemerhatian</i>
Benedict's solution <i>Larutan Benedict</i>	Brick red precipitate <i>Mendakan merah bata</i>
DCPIP <i>DCPIP</i>	Colourless solution <i>Larutan tidak berwarna</i>
Iodine <i>Iodin</i>	Dark blue colour <i>Warna biru tua</i>

Table 1
Jadual 1

Which of the following is present in this food sample ?

Antara berikut yang manakah terkandung di dalam sampel makanan tersebut?

- I protein
protein
 - II reducing sugar
gula penurun
 - III vitamin C
vitamin C
 - IV starch
kanji
- A I and II only
I dan II sahaja
 - B I, III and IV only
I, III dan IV sahaja
 - C II, III and IV only
II, III dan IV sahaja
 - D I, II, III and IV
I, II, III dan IV

18. Diagram 11 shows a child suffering from a nutrient deficiency disease.
Rajah 11 menunjukkan seorang kanak-kanak yang menghidapi penyakit kekurangan nutrien.



Diagram 11
Rajah 11

Which food of A, B, C or D should be taken often by the child to recover?
Manakah antara makanan A, B, C atau D yang perlu diambil dengan kerap oleh kanak-kanak ini untuk sembuh?

- A Fruits
Buah-buahan
- B Sweets
Manisan
- C Butter
Mentega
- D Meat
Daging
19. Which of the following are the products of aerobic and anaerobic respiration in muscles?
Antara berikut yang manakah bahan hasil dari respirasi aerobik dan anerobik di dalam otot?

	Aerobic Respiration <i>Respirasi Aerobik</i>	Anaerobic Respiration <i>Respirasi Anaerobik</i>
A	Lactic acid <i>Asid laktik</i>	Ethanol <i>Etanol</i>
B	Lactic acid <i>Asid Laktik</i>	Carbon dioxide and water <i>Karbon dioksida dan air</i>
C	Carbon dioxide and water <i>Karbon dioksida dan air</i>	Ethanol <i>Etanol</i>
D	Carbon dioxide and water <i>Karbon dioksida dan air</i>	Lactic acid <i>Asid laktik</i>

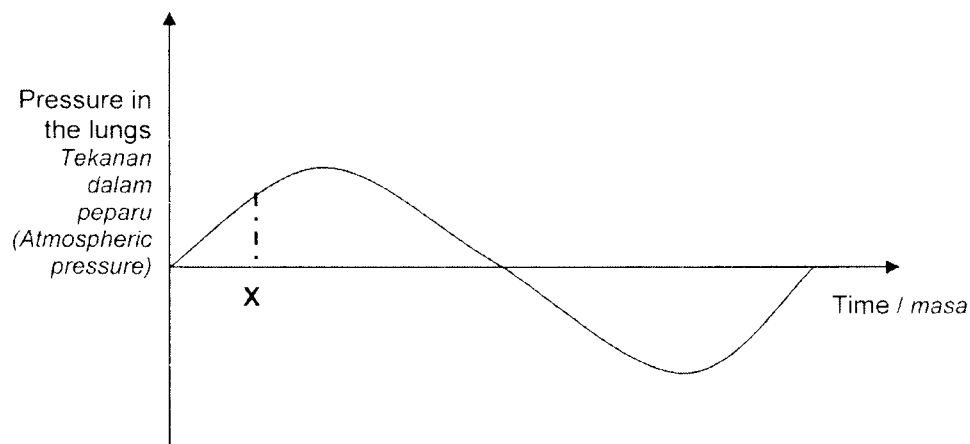
20. Which group of organisms undergo the process of exchange of respiratory gases through the skin?

Kumpulan organisma manakah menjalani proses pertukaran gas melalui kulit?

- A. Fish
Ikan
- B. Reptiles
Reptilia
- C. Mammals
Mamalia
- D. Amphibians
Amfibia

21. Graph 1 shows the changes of pressure in the lungs of a person.

Graf 1 menunjukkan perubahan tekanan dalam paru seseorang.



Graph 1
Graf 1

What is the movement of the ribcage at time X?

Bagaimanakah pergerakan sangkar rusuk di masa X?

- A. Upwards and outwards
Ke atas dan ke luar
- B. Upwards and inwards
Ke atas dan ke dalam
- C. Downwards and inwards
Bawah dan ke dalam
- D. Downwards and outwards
Ke bawah dan ke luar

- 22 Diagram 12 shows an owl with a rat.
Rajah 12 menunjukkan seekor burung hantu dengan seekor tikus.



Diagram 12
Rajah 12

What is the type of interaction between the organisms ?
Apakah jenis interaksi antara organisma-organisma itu ?

- A Parasitism
Parasitisme
- B Mutualism
Mutualisme
- C Commensalism
Komensalisme
- D Prey - predator
Mangsa - pemangsa
- 23 Diagram 13 shows an interaction between two living organisms.
Rajah 13 menunjukkan interaksi antara dua organisma hidup.

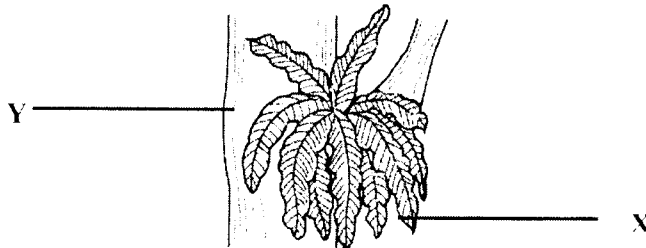


Diagram 13
Rajah 13

Which of the following is **true** about organism X ?
Antara berikut, yang manakah **benar** tentang organisma X ?

- A Organism X is epiphyte
Organisma X ialah epifit
- B Organism X is parasite
Organisma X ialah parasit
- C Organism X harms organism Y
Organisma X merugikan organisma Y
- D Organism X absorbs nutrients from organism Y
Organisma X menyerap nutrien daripada organisma Y

- 24 Diagram 14 shows a pyramid of numbers
Rajah 14 menunjukkan satu piramid nombor.

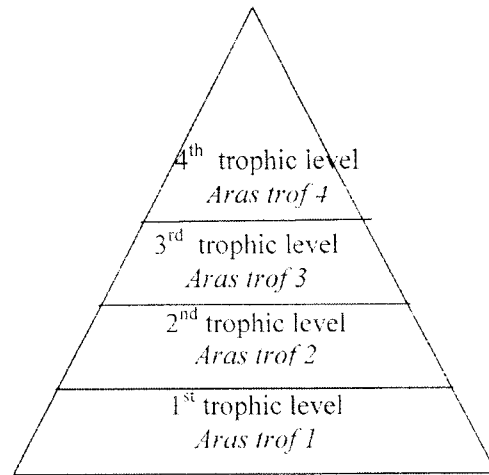


Diagram 14
Rajah 14

Which organism occupies the second trophic level ?
Organisma manakah yang menduduki aras trof kedua ?

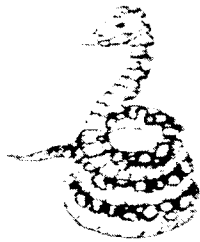
A



B



C



D



- 25 Diagram 15 shows a food web in a garden
 Rajah 15 menunjukkan satu jaringan makanan di sebuah taman.

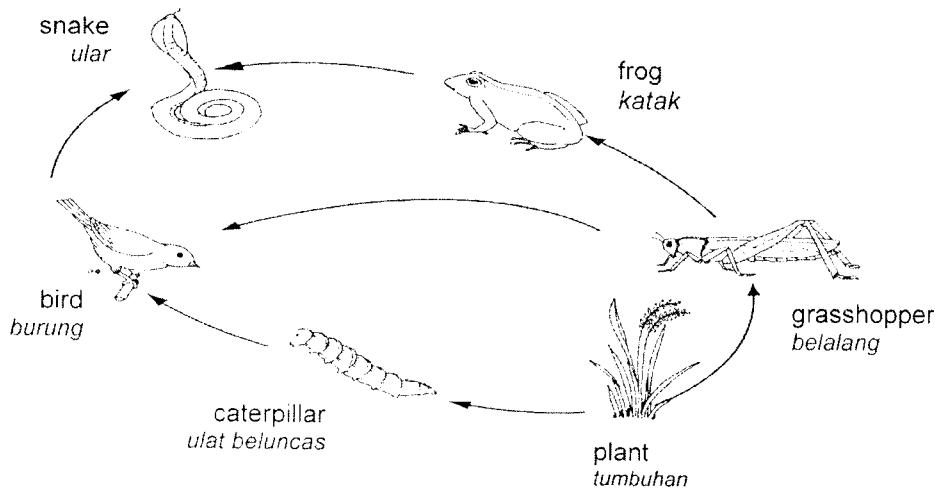


Diagram 15
 Rajah 15

What is the role of the bird ?
 Apakah peranan burung ?

- A Producer
 Pengeluar
 - B Tertiary consumer
 Pengguna tertier
 - C Primary consumer
 Pengguna primer
 - D Secondary consumer
 Pengguna sekunder
- 26 Diagram 16 shows three different zones at a mangrove swamp.
 Rajah 16 menunjukkan tiga zon yang berbeza di paya bakau.

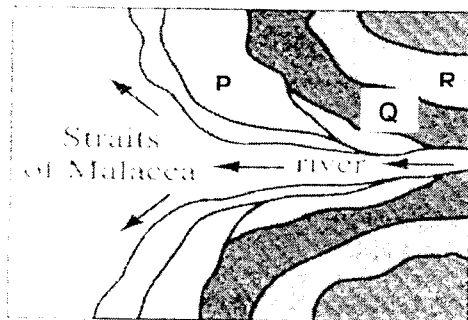


Diagram 16
 Rajah 16

Which types of roots are correctly matched to the dominant mangrove plant in the zones P, Q, and R?

Yang manakah jenis akar dipadankan dengan betul kepada pokok bakau yang dominan di zon P, Q dan R?

	Zon P	Zon Q	Zon R
A			
B			
C			
D			

- 27 Which of the following causes eutrophication ?
 Antara yang berikut, yang manakah menyebabkan eutrofikasi ?
- A Deforestation
Penyahhutanan
 - B Open burning
Pembakaran terbuka
 - C Excessive use of fertiliser
Penggunaan baja berlebihan
 - D Burning of fossil fuels
Pembakaran bahan api fosil

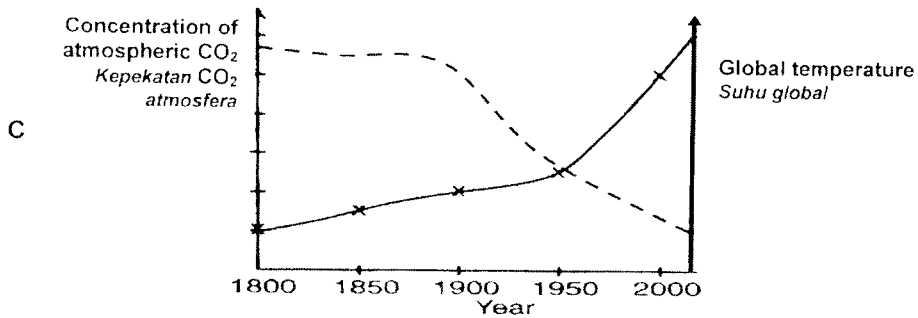
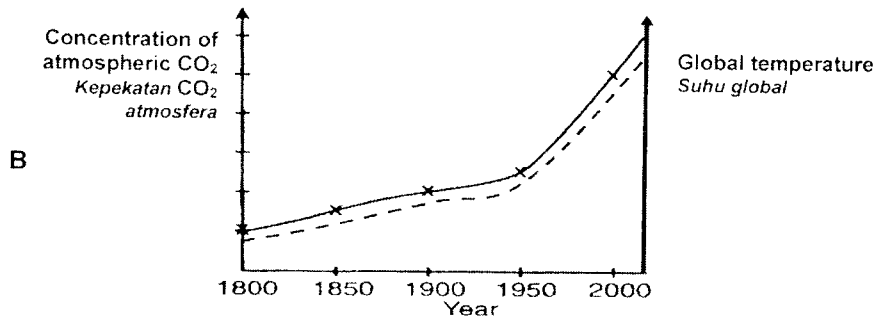
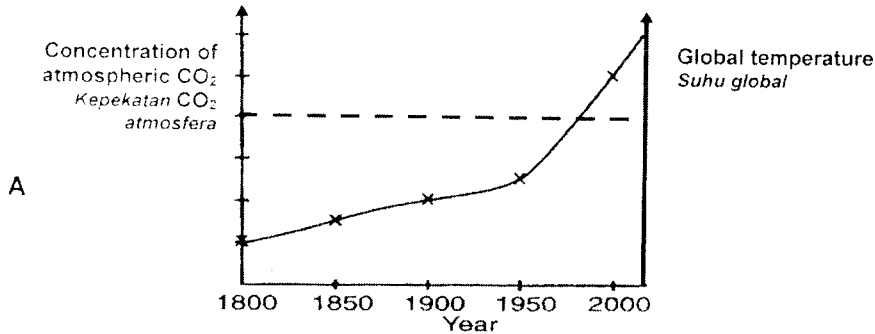
28 Which of the following graphs shows the correct relationship between concentration of atmospheric CO₂ and global temperature ?
Antara graf berikut, yang manakah menunjukkan hubungan yang betul antara kepekatan CO₂ atmosfera dan suhu global ?

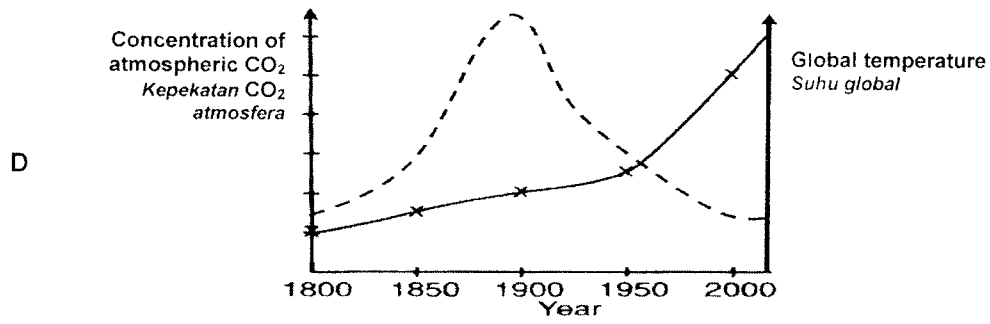
Key :

Kekunci :

———— Concentration of atmospheric CO₂
Kepekatan CO₂ atmosfera

- - - - Global temperature
Suhu global





- 29 Diagram 17 shows a human activity
Rajah 17 menunjukkan satu aktiviti manusia

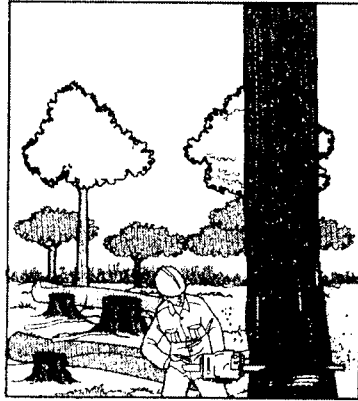


Diagram 17
Rajah 17

What is the effect of this activity ?
Apakah kesan aktiviti ini ?

- A Acid rain
Hujan asid
- B Landslides
Tanah runtuh
- C Eutrophication
Eutrofikasi
- D Ozone depletion
Penipisan lapisan ozon

30. Diagram 18 shows a cross section of a young dicotyledonous root.
Rajah 18 menunjukkan satu keratan rentas akar muda tumbuhan dikotiledon.

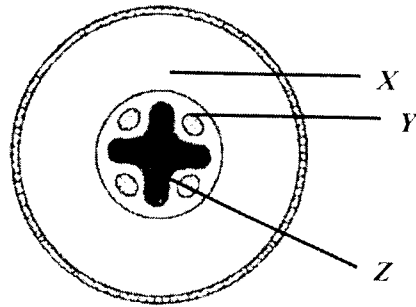


Diagram 18
Rajah 18

Identify the parts labelled X, Y and Z?
Kenalpasti bahagian berlabel X, Y dan Z?

	X	Y	Z
A	Cambium <i>Kambium</i>	Phloem <i>Floem</i>	Xylem <i>Xilem</i>
B	Cambium <i>Kambium</i>	Xylem <i>Xilem</i>	Phloem <i>Floem</i>
C	Cortex <i>kortek</i>	Phloem <i>Floem</i>	Xylem <i>Xilem</i>
D	Cortex <i>kortek</i>	Xylem <i>Xilem</i>	Phloem <i>Floem</i>

31. Diagram 19 shows the blood circulatory system of a fish.
Rajah 19 menunjukkan sistem peredaran darah ikan.

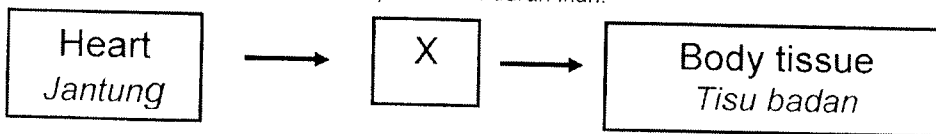


Diagram 19
Rajah 19

What is organ X?
Apakah organ X

- A Gill
Insang
- B Liver
Hati
- C Stomach
Perut
- D Intestine
Usus

- 32 P, Q, R and S are some common characteristics of leucocytes.
P, Q, R dan S adalah beberapa ciri biasa pada leukosit.

P	Lobed nucleus <i>Nucleus bercuping</i>
Q	Regular shape <i>Bentuk tetap</i>
R	Granulated cytoplasm <i>Sitoplasma bergranul</i>
S	Spherical nucleus <i>Nucleus berbentuk sfera</i>

Which are the characteristics of granulocytes?
Yang manakah merupakan ciri bagi granulosit ?

- A Q and S
Q dan S
 - B P and R
P dan R
 - C R and Q
R dan Q
 - D R and S
R dan S
- 33 Diagram 20 shows the action mechanism of a particular antibody.
Rajah 20 menunjukkan mekanisme tindakan satu antibodi.

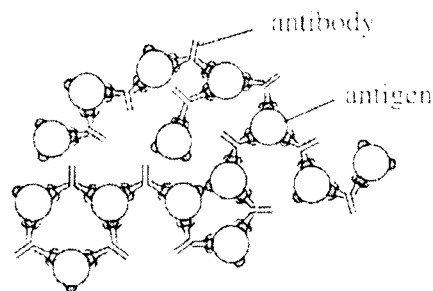


Diagram 20
Rajah 20

What is the mechanism?
 Apakah mekanisme tersebut ?

- A Lysis
Lisis
- B Agglutination
Agglutinati
- C Opsonisation
Opsonisasi
- D Neutralisation
Peneutralan

- 34 Diagram 21 shows a potometer used to measure the rate of transpiration of a plant.
 Rajah 21 menunjukkan potometer yang digunakan untuk menentukan kadar transpirasi satu tumbuhan.

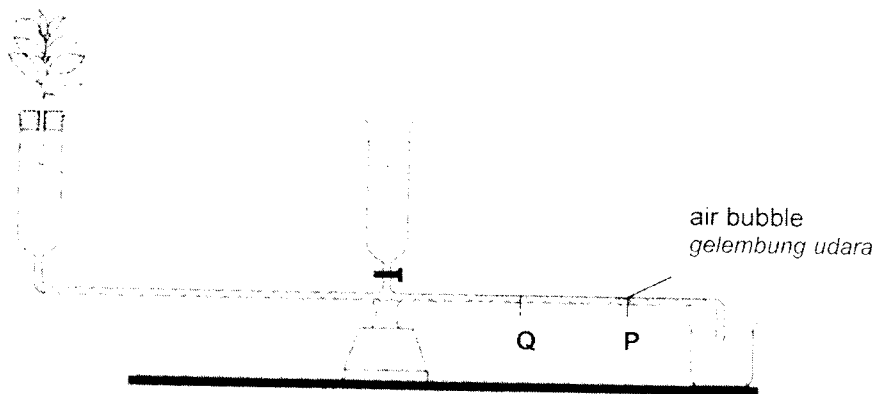


Diagram 21
 Rajah 21

The results of the experiment are recorded in the table below :
 Keputusan eksperimen telah direkodkan dalam jadual di bawah :

- The distance travelled by the air bubble from P to Q = 3 cm
 Jarak dilalui oleh gelembung udara dari P ke Q = 3 cm
- Time taken by the air bubble to move from P to Q = 10 minute
 Masa diambil oleh gelembung udara bergerak dari P ke Q = 10 minit

What is the rate of transpiration of the plant ?
 Berapakah kadar transpirasi tumbuhan ini ?

- A 0.003 cm minute⁻¹
- B 0.03 cm minute⁻¹
- C 0.3 cm minute⁻¹
- D 3.0 cm minute⁻¹

- 35 Diagram 22 shows a joint.
Rajah 22 menunjukkan satu sendi.

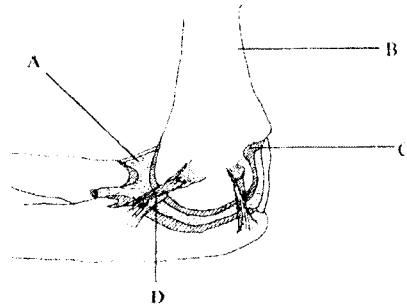


Diagram 22
Rajah 22

Which part of **A, B, C** or **D** is structurally tough and elastic?
Antara bahagian **A, B, C** dan **D**, yang manakah kuat dan elastik strukturnya?

- 36 Diagram 23 shows a human vertebra.
Rajah 23 menunjukkan vertebra manusia.

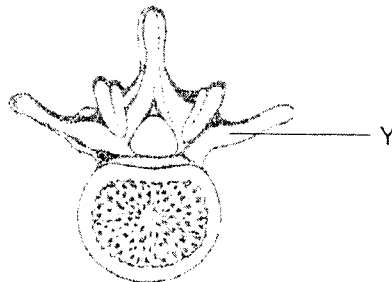


Diagram 23
Rajah 23

What is the function of **Y**?
Apakah fungsi **Y**?

- A** For muscle attachment
Untuk perlekatan otot
- B** To protect the spinal cord
Untuk melindungi saraf tunjang
- C** To form joint with the ribs
Untuk membentuk sendi dengan tulang rusuk
- D** To form with the vertebral column
Untuk membentuk turus vertebra

- 37 Diagram 24 shows some human bones.
Rajah 24 menunjukkan beberapa tulang manusia.

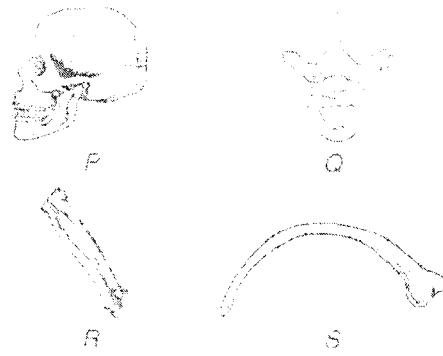


Diagram 24
Rajah 24

Which bones are part of the axial skeleton?
Tulang yang manakah sebahagian daripada rangka paksi?

- A P and Q
P dan Q
 - B Q and R
Q dan R
 - C P, Q and S
P, Q dan S
 - D P, Q, R, and S
P, Q, R, dan S
- 38 Diagram 25 shows the human spinal cord.
Rajah 25 menunjukkan saraf tunjang manusia.

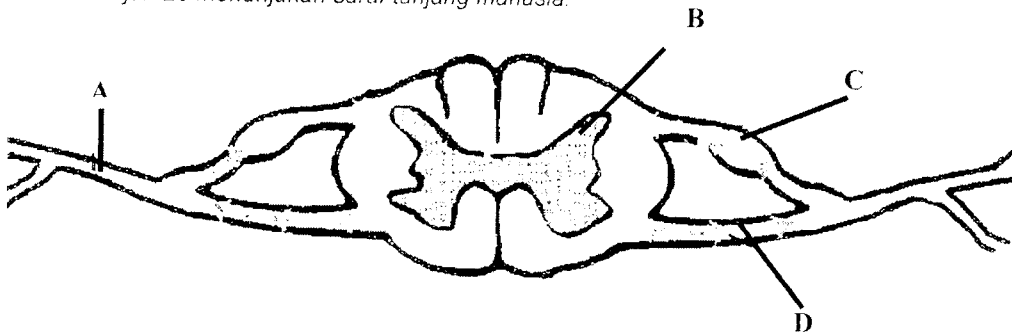


Diagram 25
Rajah 25

Which part A, B, C or D is the grey matter?
Bahagian manakah A, B, C atau D ialah jirim kelabu?

39. What is the function of the afferent neurone?
Apakah fungsi neuron aferen?

- A Carries impulses from the effector to receptor.
Membawa impuls dari efektor ke reseptor
- B Carries impulses from central nervous system to the receptor.
Membawa impuls dari sistem saraf pusat ke reseptor
- C Carries impulses from the central nervous system to the effector.
Membawa impuls dari sistem saraf pusat ke efektor
- D Carries impulses from the receptor to the central nervous system.
Membawa impuls dari reseptor ke sistem saraf pusat

40. A labourer is doing vigorous work under the hot sun.
Which of the following changes would occur in the man's body?
*Seorang buruh sedang melakukan kerja berat di bawah cahaya matahari yang terik.
Apakah perubahan yang akan berlaku di dalam badan lelaki itu?*

	Hair erector muscle <i>Otot regang rambut</i>	Blood vessel under the skin <i>Salur darah pada kulit</i>	Skin temperature <i>Suhu Kulit</i>
A	Relax <i>Mengendur</i>	Dilate <i>Mengembang</i>	Increase <i>Meningkat</i>
B	Relax <i>Mengendur</i>	Dilate <i>Mengembang</i>	Decrease <i>Menurun</i>
C	Contract <i>Mengecut</i>	Constrict <i>Mengecil</i>	Decrease <i>Menurun</i>
D	Contract <i>Mengecut</i>	Constrict <i>Mengecil</i>	Increase <i>Meningkat</i>

41. Which of the following is the site of female gamete formation?
Manakah antara berikut tempat pembentukan gamet betina?

- A Ovary
Ovari
- B Uterus
Uterus
- C Ovule
Ovul
- D Vas deferens
Vas deferens

- 42 Diagram 26 shows a longitudinal section of an ovule.
Rajah 26 menunjukkan keratan rentas ovul.

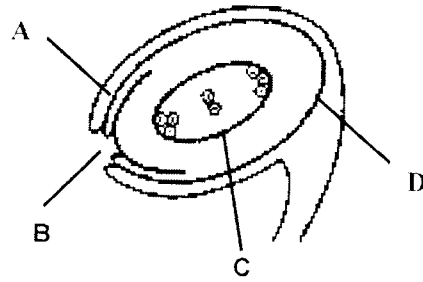


Diagram 26
Rajah 26

Which part is known as the integument?
Bahagian manakah dikenali sebagai integumen?

- 43 Which of the following substances are passed from the mother to the foetus via the placenta?
Manakah antara bahan-bahan berikut dapat merentas masuk daripada ibu ke fetus melalui plasenta?

- I Oxygen
Oksigen
- II Glucose
Glukosa
- III Fatty acids
Asid lemak
- IV Amino acid
Asid amino

- A I and II
I dan II
- B II and III
II dan III
- C I, II and IV
I, II dan IV
- D I, II, III and IV
I, II, III dan IV

44. Which hormone stimulates the development of eggs in ovaries?
Apakah hormon yang merangsang pembentukan telur di dalam ovari?

- A Follicle-stimulating hormone
Hormon Perangsang Folikel
- B Luteinising Hormone
Hormon Peluteinan
- C Progesterone
Progesteron
- D Oestrogens
Estrogen

45. Diagram 27 shows two type of variation , X and Y
Rajah 27 menunjukkan dua jenis variasi X dan Y

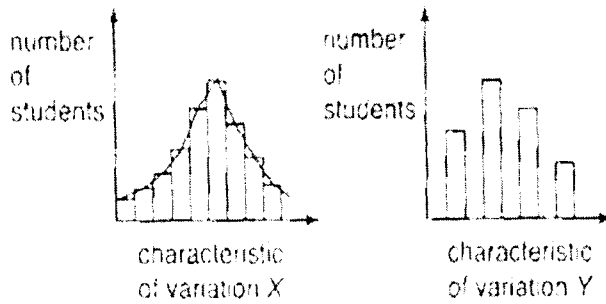


Diagram 27
Rajah 27

Which of the following are examples of variation X and Y?
Yang manakah antara berikut ialah contoh bagi variasi X dan Y?

	Variation X <i>Variasi X</i>	Varition Y <i>Variasi Y</i>
A	Eye colour <i>Warna mata</i>	Blood group <i>Kumpulan darah</i>
B	Weight <i>Berat</i>	Type of fingerprint <i>Jenis cap jari</i>
C	Height <i>Tinggi</i>	Weight <i>Berat</i>
D	Type of hair <i>Jenis rambut</i>	Height <i>Tinggi</i>

46. Diagram 28 shows the karyotype of an individual.
Rajah 28 menunjukkan kariotip seorang individu.

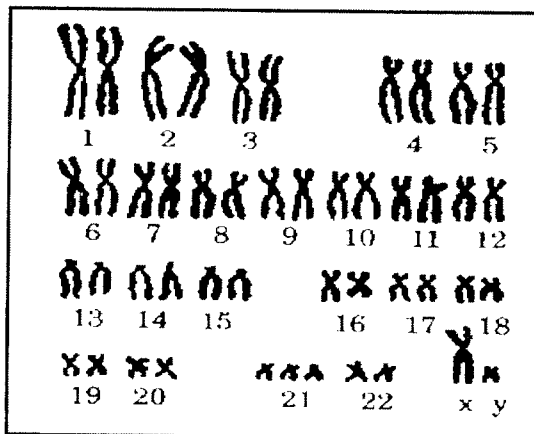


Diagram 28
Rajah 28

What is the gender and genetic disorder suffered by the individual?
 Apakah jantina dan masalah genetik yang dialami oleh individu itu ?

- A Down's syndrome male
Lelaki Sindrom Down
- B Down's syndrome female
Perempuan Sindrom Down
- C Turner's syndrome male
Lelaki Sindrom Turner
- D Klinefelter's syndrome female
Perempuan Sindrom Klinefelter

47. Diagram 29 shows the changes of gene sequence in a chromosome after exposure to gamma rays.
 Rajah 29 menunjukkan perubahan urutan gen pada satu kromosom selepas terdedah kepada sinaran gamma.

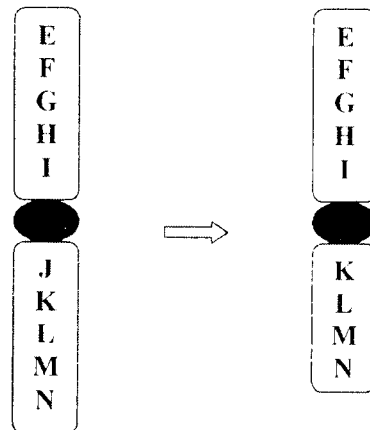


Diagram 29
 Rajah 29

Name this type of change.
 Namakan jenis perubahan ini.

- A Deletion
Pelenyapan
- B Translocation
Translokasi
- C Duplication
Penggandaan
- D Inversion
Penyongsangan

48. Diagram 30 shows a monomer of DNA.
Rajah 30 menunjukkan satu monomer DNA.

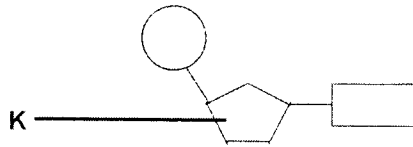


Diagram 30
Rajah 30

What is K?
Apakah K?

- A Nucleotide
Nukleotida
 - B Phosphate group
Kumpulan fosfat
 - C Nitrogenous base
Bes bernitrogen
 - D Deoxyribose sugar
Gula dioksiribosa
49. Diagram 31 is a schematic diagram for sex determination.
Rajah 31 ialah satu gambar rajah skema untuk penentuan jantina.

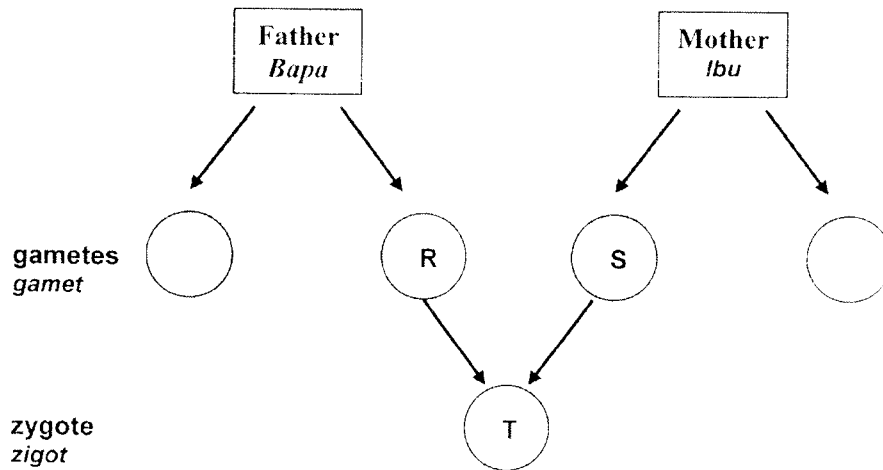


Diagram 31
Rajah 31

If the couple gets a baby girl, what are the genotypes of R,S and T?
 Jika pasangan itu mendapat anak perempuan, apakah genotip bagi R,S dan T?

	R	S	T
A	44 + X	44 + X	44 + XX
B	22 + X	22 + X	22 + XX
C	22 + Y	22 + X	44 + XY
D	22 + X	22 + X	44 + XX

50. The following information shows some alleles found in human beings.
 Maklumat yang berikut menunjukkan beberapa alel dalam manusia.

B	- Dominant allele for black iris <i>Alel dominant untuk iris berwarna hitam</i>
b	- Recessive allele for blue iris <i>Alel resesif untuk iris berwarna biru</i>
H	- Dominant allele for curly hair <i>Alel dominan untuk rambut keriting</i>
h	- Recessive allele for straight hair <i>Alel resesif untuk rambut lurus</i>

What is the probability of a couple getting a child with blue iris and straight hair if the husband is homozygous dominant for both traits while the wife is homozygous recessive for both traits?

Apakah kebarangkalian pasangan ini mendapat anak yang mempunyai iris berwarna biru dan berambut lurus jika suami homozigus dominan untuk kedua-dua trait manakala isterinya homozigus resesif untuk kedua-dua trait?

- A 0%
 B 25%
 C 50%
 D 100%

END OF QUESTION PAPER
 KERTAS SOALAN TAMAT

INFORMATION FOR CANDIDATES
MAKLUMAT UNTUK CALON

1. This question paper consist of **50** questions.
Kertas soalan ini mengandungi 50 soalan.
2. Answer **all** questions.
*Jawab **semua** soalan*
3. Answer each question by blackening the correct space on the objective answer sheet.
Jawab dengan menghitamkan ruang yang betul pada kertas jawapan objektif.
4. Blacken only **one** space for each question.
*Hitamkan **satu** ruanag sahaja bagi setiap soalan*
5. If you wish to change your answer, erase the blackened mark that you have made. Then blacken the space for the new answer.
Sekiranya anda hendak menukar jawapan , padamkan tanda yang telah dibuat. Kemudian hitamkan jawapan yang baru.
6. The diagrams in the questions provided are not drawn to scale unless stated.
Rajah yang mengiringi soalan tidak dilukis mengikut skala kecuali dinyatakan .
7. You may use a non- programmable scientific calculator.
Anda dibenarkan menggunakan kalkulator saintifik yang tidak boleh diprogram.