PROGRAM GEMPUR KECEMERLANGAN SPM
NEGERI PERLIS

ANJURAN BERSAMA
MAJLIS PENGETUA SEKOLAH MALAYSIA
NEGERI PERLIS
DAN
MAJLIS GURU CEMERLANG NEGERI PERLIS

GEMPUR KECEMERLANGAN TAHUN 2025 1511/1

TINGKATAN 5
SAINS
Kertas 1
Julai
1 ¼ minit **Satu jam lima belas minit**

JANGAN BUKA KERTAS PEPERIKSAAN INI SEHINGGA DIBERITAHU

1. Kertas soalan ini adalah dalam dwibahasa.

2. Soalan dalam Bahasa Melayu mendahului soalan yang sepadan dalam Bahasa Inggeris.

Kertas soalan ini mengandungi **22** halaman bercetak

MAKLUMAT UNTUK CALON

INFORMATION FOR CANDIDATES

1. Kertas soalan ini mengandungi **40** soalan.

   *This question paper consists of **40** questions.*

2. Jawab **semua** soalan.
   *Answer **all** questions.*

3. Tiap-tiap soalan diikuti oleh empat pilihan jawapan, iaitu **A**, **B**, **C** dan **D**. Bagi setiap soalan, pilih **satu** jawapan sahaja. Hitamkan jawapan anda pada kertas jawapan objektif yang disediakan.

   *Each question is followed by four choices of answers, **A**, **B**, **C** and **D**. For each question, choose **one** answer only. Blacken your answer on the objective answer sheet provided.*

4. Jika anda hendak menukarkan jawapan, padamkan tanda yang telah dibuat.Kemudian hitamkan jawapan yang baru.
   If you wish to change your answer, erase the blackened mark that you have made.Then blacken the space for the new answer.

5. Rajah yang mengiringi soalan tidak dilukiskan mengikut skala kecuali dinyatakan.

   The diagrams in the questions provided are not drawn to scale unless stated.

6. Anda dibenarkan menggunakan kalkulator saintifik yang tidak boleh diprogram.

   You may use a non-programmable scientific calculator.

1 Maklumat berikut menunjukkan bahan sisa bagi suatu eksperimen.
The following information shows the waste of an experiment.

R - Larutan kultur bakteria *R - Bacterial culture solution*	S - Air suling *S – Distilled water*
T – Kloroform *T – Chloroform*	U – Larutan metilena biru *U – Methylene blue solution*

Antara berikut, bahan sisa manakah yang boleh dibuang ke dalam sinki?
Which of the following waste that can be disposed of into sinks?

A S dan U
S and U
B R dan S
R and S
C R dan U
R and U
D S dan T
S and T

2 Satu kebakaran kecil telah berlaku di sebuah rumah dan telah menyambar seorang budak. Apakah alat pemadam kebakaran yang paling sesuai digunakan untuk menyelamatkan budak tersebut?
A small fire has broken out in a house and a boy had been caught in the fire. What is the most suitable fire extinguisher to be used to save the boy?

A Air
Water
B Serbuk kering
Dry powder
C Karbon dioksida
Carbon dioxide
D Selimut kebakaran
Fire blanket

3 Aminah terkena serangan jantung dan tidak sedarkan diri semasa berada di sebuah klinik. Selepas mengesahkan dia tidak bernafas, seorang jururawat melakukan CPR sehingga dia boleh bernafas semula tetapi masih belum sedar. Apakah tindakan seterusnya yang perlu dilakukan oleh jururawat tersebut?
Aminah had a heart attack and lost consciousness while in a clinic. After confirming that she was not breathing, a nurse performed CPR until she was able to breathe again but was still unconscious. What is the next action the nurse should take?

A Dongakkan kepala Aminah ke belakang.
Tilt Aminah's head back.
B Condongkan badan Aminah sedikit ke depan.
Lift Aminah's body slightly forward.
C Lakukan tekanan dada sehingga Aminah sedar.
Perform chest compression until Aminah is conscious.
D Ubah kedudukan badan Aminah kepada keadaan mengiring.
Change Aminah's body position on her side.

[*Lihat halaman sebelah*

4 Rajah 1 menunjukkan seorang murid sedang memberikan bantuan kecemasan kepada rakannya.
Diagram 1 shows a student giving emergency aid to his friend.

Rajah 1
Diagram 1

Bahagian diantara pusat dengan bawah rusuk ditekan dan disentak ke atas dengan kuat dan cepat. Apakah kepentingan tindakan tersebut?
The area between the navel and below the ribs need to be pressed and jerked upwards with quick force. What is the importance of this action?

A Melegakan pernafasan mangsa.
Relieve the victim's breathing.
B Meningkatkan tekanan di dalam peparu.
Increase pressure in the lungs.
C Meningkatkan diameter salur pernafasan.
Increase the diameter of the respiratory tract
D Meningkatkan isipadu udara di dalam peparu.
Increase air volume in the lungs

5 Amir berlari selama 15 minit. Selepas berehat selama 1 minit, dia mengira bacaan denyutan nadi selama 15 saat dan mendapat bacaan sebanyak 32 denyutan. Berdasarkan maklumat ini, kira kadar denyutan nadinya dalam satu minit?
Amir ran for 15 minutes. After resting for 1 minute, he counted his pulse for 15 seconds and got a reading of 32 beats. Based on this information, calculate his pulse rate per minute.

A 62 bpm
B 64 bpm
C 128 bpm
D 143 bpm

6 Rajah 2 menunjukkan BMI bagi dua orang murid.
Diagram 2 shows the BMI of two students.

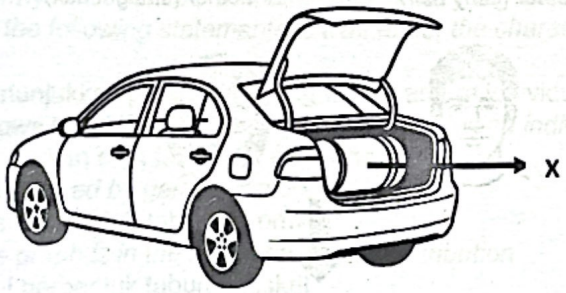
ANIS	SURI
BMI = 18 kg m^{-2}	BMI = 32 kg m^{-2}

Rajah 2
Diagram 2

Kedua-dua murid berisiko mendapat masalah kesihatan. Pilih padanan yang betul bagi masalah kesihatan yang mungkin dihidapi oleh Anis dan Suri.
Both students are at risk of developing health problems. Choose the correct match for the health problems that may be suffered by Anis and Suri.

	Anis	Suri
A	Anemia *Anaemia*	Kemurungan *Depression*
B	Diabetes *Diabetes*	Keletihan *Fatigue*
C	Kemurungan *Depression*	Anemia *Anaemia*
D	Keletihan *Fatigue*	Diabetes *Diabetes*

7 Rajah 3 menunjukan sebuah kereta yang menggunakan teknologi hijau.
Diagram 3 shows a car that uses green technology.



Rajah 3
Diagram 3

Apakah kebaikan penggunaan bahan X?
What is the advantage of using substance X?

A Mengurangkan pelepasan gas rumah hijau.
Reduce greenhouse gas emissions.
B Meningkatkan penggunaan minyak hitam
Increase the consumption of black oil.
C Memerlukan minyak pelincir khas.
Requires special lubricant.
D Meningkatkan suhu enjin.
Increase engine temperature.

[*Lihat halaman sebelah*

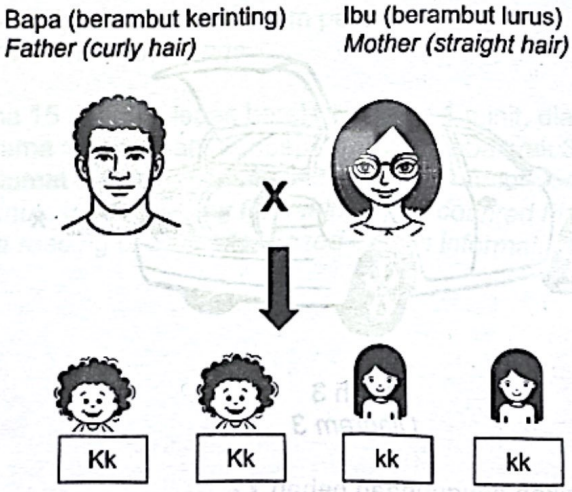
8 Antara pernyataan berikut, yang manakah benar tentang meiosis?
Which of the following statements is true about meiosis?

A Berlaku pada sel soma
Happens in a somatic cell
B Satu sel induk menghasilkan dua sel nak
One parent cell produces two daughter cells
C Proses pembahagian sel berlaku sekali sahaja
Cell division occurs once
D Sel anak mempunyai bilangan kromosom separuh daripada sel induk
Daughter cells have half the number of chromosomes compared to parent cells

9 Seorang murid disahkan mengidap penyakit talasemia. Apakah faktor penyebab penyakit itu?
A student is confirmed to have thalassemia. What is the factor that causes the disease?

A Mutasi gen
Gene mutation
B Replikasi DNA
Replication of DNA
C Pembahagian sel
Cell division
D Mutasi kromosom
Chromosome mutation

10 Rajah 4 menunjukkan rajah skema pewarisan sifat bagi jenis rambut manusia.
Ddiagram 4 shows a schematic diagram of the inheritance of traits for human hair types.



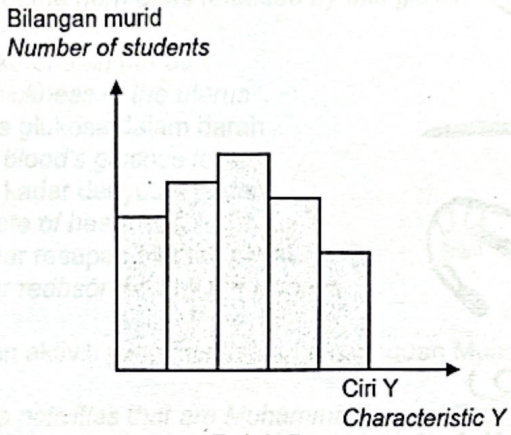
K : Alel dominan (rambut kerinting)
Dominant allele (curly hair)
k : Alel resesif (rambut lurus)
Recessive allele (straight hair)

Rajah 4
Diagram 4

Berdasarkan Rajah 4, apakah genotip bagi bapa dan ibu ?
Based on Diagram 4, what are the genotypes of the father and mother?

	Bapa *Father*	Ibu *Mother*
A	KK	kk
B	Kk	kk
C	Kk	Kk
D	Kk	Kk

11 Rajah 5 menunjukkan graf bagi suatu variasi.
Diagram 5 shows a graph of variation.



Rajah 5
Diagram 5

Antara pernyataan berikut, manakah maklumat yang **benar** mengenai ciri Y tersebut?
*Which of the following statements is **true** about the characteristic of Y?*

A Menunjukkan perbezaan yang ketara antara individu
Shows the differences that are distinct between individual
B Ditentukan oleh faktor genetik sahaja
Determined by genetic factors only
C Graf berbentuk taburan normal
The graph is in the form of a normal distribution
D Graf berbentuk taburan diskrit
The graph is in the form of a discrete distribution

[*Lihat halaman sebelah*

12 Pernyataan di bawah menunjukkan suatu ciri bagi suatu jenis sistem sokongan dalam haiwan S.
The statement below shows a characteristic of a type of support system in animal S.

- Rangka yang terdiri daripada lapisan keras kitin berlilin
- *The skeleton consists of a hard layer of waxy chitin.*

Apakah haiwan S?
What is animal S?

A 

B 

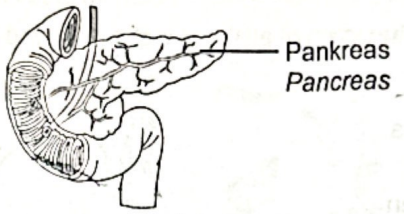
C 

D 

13 Antara berikut, yang manakah **benar** tentang pertumbuhan manusia?
*Which of the following is **true** about human growth?*

A Proses kekal dan berbalik
The process is permanent and reversible
B Pertumbuhan manusia terdiri daripada tiga peringkat
Human growth stage consists of three stages
C Kadar pertumbuhan adalah tinggi pada peringkat dewasa
Growth rate is high in adulthood
D Melibatkan pertambahan saiz dan berat manusia
Involves an increase in human size and weight

14 Rajah 6 menunjukkan satu kelenjar endokrin.
Diagram 6 shows an endocrine gland.

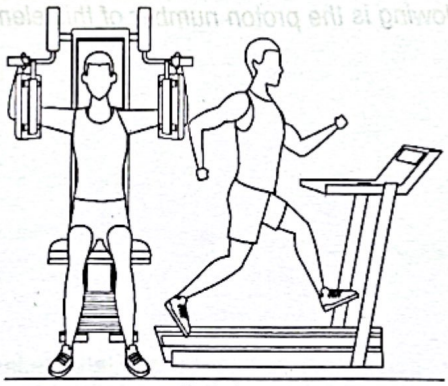


Rajah 6
Diagram 6

Apakah fungsi hormon yang dirembeskan oleh kelenjar tersebut?
What is the function of the hormones released by this gland?

A Mengekalkan ketebalan uterus
Maintain the thickness of the uterus
B Mengawal aras glukosa dalam darah
Regulates the blood's glucose level
C Meningkatkan kadar denyutan jantung
Increase the rate of heartbeat
D Mengawal kadar resapan air oleh ginjal
Regulate water reabsorption by the kidneys

15 Rajah 7 menunjukkan aktiviti yang menjadi rutin mingguan Muhammad bersama rakannya.
Diagram 7 shows the activities that are Muhammad's weekly routine with his friend.



Rajah 7
Diagram 7

Bagaimanakah aktiviti tersebut membantu Muhammad menjaga kesihatan mindanya?
How did these activities help Muhammad to maintain his mental health?

A Membantu menurunkan berat badan.
Helps to lose weight
B Meningkatkan kadar metabolisme
Increase the rate of metabolism
C Meningkatkan kecergasan fizikal
Increase physical fitness
D Membantu melegakan tekanan
Helps relieve stress

[*Lihat halaman sebelah*

16 Antara berikut, yang manakah bahan ion?
Which of the following is an ionic substance?

A Air laut
Sea water

B Logam emas
Gold metal

C Gas oksigen
Gas oxygen

D Natrium klorida
Sodium chloride

17 Rajah 8 menunjukkan simbol sebenar unsur yang terdapat dalam jadual berkala unsur moden.

Diagram 8 shows the actual symbol of an element found in the modern periodic table of elements.

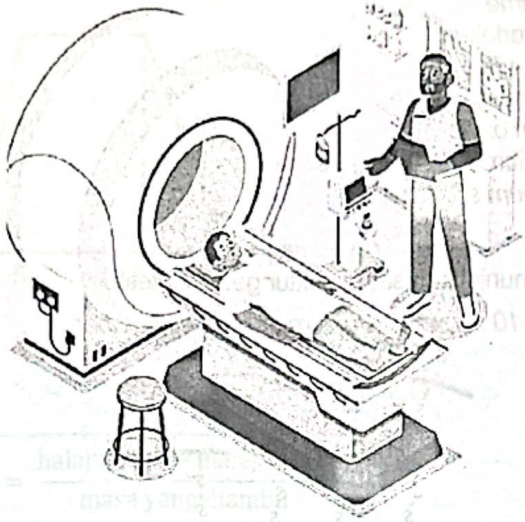
Rajah 8
Diagram 8

Antara berikut, yang manakah merupakan nombor proton bagi unsur ini?
Which of the following is the proton number of this element?

A 18
B 22
C 40
D 58

18 Rajah 9 menunjukkan seorang pesakit dimasukkan ke dalam sebuat mesin untuk menjalankan proses rawatan bagi membunuh sel kanser.

Diagram 9 shows a patient being put into a machine to carry out a treatment process to kill cancer cells.



Rajah 9
Diagram 9

Apakah isotop yang digunakan dalam rawatan ini ?
What is isotope used in this treatment?

A Kobalt-60
Cobalt-60
B Iodin-131
Iodine-131
C Fosforus-32
Phosphorus-32
D Uranium-235
Uranium-235

19 Antara berikut, yang manakah adalah aloi?
Which of the following is an alloy?

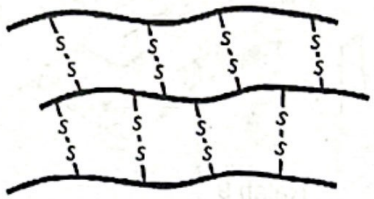
A Besi
Iron
B Zink
Zink
C Kuprum
Copper
D Loyang
Brass

[*Lihat halaman sebelah*

20 Apakah bahan utama yang terdapat dalam tanah liat ?
What is the main substance found in clay?

A Soda kapur
Soda lime
B Silika terlakur
Fused silica
C Natrium oksida
Sodium oxide
D Aluminium silikat
Aluminum silicate

21 Rajah 10 menunjukkan satu struktur getah sintetik.
The diagram 10 shows a structure of synthetic rubber.



Rajah 10
Diagram 10

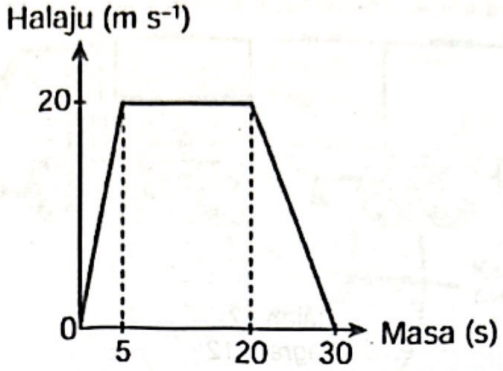
Apakah ciri polimer ini?
What is the characteristic of this polymer?

A Telap terhadap cecair
Permeable to liquids
B Kurang kenyal
Less elastic
C Tidak tahan haba
Cannot withstand heat
D Lebih keras
Harder

22 Antara berikut, yang manakah merupakan punca utama penghasilan radikal bebas dalam badan manusia?
Which of the following is the main cause of free radical production in the human body?

A Pengambilan vitamin
Vitamin intake
B Pencemaran udara
Air pollution
C Pencemaran bunyi
Sound pollution
D Senaman ringan
Light exercise

23 Rajah 11 menunjukkan graf halaju-masa suatu objek.
Diagram 11 shows a velocity-time graph of an object.



Rajah 11
Diagram 11

$$\text{Pecutan} = \frac{\text{halaju akhir} - \text{halaju awal}}{\text{masa yang diambil}}$$

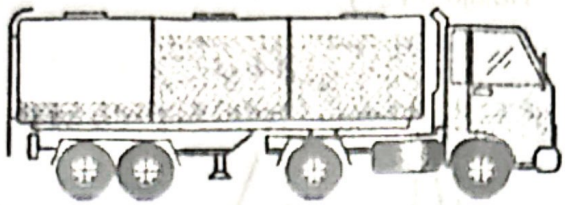
$$Acceleration = \frac{final\ velocity - initial\ velocity}{time\ taken}$$

Berapakah pecutan objek tersebut dari 20 saat hingga 30 saat?
What is the acceleration of the object at 20 seconds to 30 seconds?

A -0.67 ms^{-2}
B -1.00 ms^{-2}
C -2.00 ms^{-2}
D -20.00 ms^{-2}

[*Lihat halaman sebelah*

24 Rajah 12 menunjukkan sebuah lori tangki minyak dibahagikan kepada 3 bahagian.
Diagram 12 shows an oil tanker divided into 3 parts.



Rajah 12
Diagram 12

Apakah tujuan pembahagian tangki tersebut?
What is the purpose of dividing the tank?

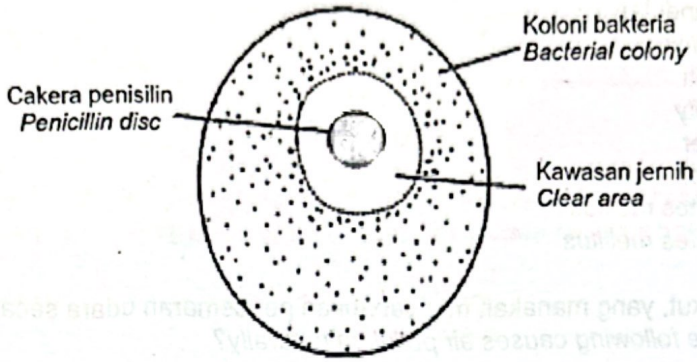
A Mengurangkan kesan inersia
Reduce the effect of inertia
B Mengurangkan momentum
Reduce momentum
C Mengurangkan geseran
Reduce friction
D Mengurangkan daya
Reduce force

25 Antara berikut, yang manakah kesan somatik yang berpunca darpada penyebaran radiasi ujian nuklear?
Which of the following is the somatic effect caused by the spread of nuclear test radiation?
A Kanser
Cancer
B Leukemia
Leukaemia
C Mutasi sel
Cell mutation
D Kecacatan pada bayi
Deformation in babies

26 Antara mikroorganisma berikut, yang manakah kumpulan alga?
Which of the following microorganisms is a group of algae?

A *Lactobacillus sp.*
B *Paramecium sp.*
C *Spirogyra sp.*
D *Amoeba sp.*

27 Rajah 13 menunjukkan keputusan eksperimen kesan penisilin ke atas koloni bakteria.
Diagram 13 shows the results of an experiment on the effect of penicillin on bacterial colonies.



Rajah 13
Diagram 13

Antara pernyataan berikut yang manakah betul tentang kawasan jernih?
Which of the following statements is true about the clear area?

A Kawasan tanpa nutrien
Area without nutriens
B Pertumbuhan bakteria menjadi aktif
Bacterial growth is active
C Kawasan tanpa kehadiran bakteria
Area without the presence of bacteria
D Pertumbuhan bakteria menjadi terencat
Bacteria growth is retarded.

28 Jadual 1 menunjukkan nilai kalori bagi tiga jenis makanan yang berbeza.
Table 1 shows the calorie values for three different types of food.

Makanan *Food*	**Nilai kalori (kJ/g)** *Calorie value (kJ/g)*
Emping jagung *Corn flakes*	15.5
Roti putih *White bread*	10.5
Susu *Milk*	2.6

Jadual 1
Table 1

Kira nilai kalori yang diambil oleh Adam untuk sarapan pagi jika dia mengambil 5 gram emping jagung, 30 gram roti putih dan 100 gram susu.
Calculate the calorie value taken by Adam for breakfast if he takes 5 grams of corn flakes, 30 grams of white bread and 100 grams of milk.

A 652.50 kJ/g
B 423.15 kJ/g
C 359.00 kJ/g
D 28.60 kJ/g

[*Lihat halaman sebelah*

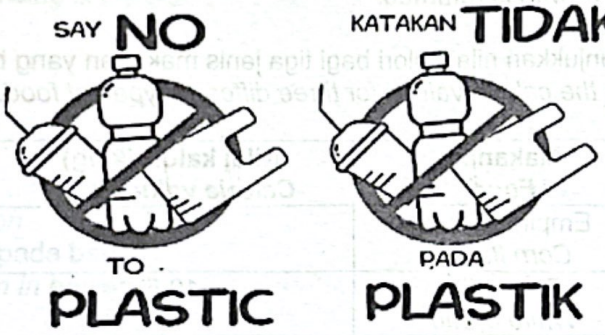
29. Monosodium glutamat (MSG) ialah sejenis bahan kimia yang ditambah dalam makanan. Apakah kesan pengambilan bahan tersebut secara berlebihan?
Monosodium glutamat (MSG) is a type of chemical added to food.What is the effects of taking the substance excessively?

A Kemandulan
Infertility
B Obesiti
Obesity
C Kanser
Cancer
D Diabetes melitus
Diabetes mellitus

30 Antara berikut, yang manakah menyebabkan pencemaran udara secara semulajadi?
Which of the following causes air pollution naturally?

A Pebakaran hutan
Forest fires
B Penjanaan kuasa terma
Generating thermal power
C Pembakaran dalam relau bagas
Burning in blast furnaces
D Pembebasan gas ekzos kenderaan bermotor
The release of exhaust gases from vehicles

31 Rajah 14 menunjukkan kempen yang telah dilaksanakan oleh badan kerajaan.
Diagram 14 shows campaigns that has been implemented by government bodies.



Rajah 14
Diagram 14

Apakah kebaikan amalan kempen di atas terhadap siratan makanan?
What are the benefits of the above campaign practices on food web?

A Menjimatkan kos
Save cost
B Menjaga kebersihan persekitaran
Keep the environment clean
C Menyelamatkan nyawa organisma akuatik
Save the lives of aquatic organisms
D Mengurangkan penggunaan sumber plastik
Reduce the use of plastic sources

32 Jadual 2 menunjukkan keputusan bagi suatu tindak balas antara sejenis logam dengan air.
Table 2 shows the results of reaction between a type of metal with water.

Masa (s) *Time (s)*	0	20	40	60	80	100	120
Isipadu gas (cm^3) *Volume of gas (cm^3)*	0	12	20	24	30	30	30

Jadual 2
Table 2

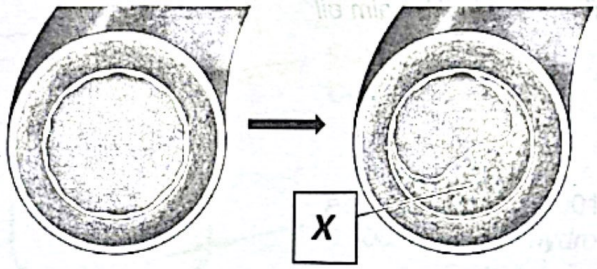
Berdasarkan Jadual 2, berapakah kadar tindak balas purata keseluruhan?
Based on Table 2, what is the average rate of reaction for the whole reaction?

Kadar tindak balas purata = $\frac{\text{Jumlah isipadu gas}}{\text{Masa yang diambil}}$

Average rate of reaction for the whole reaction = $\frac{\textit{Total volume gas}}{\textit{Time taken}}$

A $0.25\ cm^3\ s^{-1}$
B $0.38\ cm^3\ s^{-1}$
C $2.67\ cm^3\ s^{-1}$
D $4.00\ cm^3\ s^{-1}$

33 Rajah 14 menunjukkan keratan rentas perubahan salur darah manusia.
Diagram 14 shows the cross-section of changes in a human blood vessel.



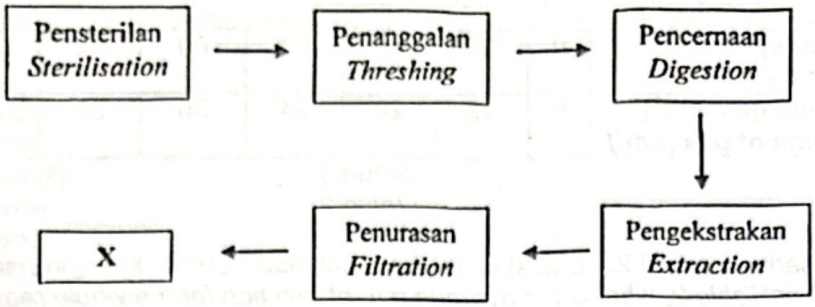
Rajah 14
Diagram 14

Antara berikut, contoh makanan manakah yang menyebabkan pembentukan mendapan X jika dimakan secara berlebihan?
Which of the following is an examples of food that causes the formation of deposits X if eaten excessively?

A Burger daging
Beef burger
B Puding
Pudding
C Yogurt
Yoghurt
D Makanan laut
Seafood

[*Lihat halaman sebelah*

34 Rajah 15 menunjukkan urutan bagi proses pengekstrakan minyak sawit.
Diagram 15 shows sequence of palm oil extraction process.

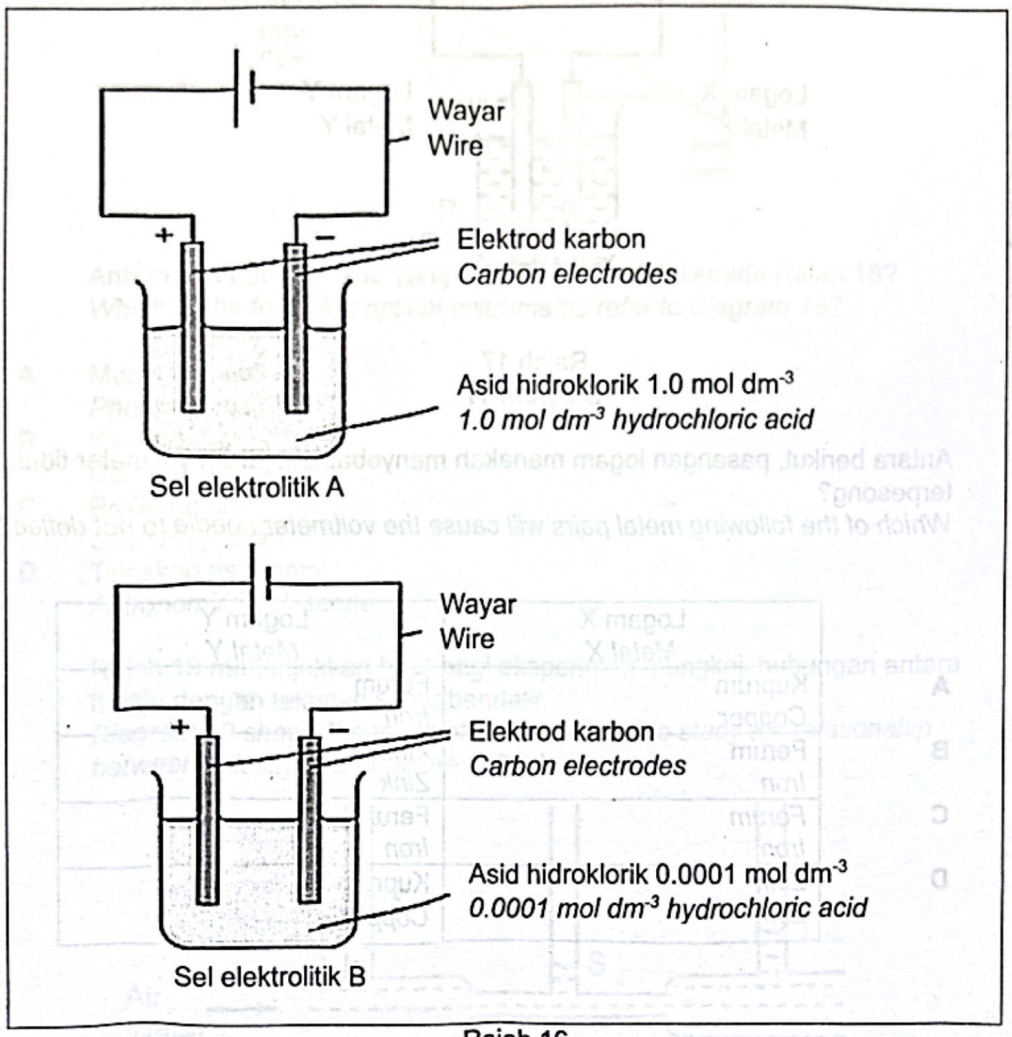


Rajah 15
Diagram 15

Apakah tujuan bagi peringkat X dijalankan?
What is the purpose of conducting process X?

A Untuk membunuh mikroorganisma
To kill microorganisms
B Untuk menjadikan minyak sawit kekuningan
To produce yellowish colour of palm oil
C Untuk mengelakkan minyak sawit menjadi masam
To avoid palm oil to become sour
D Untuk mengurangkan kandungan lemak dalam minyak sawit
To reduce fat content in the palm oil

35 Sekumpulan murid menjalankan eksperimen untuk mengkaji factor yang mempengaruhi hasil elektrolisis. Rajah 16 menunjukkan dua sel elektrolitik yang digunakan dalam eksperimen itu.
A group of students conducted an experiment to study the factor affecting the products of an electrolysis. Diagram 16 shows the two electrolytic cells that were used in the experiment.



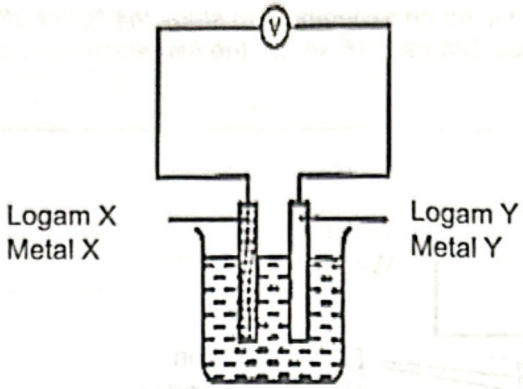
Rajah 16
Diagram 16

Berdasarkan maklumat pada Rajah 16, gas manakah yang terhasil di anod?
Based on the information in Diagram 16, which gas is formed at the anode?

	Sel elektrolitik A	Sel elektrolitik B
A	Oksigen *Oxygen*	Klorin *Chlorine*
B	Klorin *Chlorine*	Oksigen *Oxygen*
C	Oksigen *Oxygen*	Hidrogen *Hydrogen*
D	*Hidrogen* *Hydrogen*	Oksigen *Oxygen*

[*Lihat halaman sebelah*

36 Rajah 17 menunjukkan susunan radas bagi satu sel kimia ringkas.
Diagram 17 shows the apparatus set up of a simple chemical cell.

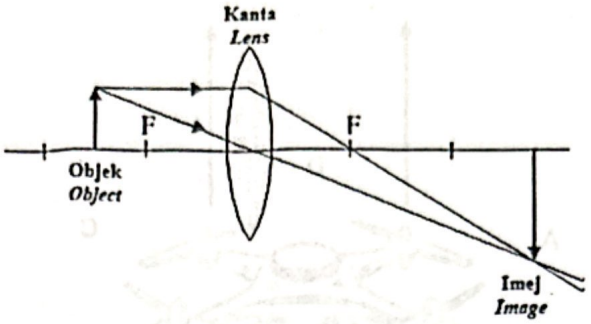


Rajah 17
Diagram 17

Antara berikut, pasangan logam manakah menyebabkan jarum voltmeter tidak terpesong?
Which of the following metal pairs will cause the voltmeter needle to not deflect?

	Logam X *Metal X*	Logam Y *Metal Y*
A	Kuprum *Copper*	Ferum *Iron*
B	Ferum *Iron*	Zink *Zink*
C	*Ferum* *Iron*	Ferum *Iron*
D	*Zink* *Zink*	Kuprum *Copper*

37 Rajah 18 menunjukkan satu rajah sinar.
Diagram 18 shows a ray diagram.

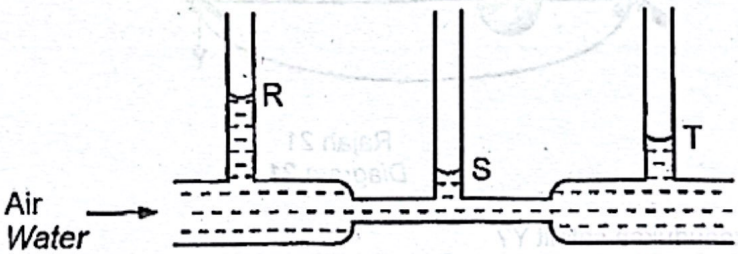


Rajah 18
Diagram 18

Antara alat optik berikut, yang manakah merujuk kepada Rajah 18?
Which of the following optical instruments refer to Diagram 18?

A Mesin fotostat
Photostat machine
B Kamera
Camera
C Projector slaid
Slide Projector
D Teleskop astronomi
Astronomical telescope

38 Rajah 19 menunjukkan hasil bagi eksperimen mengkaji hubungan antara halaju dengan tekanan suatu bendalir.
Diagram 19 shows the result of an experiment to study the relationship between velocity and pressure in fluids.



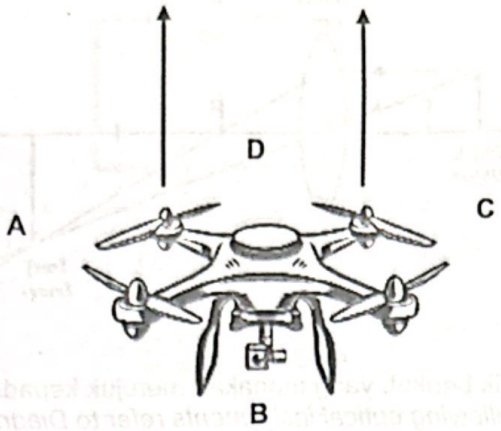
Rajah 19
Diagram 19

Apakah kesimpulan yang dapat dibuat berdasarkan hasil eksperimen ini?
What is the conclusion that can be drawn based on the result of this experiment?

A Semakin tinggi halaju bendalir, semakin rendah tekanan
The higher the velocity of fluid, the lower the pressure
B Semakin tinggi halaju bendalir, semakin tinggi tekanan
The higher the velocity of fluid, the higher the pressure
C Halaju dan tekanan berubah mengikut masa
Velocity and pressure change according to time
D Halaju air adalah seragam apabila melalui tiub Venturi
The velocity of water is uniform when it flows through the Venturi's tube

[*Lihat halaman sebelah*

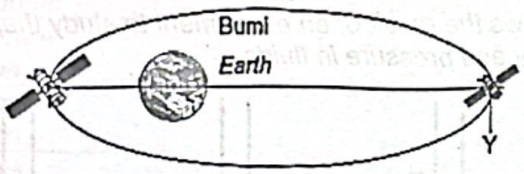
39 Rajah 20 menunjukkan sebuah dron yang sedang bergerak ke atas.
Diagram 20 shows a drone moving upwards.



Rajah 20
Diagram 20

Antara **A**, **B**, **C** dan **D**, kawasan manakah mempunyai tekanan udara paling tinggi?
*Which of the following area **A**, **B**, **C** and **D** has the highest air pressure?*

40 Rajah 21 menunjukkan kedudukan satelit dalam orbit elips.
Diagram 21 shows the positions of satelites in an eliptical orbit.



Rajah 21
Diagram 21

Apakah kedudukan satelit Y?
What is the position of satelite Y?

A Geopegun
Geostationary
B Apogi
Apogee
C Perigi
Perigee
D Geosegerak
Geosynchronous

KERTAS PEPERIKSAAN TAMAT