

FORM 4 Practice Test 6.2

BIOLOGY

4551/C6.2

May 2025

45 minutes

You must answer on the question paper.

No additional materials are required.

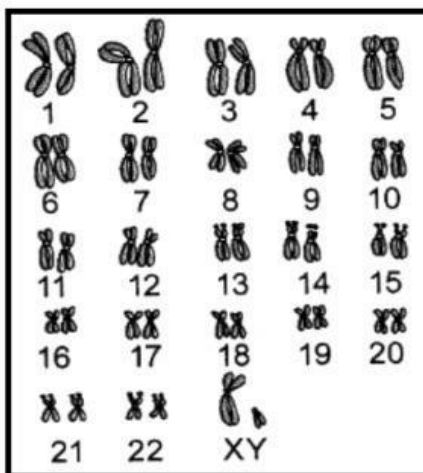
INSTRUCTIONS

- Answer **all** questions.
- Use a black or dark blue pen.
- Write your name, centre number and candidate number on the answer booklet.
- Do **not** use staples, paper clips, glue or correction fluid.
- Do **not** write on any bar codes.

INFORMATION

- The total mark for this paper is 30.
- The number of marks for each question or part question is shown in brackets [].

- 1 The diagram shows a karyotype of a male. Karyotype is an arrangement of chromosomes in an organism's cell.
Rajah menunjukkan kariotip seorang lelaki. Kariotip ialah susunan kromosom yang terdapat dalam sel sesuatu organisma.



- (a) According to the karyotype, state :
Berdasarkan kariotip di atas, nyatakan :

- (i) Diploid chromosomal number for the male.
Bilangan kromosom diploid bagi lelaki tersebut.

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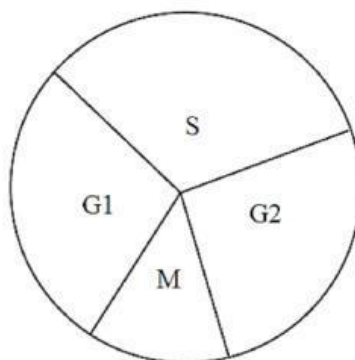
[1]

- (ii) Haploid chromosomal number for the male.
Bilangan kromosom haploid bagi lelaki tersebut.

.....

[1]

- (b) The diagram shows a cell cycle.
Rajah menunjukkan satu kitar sel.



- (i) What will happen to the cell division process if the G_1 phase does not occur?
Apakah yang akan berlaku kepada proses pembahagian sel sekiranya fasa G_1 tidak berlaku?

.....

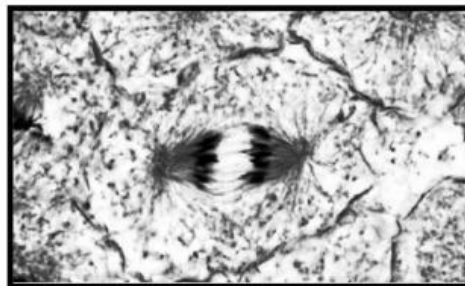
 [2]

- (ii) S phase consists of mitosis and cytokinesis. State **two** differences between mitosis and cytokinesis.
*Fasa S terdiri daripada mitosis dan sitokinesis. Nyatakan **dua** perbezaan antara sitokinesis pada sel haiwan dan sel tumbuhan*

.....

 [2]

- (c) The diagram shows a stage in a type of cell division in somatic cells for an animal.
Rajah menunjukkan satu peringkat dalam sejenis pembahagian sel dalam sel soma sejenis haiwan.



The somatic cell for the animal has four chromosomes. Describe the chromosomal behaviour after the stage shown in the diagram above.

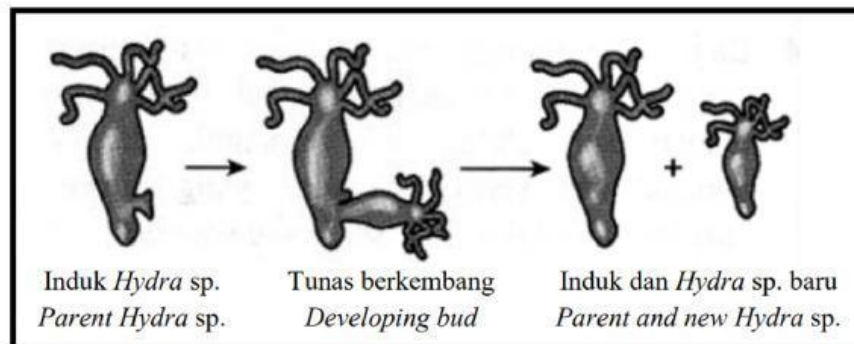
Sel soma haiwan tersebut mempunyai empat kromosom. Perihalkan perlakuan kromosom selepas peringkat yang ditunjukkan dalam rajah di atas.

.....

 [4]

[Total: 10]

- 2 The diagram shows a living process of *Hydra sp.*
 Rajah menunjukkan satu proses hidup bagi *Hydra sp.*



- (a) (i) Name the living process of *Hydra sp.* as shown in the diagram.
 Namakan proses hidup *Hydra sp.* seperti dalam rajah.

.....

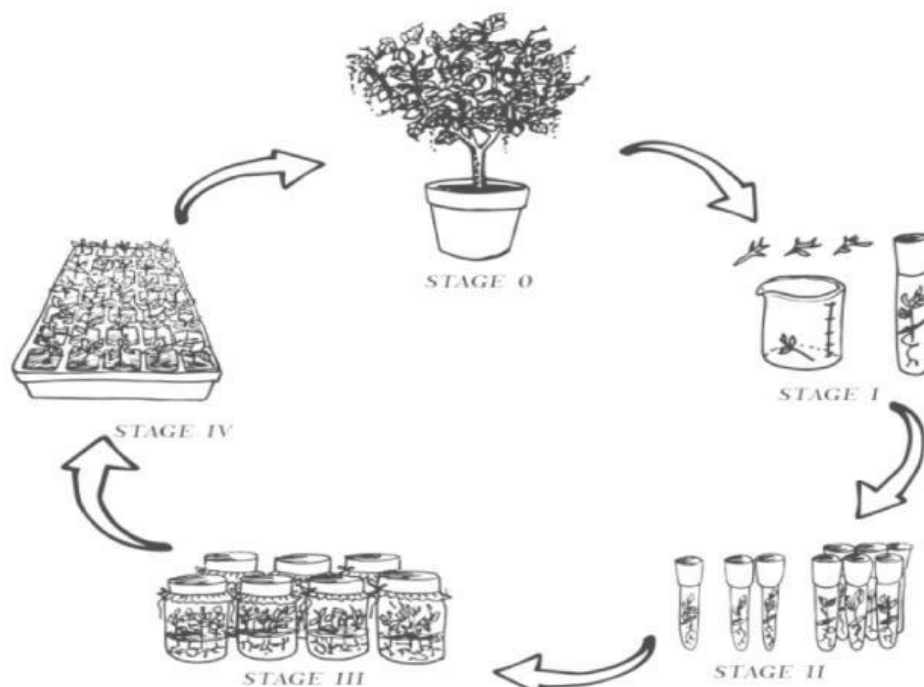
[1]

- (ii) State **one** advantage of mitosis for *Hydra sp.*
 Nyatakan **satu** kelebihan proses mitosis bagi *Hydra sp.*

.....

..... [1]

- (b) The diagram shows an application of mitosis in plants.
 Rajah menunjukkan satu aplikasi mitosis pada tumbuhan.



- (i) Name the technique used.
Namakan teknik yang digunakan.

.....

[1]

- (ii) Describe the advantages of the technique.
Huraikan kelebihan teknik tersebut bagi suatu jangka masa panjang.

.....

.....

.....

.....

.....

..... [3]

- (c) The development of science and technology has provided various facilities to mankind in various aspects of life. This includes the production of meat without involving conventional cattle breeding known as cultured meat.
Perkembangan sains dan teknologi telah memberikan pelbagai kemudahan kepada manusia dalam pelbagai aspek kehidupan. Antaranya penghasilan daging tanpa melibatkan penternakan lembu secara konvensional yang dinamakan sebagai daging kultur.

SINGAPURA - Daging ayam pertama yang dihasilkan di makmal membuat debut bersejarah di sebuah restoran di Singapura pada Sabtu lalu.

Daging kultur yang dipasarkan secara komersial oleh Eat Just itu pertama kali dihidangkan kepada pelajar berumur 14 hingga 18 tahun yang dijemput menghadiri pelancaran produk itu di 1880, sebuah restoran di Robertson Quay setelah mereka menunjukkan komitmen untuk membina planet lebih baik.

Acara itu bagaimanapun ditutup kepada media kerana langkah memerangi pandemik Covid-19.

Usahawan, Marc Nicholson yang mengasaskan 1880 menyifatkan daging kultur sebagai langkah pembaharuan untuk menyelesaikan isu perubahan iklim.

Petikan Sinar Harian – 22 Disember 2020

According to the statement above, explain one advantage of cultured meat process.
Berdasarkan kenyataan di atas, huraikan satu kebaikan proses penghasilan daging kultur.

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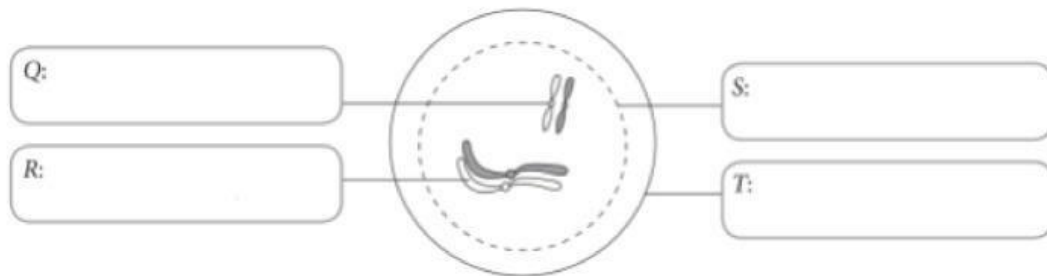
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..... [3]

[Total: 09]

- 3 The diagram shows a skin cell of an organism.
Rajah menunjukkan sel kulit satu organisma.



- (a) (i) Name the structures **Q**, **R**, **S** and **T** in the diagram.
Namakan struktur **Q**, **R**, **S** dan **T** dalam rajah.

[4]

- (ii) State the function of **R**.
Nyatakan fungsi **R**.

..... [1]

- (b) The cell in the diagram undergoes cell division.
Sel dalam rajah mengalami pembahagian sel.

- (i) State the type of cell division.
Nyatakan jenis pembahagian sel tersebut.

..... [1]

- (ii) Suggest the importance of the type of cell division above to the living organisms.
Cadangkan kepentingan jenis pembahagian sel di atas ke atas organisma hidup.

.....

 [3]

- (c) State the number of daughter cells and number of chromosomes produced at the end of cell division in the diagram.

Nyatakan bilangan sel anak dan bilangan kromosom yang akan terhasil di akhir pembahagian sel dalam rajah.

.....
..... [2]

[Total: 11]

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