

Nama: .....

Nombor Kad Pengenalan: .....

964/2



PERCUBAAN STPM  
2011

JABATAN PELAJARAN NEGERI TERENGGANU

**BIOLOGY  
PAPER 2**

**Two and a half hours**

**Instructions to candidates :**

Answer **all** the questions in Section A in the spaces provided.

Answer any **four** questions from section B.

For this section, write your answers on the answer sheets provided. Begin each answer on a fresh sheet of paper. Answers should be illustrated by large, clearly labeled diagrams wherever suitable.

Answers may be written in either Malay or English.

Arrange your answer in numerical order and tie the answer sheets to this booklet.

For examiner's use	
Section	Marks
A	1
	2
	3
	4
B	5
	6
	7
	8
	9
	10
<b>TOTAL</b>	

Disediakan oleh:  
Guru AKRAM Terengganu

Dengan kerjasama  
MPSM Negeri Terengganu

Dibiayai oleh:  
Kerajaan Negeri Terengganu

**TERENGGANU NEGERI ANJUNG ILMU**

Dicetak Oleh:  
Percetakan Yayasan Islam Terengganu Sdn. Bhd.  
Tel: 609-666 8611/6652/8601 Faks: 609-666 0611/0063

This question paper consists of 10 printed pages and 0 blank page.

STPM 964/2

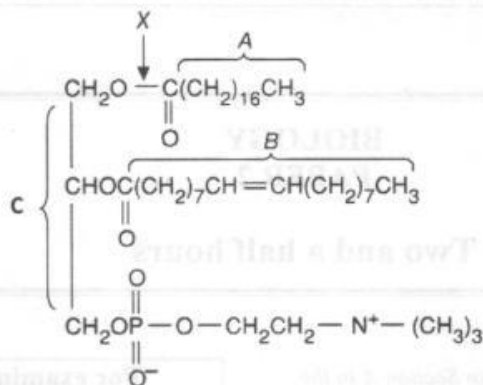
\* This question paper is CONFIDENTIAL until the examination is over.

[Turn over]  
CONFIDENTIAL\*

**Section A ( 40 marks )**

Answer all question in this section

1. The diagram below shows the structure of a lipid.



- (a) Name this lipid. [ 1 mark ]

- (b) Name the components A, B and C. [ 3 marks ]

A: .....

B: .....

C: .....

- (c) Name the type of bond labeled X. [ 1 mark ]

- (d) State one difference between A and B. [ 1 mark ]

(e) Describe the main features of this lipid which are important in the formation of plasma membrane. [ 2 marks ]

.....  
.....  
.....

(f) State two functions of this lipid in the cell membrane. [ 2 marks ]

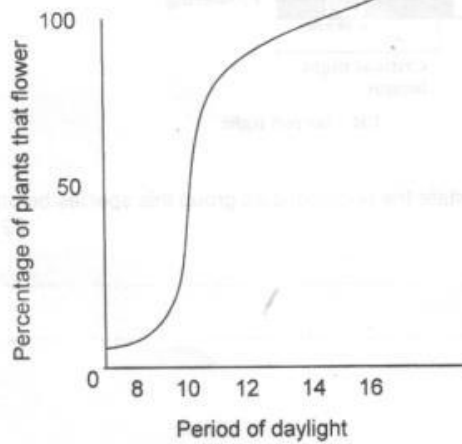
.....  
.....

2. Flowering in plants can be induced by different day lengths. The plants can be divided into three photoperiodic groups; short day, long day and day neutral plant.

a) (i) Using a suitable example, explain what is meant by *day neutral plant*. [ 2 marks ]

.....  
.....  
.....

(ii) An experiment is carried out to investigate the relationship between the period of daylight and flowering on spinach plant.



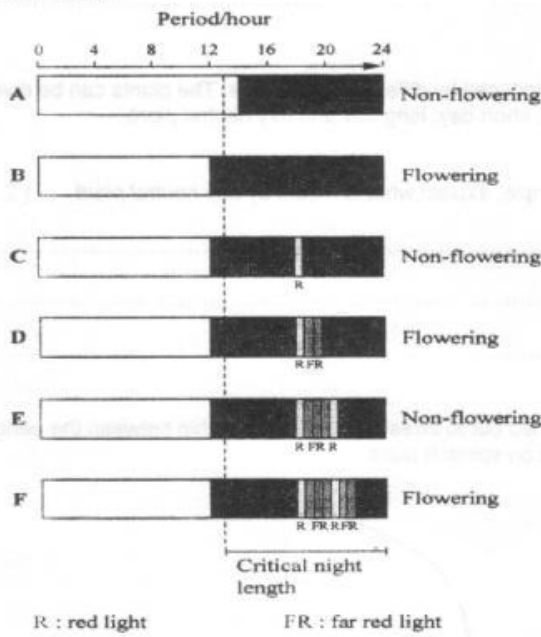
Based on the graph below which photoperiodic group does spinach belong to?  
 Explain your answer. [3 marks]

.....

.....

.....

a) Sample of plant from a species were exposed to a range of light and dark treatments as shown in the diagram below ( A, B, C, D, E and F ). The result of each treatment on flowering is shown below.



i) Based on the results of A and B, state the photoperiodic group this species belong to.  
 Explain your answer. [ 2 marks]

.....

.....

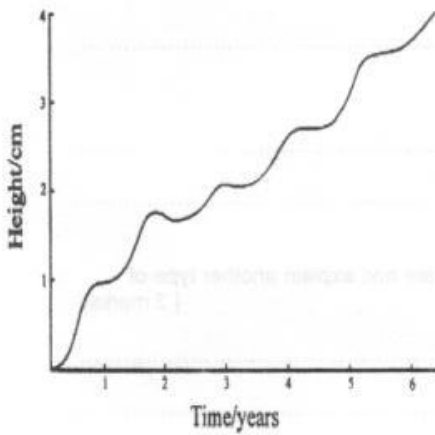
ii) With reference to treatments C, D, E and F, state your conclusions about the effects of red and far red lights on the flowering of this plant. [ 3 marks]

.....

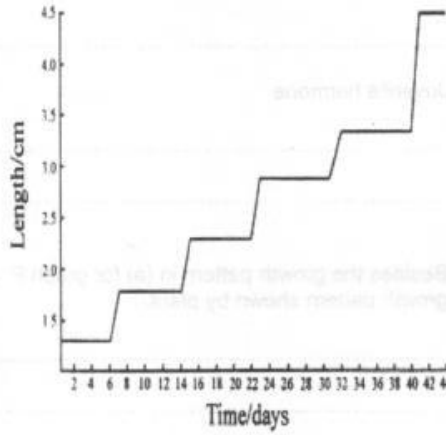
.....

.....

3. Graph P shows the growth curve of a woody perennial plant and graph Q shows the growth curve of an insect.



Graph P



Graph Q

(a) (i) With reference to graphs P and Q, explain the form of the two growth curve. [ 4 marks]

Graph P :

.....

.....

Graph Q :

.....

.....

(ii) The growth curve of the insect uses length as a measure of growth. Give a reason why this growth curve cannot be considered as a true measurement of the insect's growth.

[ 1 mark]

.....

(b) State the role played by the ecdysone and juvenile hormone in the metamorphosis in insects.

[ 2 marks]

Ecdysone

.....

.....

Juvenile hormone

.....

.....

(c) Besides the growth pattern in (a) for graph P, state and explain another type of growth pattern shown by plant.

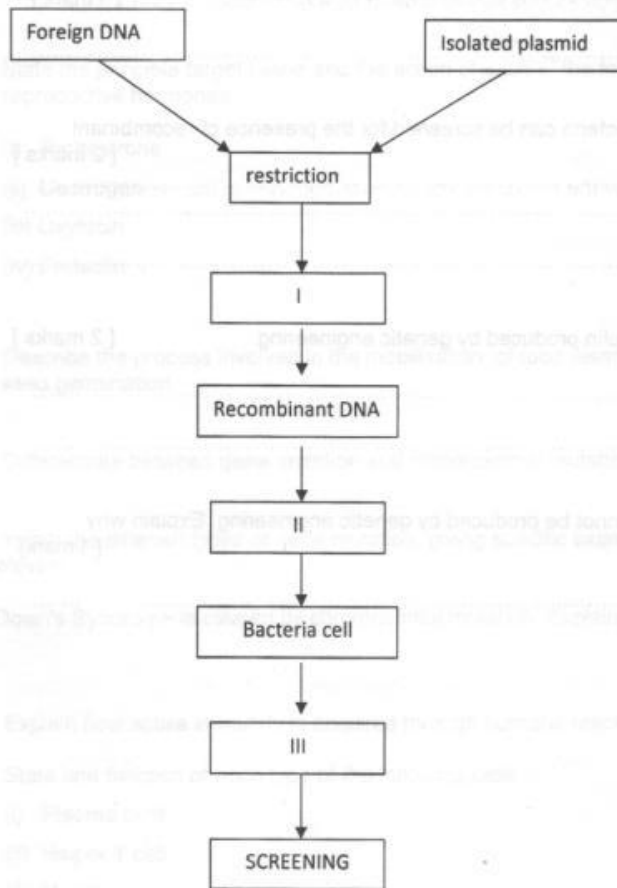
[ 3 marks]

.....

.....

.....

4. The diagram below shows summary of a procedure designed to clone genes



(a) Explain what is meant by *recombinant DNA*. [ 1 mark ]

.....  
.....

(b) State briefly what happens at step I, II and III. [ 3 marks ]

I:.....  
II:.....  
III:.....

(c) Why are the plasmid and foreign gene cut by using the same restriction enzyme ? [ 1 mark ]

.....

(d) State two ways in which bacteria can be screened for the presence of recombinant plasmids. [ 2 marks ]

.....

(e) (i) State two benefits of insulin produced by genetic engineering. [ 2 marks ]

.....

(ii) Unlike insulin, blood cannot be produced by genetic engineering. Explain why. [ 1 mark ]

.....



**Section B [ 60 marks]**

Answer any **four** questions in this section

5. (a) State the principle target tissue and the action of each of the following female reproductive hormones. [ 8 marks ]
- (i) Progesterone
  - (ii) Oestrogen
  - (iii) Oxytocin
  - (iv) Prolactin
- (b) Describe the process involved in the mobilisation of food reserve in an endosperm in seed germination. [ 7 marks ]
6. (a) Differentiate between gene mutation and chromosomal mutation. [ 4 marks ]
- (b) Explain the different types of gene mutation, giving specific examples where relevant. [ 8 marks ]
- (c) Down's Syndrome is caused by chromosomal mutation. Explain how this may occur. [ 4 marks ]
7. (a) Explain how active immunity is acquired through humoral response [ 10 marks ]
- (b) State one function of each type of the following cells. [ 5 marks ]
- (i) Plasma cells
  - (ii) Helper T cell
  - (iii) Macrophage
  - (iv) Cytotoxic T cell
  - (v) Suppressor T cell

8. (a) With reference to an example, explain what is meant by the following genetic terms

(i) epistasis

(ii) polygenic inheritance

[6 marks]

(b) In sweet corn plants, the alleles for red and smooth seed are dominant over the alleles for white and wrinkled seeds. Sweet corn plants with red and smooth seeds were crossed with plants with white and wrinkled seeds. A test cross was done using the F<sub>1</sub> progeny and the results are as follows:

Red, smooth	348
White, wrinkled	335
Red, wrinkled	40
White, smooth	39

By using suitable symbols, draw a genetic cross diagram to explain the results.

[9 marks]

9. (a) With the aid of a diagram, explain how lactose affects the lactose operon.

[9 marks]

(b) State the negative effects on health and the environment that may arise from the use of recombinant DNA technology.

[6 marks]

10. (a) What is meant by *species*?

[2 marks]

(b) Explain the problems that exist in defining species.

[5 marks]

(c) Explain how different species could maintain their identities through the isolating mechanism.

[8 marks]