

4551/1
Biology
Paper 1
Ogos
2008

1 $\frac{1}{4}$ hours



SEKOLAH BERASRAMA PENUH
BAHAGIAN PENGURUSAN SEKOLAH BERASRAMA PENUH / KLUSTER
KEMENTERIAN PELAJARAN MALAYSIA

SIJIL PELAJARAN MALAYSIA
PEPERIKSAAN PERCUBAAN
2008

BIOLOGI

KERTAS 1

Satu jam lima belas minit

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU

Kertas soalan ini mengandungi 25 halaman bercetak

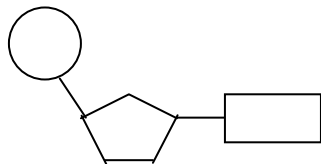
INFORMATION FOR CANDIDATES

1. *These question paper consists of 50 questions.*
2. *Answer **all** questions*
3. *Answer each question by blackening the correct space on the answer sheet.*
4. *Blacken **only one** space for each question.*
5. *If you wish to change your answer, erase the blackened mark that you have made. Then blacken the space for the new answer.*
6. *The diagrams in the questions provided are not drawn to scale unless stated.*
7. *You may use a non-programmable scientific calculator.*

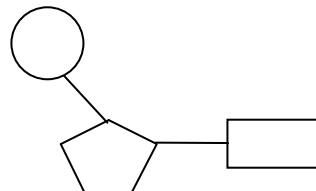
Instruction: Answer all questions.

- 1 Which organelle is responsible in packaging extracellular enzyme?
- A Golgi apparatus
 - B Ribosome
 - C Mitochondrion
 - D Endoplasmic reticulum
- 2 The movement of dissolved substances from a region of high concentration to low concentration is known as
- A diffusion
 - B haemolysis
 - C plasmolysis
 - D osmosis
- 3 Which is the correct structure of a nucleotide?

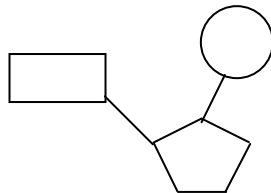
A



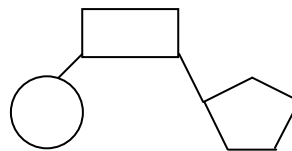
C



B



D



- 4 Diagram 1 shows a molecule of an enzyme.

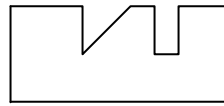
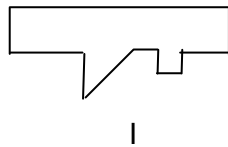
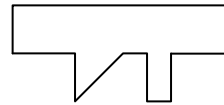


DIAGRAM 1

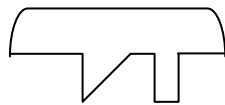
Which is the suitable substrate for this enzyme?



I



II



III



IV

- A I and II only
 B II and III only
 C I and III only
 D II and IV only
- 5 Diagram 2 shows a cell cycle.

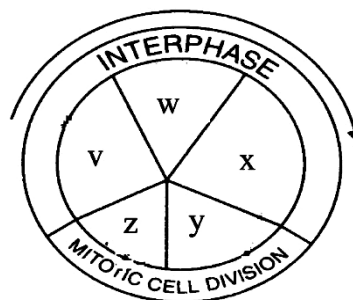


DIAGRAM 2

Which phase does the replication of DNA takes place?

- A V
 B W
 C X
 D Y

- 6 Diagram 3 shows the structure of a chloroplast seen under an electron microscope.

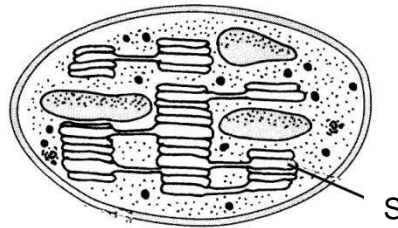


DIAGRAM 3

Name the process that occurs in S.

- A Photolysis of water
 - B Synthesis of starch
 - C Synthesis of glucose
 - D Reduction of carbon dioxide.
- 7 Diagram 4 shows the human alimentary canal.

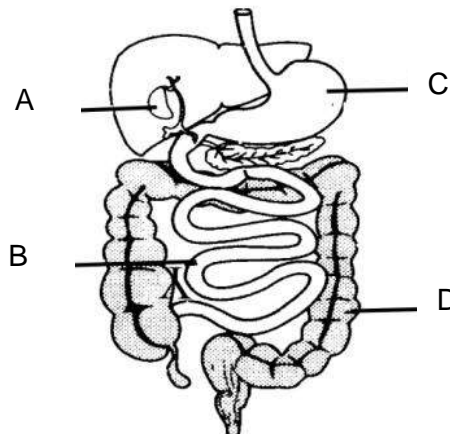


DIAGRAM 4

Which parts labelled A, B, C or D produce enzyme that works best at pH 1.5 ?

- 8 Element X is the main structural component of pigment chlorophyll. What is element X?
- A Calcium
 - B Ferum
 - C Magnesium
 - D Manganese

- 9 Diagram 5 shows a cross section of an alveolus and a blood capillary.

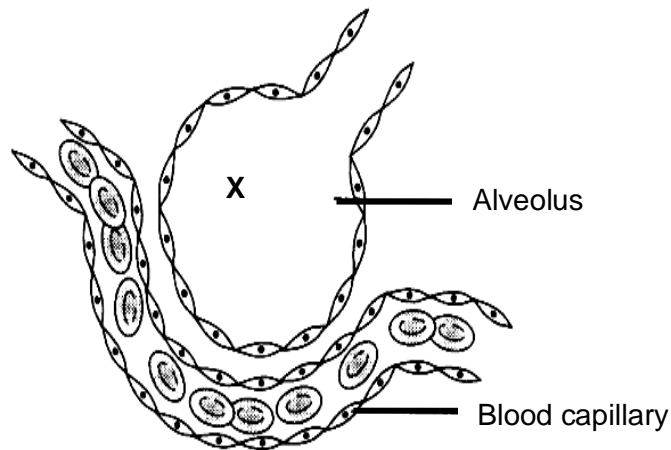


DIAGRAM 5

Which of the following statement describe correctly when a person inhales?

- I More oxyhaemoglobin will be formed.
 - II Oxygen diffuses from X into the blood capillary.
 - III The partial pressure of oxygen in X is higher than the partial pressure of oxygen in the blood capillary.
 - IV The partial pressure of carbon dioxide in X is lower than the partial pressure of carbon dioxide in the blood capillary.
-
- A I and II only
 - B III and IV only
 - C I, II, and III only
 - D I, II, III, and IV

10 Diagram 6 shows the structure of the tracheal system in a cockroach.

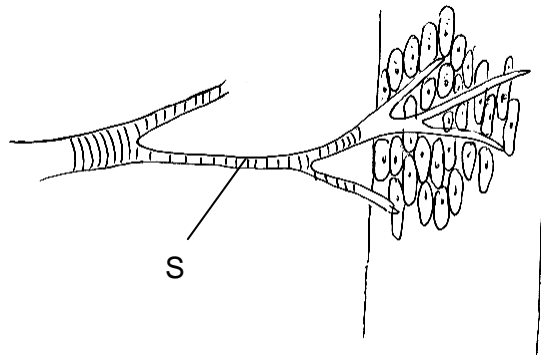


DIAGRAM 6

Which of the explanation is **true** about S?

- A Control the opening of the spiracle
- B Thickened by chitin to prevent collapse
- C Allow gaseous exchange to occurs rapidly
- D Covered with a thin layer of fluid to aid difusión

11 Which is the correct sequence in the hierarchical classification of organisms from the smallest to the largest classification?

- A Genus → pecies → class → order → family
- B Species → genus → family → order → class
- C Species → genus → class → family → order
- D Species → genus → order → class → family

12 Diagram 7 shows an interaction between two organisms.

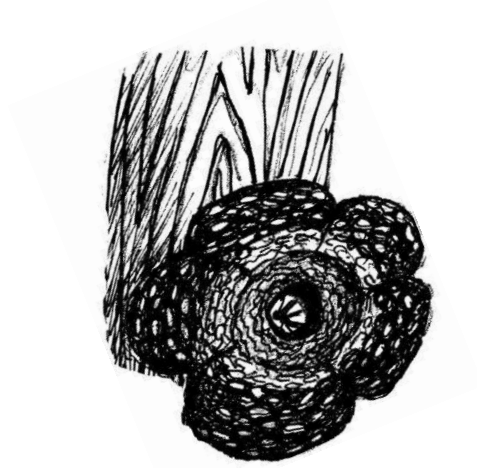


DIAGRAM 7

What type of interaction does this represent?

- A Competition
- B Mutualism
- C Parasitism
- D Saprophytism

13 Which gas traps heat from sunlight and leads to greenhouse effect ?

- A Carbon dioxide
- B Sulphur dioxide
- C Carbon monoxide
- D Oxides of nitrogen

- 14 Diagram 8 shows a phenomenon in an industrial area.

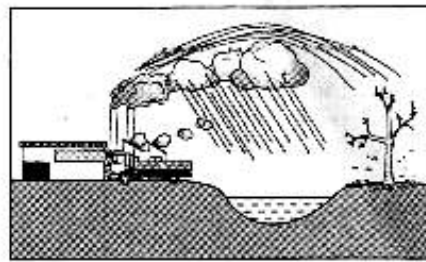
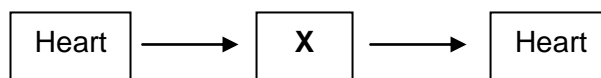


DIAGRAM 8

Which of the following substance results in the phenomenon?

- A Chlorofluorocarbons (CFCs)
 - B Carbon dioxide
 - C Sulfur dioxide
 - D Carbon monoxide
- 15 The sample of water in a lake shows a low BOD level.
Which of the following statement best describe the situation?
- A Pollution by untreated waste
 - B An increase in the temperature of the lake.
 - C The high amount of dissolve oxygen in the lake.
 - D A decrease activity of microorganism in the lake
- 16 The flow chart shows the systemic circulation in human.



What is organ X?

- A Gills
- B Lungs
- C Body tissues
- D Haemocoelom

17 Which hereditary disease occurs due to lack of certain clotting factors in the blood?

- A Embolism
- B Thrombosis
- C Haemophilia
- D Arteriosclerosis

18 Diagram 9 shows four types of blood cell in human.

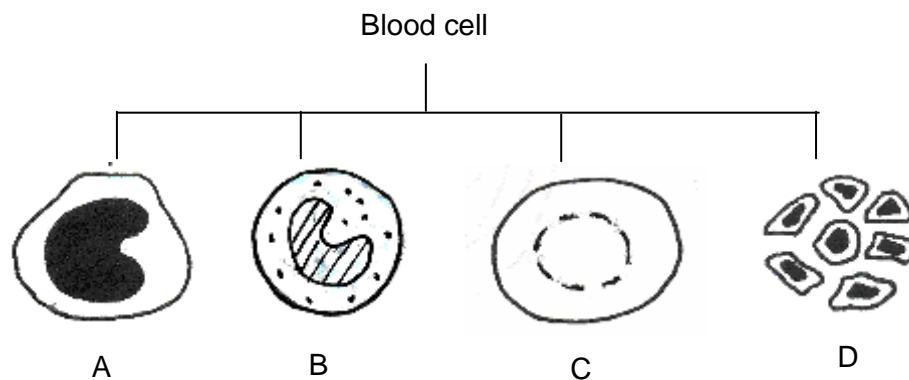


DIAGRAM 9

Which cell labelled A, B, C or D function in the transportation of respiratory gases?

19 Diagram 10 shows a joint.

Which parts labelled A, B, C or D is structurally tough and elastic?

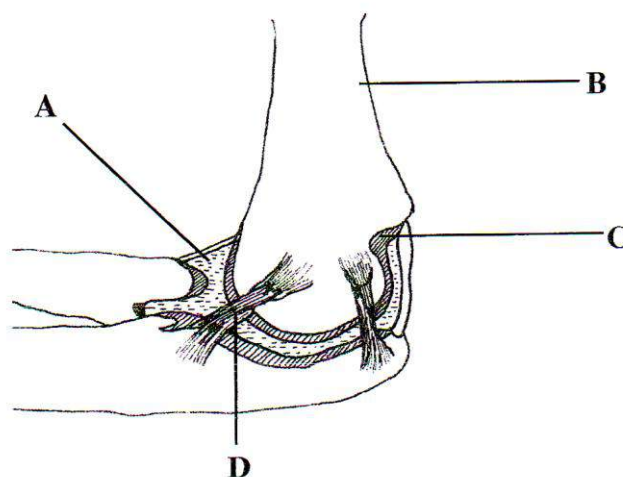


DIAGRAM 10

20 Diagram 11 shows a human vertebra.

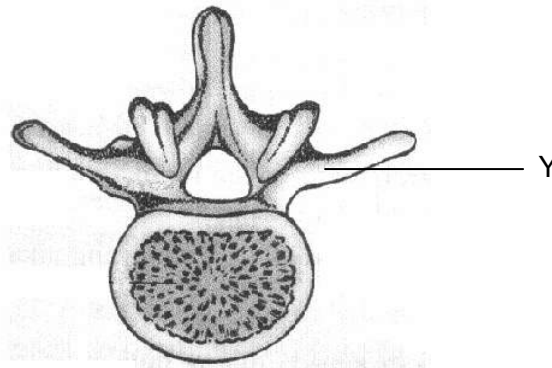


DIAGRAM 11

What is the function of Y?

- A For muscle attachment
- B To protect the spinal cord
- C To form joints with the ribs
- D To form joints with the vertebral column

21 Diagram 12 shows human endocrine glands.

Which gland labelled A, B, C or D secretes aldosterone hormone?

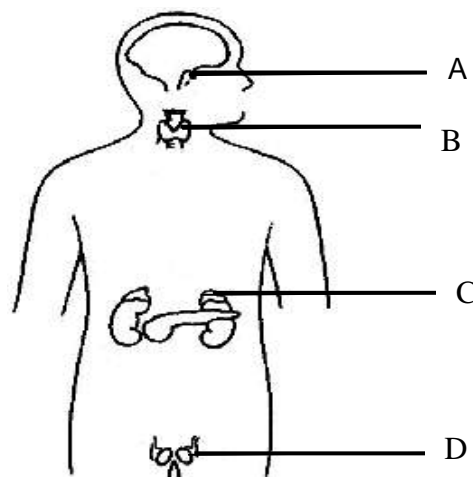


DIAGRAM 12

22 Diagram 13 shows the development of pollen in a pollen sac.

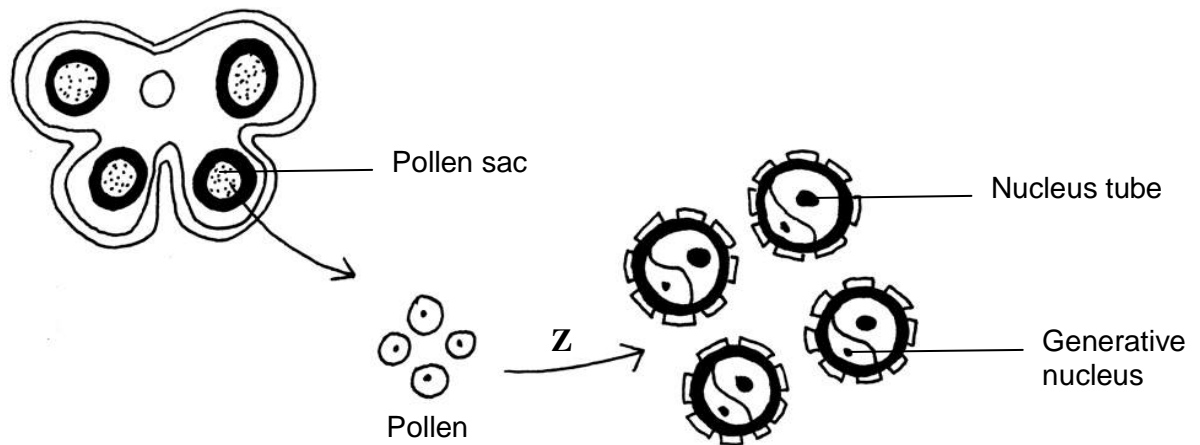


DIAGRAM 13

What is process Z?

- A Mitosis
- B Meiosis
- C Pollination
- D Fertilization

23 Diagram 14 shows human reproductive system.

Which part labelled A, B, C or D does fertilization occur?

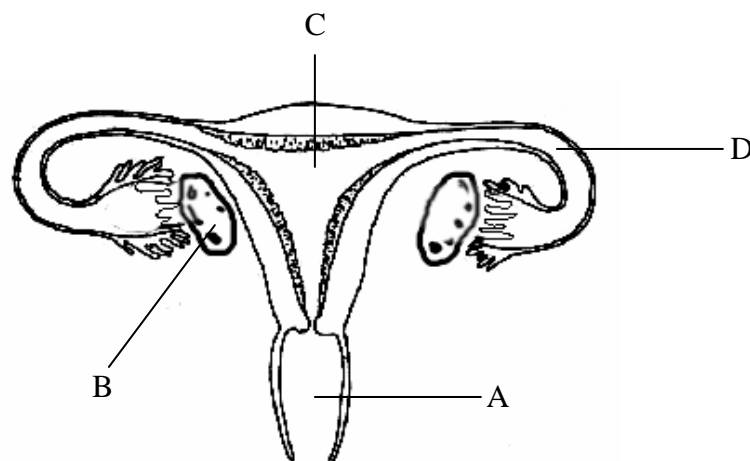


DIAGRAM 14

24 Diagram 15 shows a pair of identical twins.

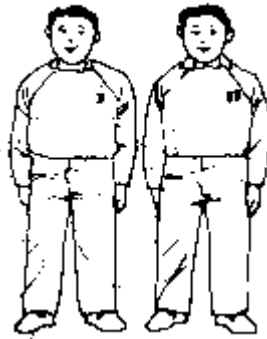


DIAGRAM 15

Which of the statement is **true** about the fertilisation occurs to form twin?

- A It is between two sperms and two ova forming two zygotes.
- B It is between two sperms and one ovum forming two zygotes.
- C It is between two sperms and one ovum forming a zygote which divides into two.
- D It is between one sperm and one ovum forming a zygote which divides into two.

25 Which characteristic is a discontinuous variation in human?

- A Body weight
- B Skin colour
- C Intelligence
- D Hair type

26 Diagram 16 shows an organelle.

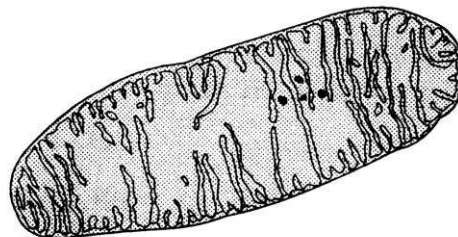


DIAGRAM 16

Which cell does **not** have the organelle?

- | | |
|----------------|------------------|
| A Meristem | C Sclerenchyma |
| B Cork cambium | D Companion cell |

27 Diagram 17 shows a mango strip.

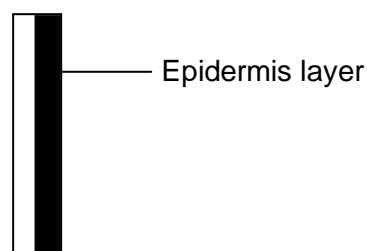


DIAGRAM 17

A student soaks the mango strip in a concentrated sugar solution for 24 hours. Which of the following shows its condition after 24 hours?

	Condition of cell	Condition of mango strip
A		
B		
C		
D		

28 People of the Eskimo are able to catch fish in frozen lakes. Which physical characteristic of water enable the fish to live in this situation?

- A Water expands at 0°C
- B Water is a weak conductor of heat
- C Water achieves minimum density at -4°C
- D Water has a high latent heat of evaporation

29 Diagram 18 shows an animal cell during anaphase I of meiosis.

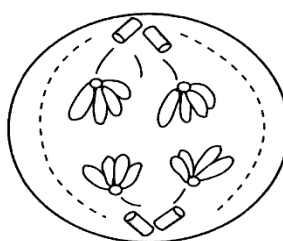


DIAGRAM 18

What is the number of chromosome in the parent cell?

- A 2
- B 4
- C 8
- D 16

30 Which of the following is **true** if an insect species has a diploid number of chromosomes , $2n = 12$?

	Number of nuclear division during meiosis	Number of chromosomes in gametes after meiosis
A	1	6
B	2	4
C	2	6
D	1	12

31 Diagram 19 shows the apparatus set-up of an experiment to study the movement of

substances through the Visking tubing.

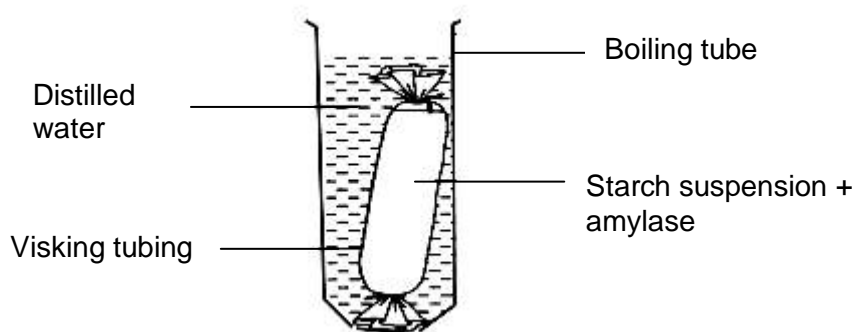


DIAGRAM 19

Samples outside the visking tube are tested using iodine, Benedict's solution, and Biuret's solution after one hour. Which shows the correct results?

	Iodine solution	Benedict's solution	Biuret's solution
A	Brownish-yellow	Blue	Purple
B	Blue-black	Blue	Purple
C	Brownish-yellow	Brick-red precipitate	Blue
D	Blue-black	Brick-red precipitate	Blue

32 Which is the correct comparison between butter and vegetable oil?

	Butter	Vegetable Oil
A	Liquid at 28°C.	Solid at 28°C.
B	Contain more cholesterol	Contain less cholesterol
C	Provide less energy	Provides more energy
D	Has double bond between the carbon atoms	Has no double bond between the carbon atoms

33 In an experiment to estimate the population of snails in a habitat, the number of snails caught

and marked is 210. The snails were then released. After three days, another 150 snails were caught and it was found that 50 of them were marked. What is the estimated population of the snails in the habitat?

- A 70
- B 210
- C 630
- D 1200

34 Diagram 20 shows part of the nitrogen cycle.

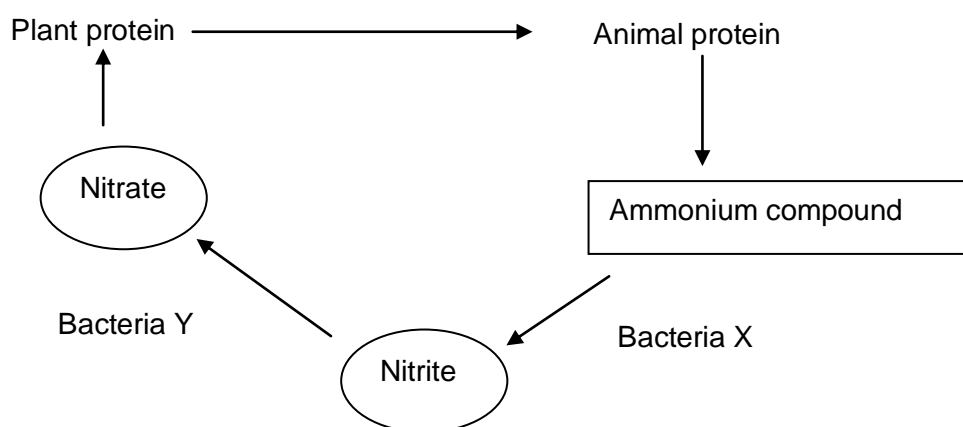


DIAGRAM 20

Name bacteria X and Y.

	X	Y
A	<i>Rhizobium</i>	<i>Nitrobacter</i>
B	<i>Lactobacillus</i>	<i>Nitrosomonas</i>
C	<i>Nitrosomonas</i>	<i>Rhizobium</i>
D	<i>Nitrosomonas</i>	<i>Nitrobacter</i>

35 Which activity is **correctly** matched to its impact on the environment?

	Activity	Impact on the environment
A	Ore mining	Soil erosion
B	Extensive deforestation	Water pollution
C	Excessive use of organic fertilizers	Acid rain
D	Construction of houses on hill tops	Thermal pollution

36 Which is the shortest route taken by the blood traveling from a leg to an arm in the human body?

- A Leg → heart →lungs →heart→ arm
- B Leg →heart →lungs→liver →arm
- C Leg →liver→heart →lungs →arm
- D Leg →lungs→ heart →lungs →arm

37 Diagram 21 shows a joint in human skeletal system.

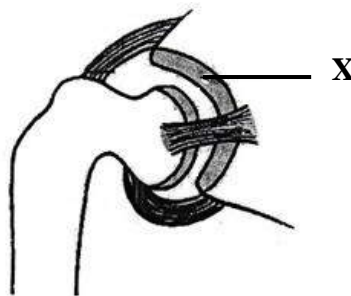


DIAGRAM 21

What is the function of X ?

- A Attach bones to the bone.
- B Secretes fluid to lubricate the joint.
- C Reduces friction between the bones.
- D Prevents the bones from being dislocated.

- 38 Diagram 22 shows a reflex arc of the nervous system. It has been cut at X. A bee sting a finger, as shown. What are the effects of this sting?

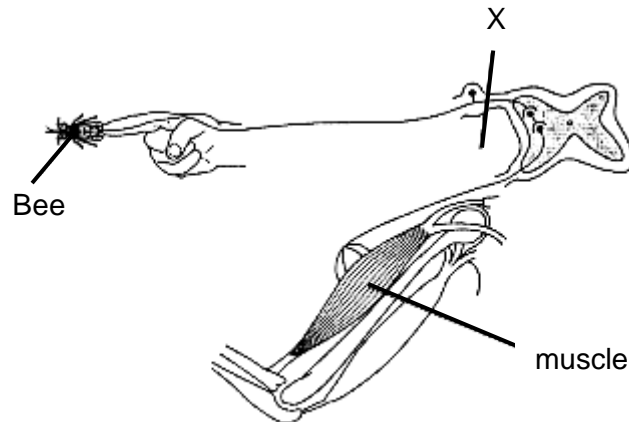


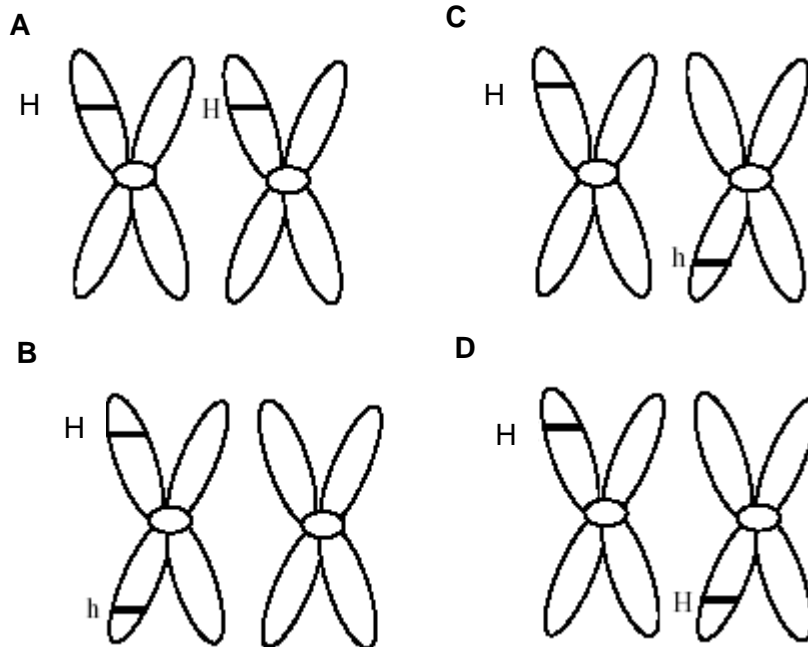
DIAGRAM 22

	Pain felt	Arm move
A	No	No
B	No	Yes
C	Yes	No
D	Yes	Yes

- 39 A sickle-cell anemia is a recessive trait. A sickle-cell anemia man marries a normal woman. Which of the following is **true** about their children?

- A The daughters will be normal whereas the sons will have sickle-cell anaemia.
- B The sons will be normal whereas the daughters will have sickle-cell anaemia
- C All their children will have sickle-cell anaemia
- D All the daughters and sons are carriers.

40 Which of the following shows a pair of allele?



41 Diagram 23 shows an experiment which is used to investigate osmosis in potato tissue.

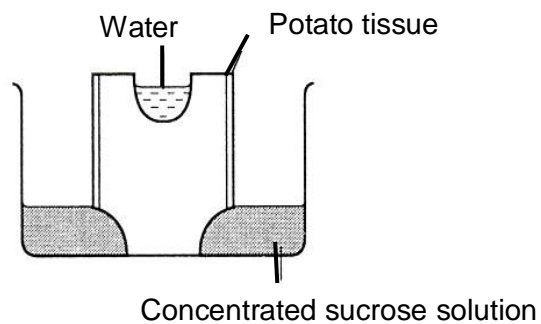
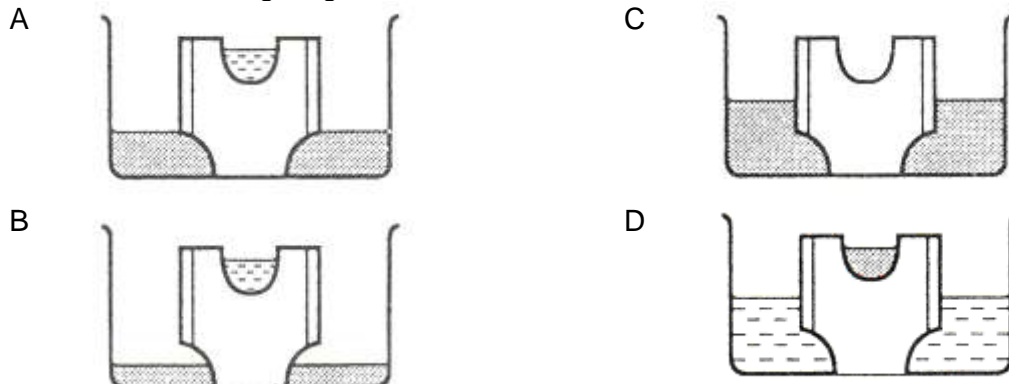


DIAGRAM 23

Which of the following diagrams shows the result after 12 hours?



- 42 Diagram 24 shows a shirt with a blood stain before and after being washed with an enzyme containing detergent.

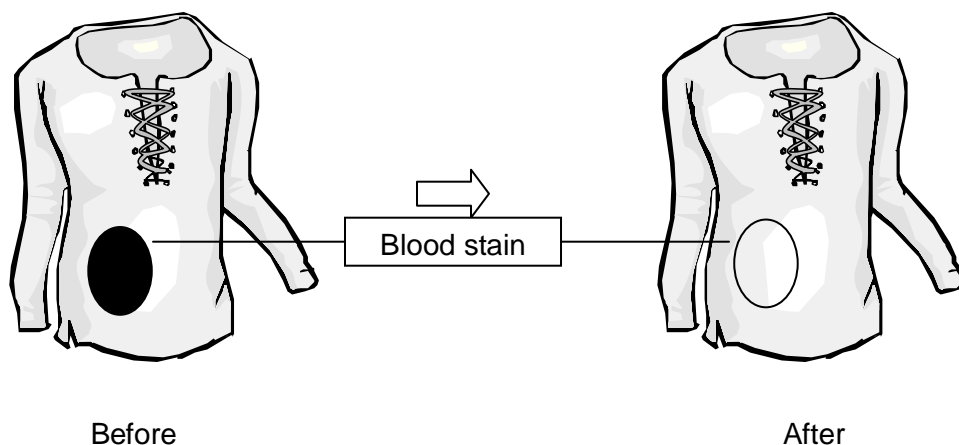


DIAGRAM 24

Which is the most suitable enzyme and temperature to give the result shown?

	Enzyme	Temperature
A	Lipase	37°C
B	Protease	18°C
C	Lipase	18°C
D	Protease	37°C

- 43 An animal has 8 chromosomes. How many different combinations of the homologous chromosomes can be arranged at the metaphase I to produce different gametes?

- A 2^4
- B 2^8
- C 4^2
- D 4^8

- 46 An athlete drinks concentrated glucose solution for energy supply before competition. Which of the following is **true** about reabsorption of glucose and water in his nephrone compared to daily intake?

	Reabsorption of Glucose	Reabsorption of Water
A	more	same
B	same	more
C	less	less
D	more	more

- 47 A rounded yellow seed homozygous pea is crossed with a wrinkled green seed. Rounded seed is dominant to wrinkled seed while yellow seed is dominant to green seed. A progeny from the first generation (F1) is crossed with another plant which is homozygous recessive for both traits. What is the phenotypic ratio of the second generation (F2)?

- A All round yellow seed
 B 3 round yellow : 1 wrinkle green
 C 9 round yellow: 3 round green : 3 wrinkle yellow: 1 wrinkle green
 D 1 round yellow: 1 round green: 1 wrinkle yellow: 1 wrinkle green

- 48 Which crossing between male and female will produce 50% albino progeny?

Key:

A - dominant allele for normal skin

a - recessive allele for albino

	Male	Female
A	Aa	Aa
B	Aa	aa
C	AA	aa
D	aa	aa

- 49 A chemical colchicine inhibits a formation of spindle fibre during cell division. A cell with 4 chromosomes is exposed to this chemical during mitosis. Which is the correct number of chromosome in its daughter cell?

	Daughter cell 1	Daughter cell 2
A	8	0
B	4	0
C	4	4
D	2	2

- 50 Diagram 26 shows the changes in the thickness of the uterus lining of a married woman during her menstrual cycle. The couple is not to have a child. Which is the best time to avoid pregnancy?

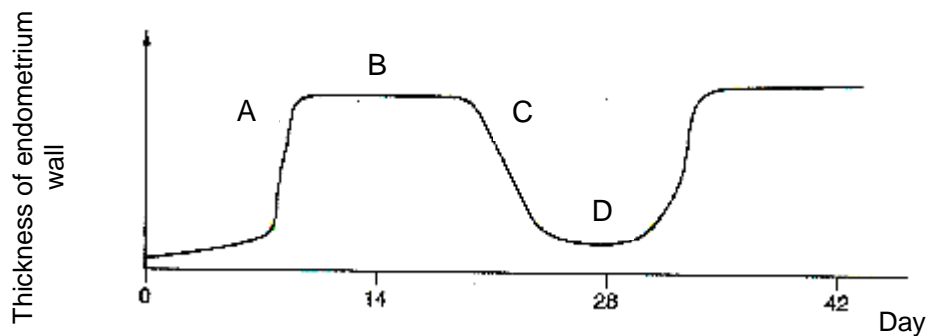


DIAGRAM 26

END OF QUESTION PAPER