



**KRANJI SECONDARY SCHOOL**

**2N(T)**

**MID-YEAR EXAMINATION 2019**

**SCIENCE**

**Level** : Secondary Two

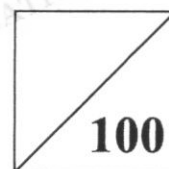
**Date** : 9 May 2019

**Stream** : Normal (Technical)

**Duration** : 1 hour 40 minutes

**Name** : \_\_\_\_\_ ( ) **Marks** :

**Class** : Sec \_\_\_\_\_



**READ THESE INSTRUCTIONS FIRST:**

**Do not open this booklet until you are told to do so.**

**Section A [40 marks]**

Answer **ALL** questions.

For each question, there are four possible answers, A, B, C and D. Choose the one you consider correct and shade your answer on the OMR sheet provided using a dark pencil.

**Section B [60 marks]**

Answer **ALL** questions in the spaces provided.

The number of marks is given in brackets [ ] at the end of each question or part question.

### Section A: Multiple Choice Questions [40 marks]

Answer **ALL** questions.

For each question, there are four possible answers, **A**, **B**, **C** and **D**. Choose the one you consider correct and shade your answer on the OMR sheet provided using a dark pencil.

- 1 Which of the following laboratory equipment would enable you to observe small cells like bacteria?
- A magnifying glass
  - B telescope
  - C microscope
  - D ruler
- 2 What is the purpose of having several types of cells in our body?
- A To allow each type of cell to carry out a specific function efficiently.
  - B To allow all cells to perform similar functions.
  - C To allow one type of cell to take over the function of other cells.
  - D To allow cells to combine together to form complex cells.
- 3 Which of the following is **not** true?
- A Cells are the basic building blocks of life.
  - B Genes are found in the nucleus of the cell.
  - C Plants and animals have the same cell structure.
  - D There are organisms with only one cell.
- 4 Which of the following is the main reason to classify onions as multicellular organisms?
- A They are able to do one type of job.
  - B They are made up of many different types of cells.
  - C They can reproduce.
  - D They have cells different from other animals.
- 5 Which of the following correctly shows how cells are organised to form organisms?
- A cell → tissue → organ → system → organism
  - B cell → organ → tissue → system → organism
  - C cell → system → organ → tissue → organism
  - D cell → system → tissue → organ → organism

6 Which of the following cells does **not** contain DNA?

- A bone cell
- B cheek cell
- C muscle cell
- D red blood cell

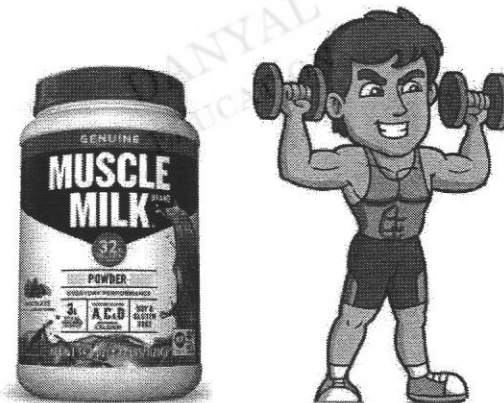
7 Which of the following cells helps the body to fight diseases?

- A bone cell
- B cheek cell
- C red blood cell
- D white blood cell

8 Brian has blue eyes, while Adrian has black eyes. What could be the reason?

- A Adrian inherited genes for black eyes from his parents.
- B Adrian rubbed his eyes too much.
- C Brian inherited genes for blue eyes from his uncle.
- D Brian washes his eyes everyday with saline water.

9 The picture below shows a popular product eaten by weight lifters.

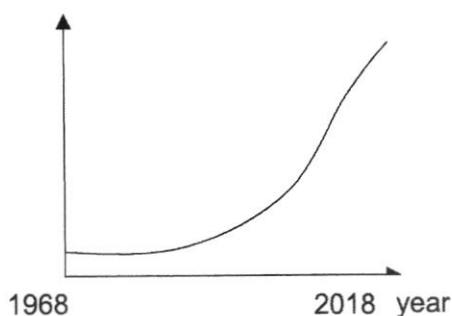


What is the main nutrient found in the product above?

- A carbohydrate
- B fat
- C mineral salt
- D protein

- 10 The graph shows the change in the percentage of obese people in rich, developed countries over the past 50 years.

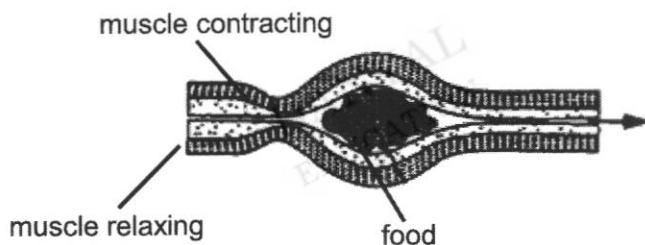
percentage of  
obese people in  
developed  
countries



What is the most likely cause for this change?

- A A decrease in daily meal portion sizes.
- B A decrease in sugar in the diet.
- C An increase in sugar in the diet.
- D An increase in physical activities.

- 11 The diagram shows some food moving through the digestive system.



Which part of the digestive system does the diagram represent?

- A mouth
- B oesophagus
- C urethra
- D anus

- 12 Joanna was chewing baked potato in her mouth and she noticed that it tasted sweet after a few minutes. What is the explanation for this?

- A The potato is made of protein which taste sweet.
- B The potato is made of sugars that takes time to be tasted.
- C The enzymes in her saliva changed the carbohydrates in the potato to simple sugars.
- D The enzymes in her saliva changed the proteins in the potato to simple sugars.

- 13 Which of the following digestive organs are matched to its correct function?

	organ	function
A	oesophagus	to chew food into smaller pieces
B	large intestine	to absorb excess water from faeces

<b>C</b>	small intestine	to store faeces
<b>D</b>	stomach	to absorb digested foods

**14** Which of the following is **not** part of the respiratory system?

- A** diaphragm
- B** lungs
- C** nose
- D** heart

**15** During breathing, the air leaves the body by the following route.

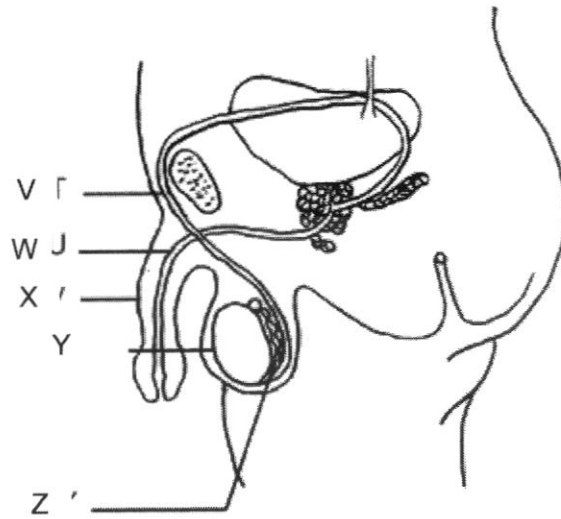
- A** lungs → wind pipe → nose
- B** lungs → nose → wind pipe
- C** nose → lungs → wind pipe
- D** nose → wind pipe → lungs

**16** Which of the following changes listed below happens in girls **only** during puberty?

- A** hips widen
- B** pubic hair grows
- C** sperm production starts
- D** voice changes

Answer questions 17 to 19 based on the diagram below.

The diagram below shows a male reproductive system.



17 Which part of the male reproductive system is a tube for only sperms to pass through?

- A V
- B W
- C X
- D Y

18 Which part of the male reproductive system produces sperms and sex hormones?

- A V
- B W
- C Y
- D Z

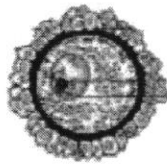
19 What is the function of part X?

- A For urine to pass through.
- B For semen to pass through.
- C For urine to be deposited into the vagina when erect.
- D To be inserted into the vagina when erect.

20 Which body system is different for male and females?

- A circulatory system
- B digestive system
- C reproductive system
- D respiratory system

21 The similarity between the two cells below are



- I. Both contain genetic information from the parents.
- II. Both are human sex cells necessary for reproduction.
- III. Both are the largest in the human body.
- IV. Both are the smallest cells in the human body.

- A I only
- B I and II only
- C II and III only
- D III and IV only

22 Which of the following is a reason for unsuccessful fertilisation?

- A No healthy eggs are released by ovaries.
- B There is a growth in the breast.
- C The penis is longer than the vagina.
- D Sperms are produced all year round.

23 In which place does fertilisation take place during in-vitro fertilisation (IVF)?

- A ceramic plate
- B fallopian tube
- C ovary
- D petri dish

24 Which of the following is done during artificial insemination, to ensure a better chance for fertilisation?

- A The woman is given medication to sleep during artificial insemination.
- B Semen is collected from the male right before the insemination.
- C Sperm cells are released directly into the uterus.
- D Syringes are used to store the sperms.

25 What will happen to an unfertilised ovum?

- A It will be developed into a foetus.
- B It will be developed into a placenta.
- C It will be digested by the body.
- D It will be released out of the body.

26 Which of the following are sexually transmitted infections caused by bacteria?

- I. Diarrhoea
- II. Gonorrhoea
- III. Pneumonia
- IV. Syphilis

- A I and II only
- B I and III only
- C II and III only
- D II and IV only

27 Which of the following symptoms can be observed in babies with Gonorrhoea at birth?

- A deformed joints and teeth
- B diarrhoea
- C eye infection leading to blindness
- D hand foot and mouth disease

28 HIV is harmful to the body because

- A it causes malaria and dengue fever.
- B it causes infertility.
- C it causes the immune system to fail, leading to other infections.
- D it causes measles.

29 Which of the following statements is true about AIDS?

- A AIDS can be cured by antibiotics.
- B AIDS causes pain when urinating.
- C AIDS is transmitted through the air.
- D AIDS is caused by a virus.

30 How will a drug abuser most likely contract AIDS when he takes drugs?

- A By hugging infected addicts.
- B By sharing food with addicts.
- C By sharing needles with infected addicts.
- D By using a public toilet used by addicts.

31 What is the purpose of using a condom?

- A To avoid contracting sexually transmitted infections.
- B To prevent ovulation.
- C To prevent the ejaculation of sperm.
- D To prevent the production of sperm.



32 Which is **not** a consequence of pre-marital sex?

- A Higher chance of pimple infections.
- B Higher chance of unplanned pregnancy.
- C Higher chance of getting sexually transmitted infections.
- D Higher chance of having an abortion.

33 Which of the following is **not** a consequence of abortion?

- A Injury to the uterus.
- B Feeling guilty and depressed.
- C Higher chance of getting pregnant in the future.
- D Lower chance of getting pregnant in the future.

34 Which of the following methods of contraception is correctly matched?

	contraception	temporary / permanent	for males / females
A	condoms	permanent	males
B	contraceptive pills	temporary	females
C	ligation	permanent	males
D	vasectomy	permanent	females

35 Nicotine is a harmful substance found in cigarettes. What is the effect of nicotine on the body?

- A It causes thirst.
- B It causes diabetes.
- C It causes yellowing of teeth and nails.
- D It is addictive.

36 What is the substance in cigarettes that causes the lungs to grow lumps?

- A carbon dioxide
- B carbon monoxide
- C carbon particles
- D tar

37 Maria classified some drugs into harmful and useful drugs as shown in the table below.

	drug	effect on our body
I	alcohol	harmful
II	coffee	harmful
III	panadol	useful
IV	antibiotics	useful

Which of the above drug(s) and its effect is/are correctly matched?

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

38 Which of the following is an example of inhalant abuse?

- A drinking alcohol
- B sniffing ground coffee
- C sniffing lighter fluid
- D smoking cigarettes

39 Abusing drugs can cause all of the following **except**

- A damage the health of the abuser.
- B make the drug abuser think he is very happy temporarily.
- C make the drug abuser spend a lot of money to buy drugs.
- D make the drug abuser live longer than most people.

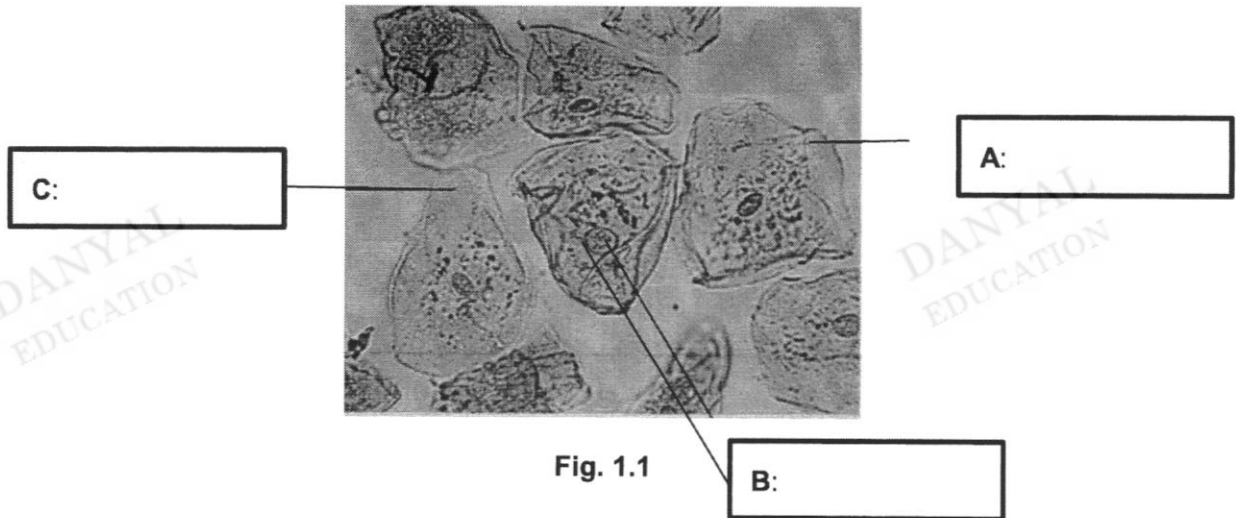
40 Which of the following is a withdrawal symptom of drug abuse?

- I. cold shivers
- II. fever
- III. weight loss

- A I only
- B II only
- C I and III only
- D I, II and III

**Section B: Structured Questions [60 marks]**  
 Answer **all** the questions in the spaces provided.

- 1 A student observed some cells found in an animal.  
 He used an instrument found in the science laboratory to look at the cells shown in Fig. 1.1.



- (a) Name the cell shown above.  
 ..... [1]
- (b) Label the parts **A**, **B** and **C** of the animal cells shown in Fig. 1.1. [3]
- (c) Fill in the blanks to show the functions **A**, **B** and **C** in the cell.  
 Each word may be used once, more than once or not at all.

substances	reproduction	jelly-like	activities	division
------------	--------------	------------	------------	----------

**A** controls the movement of ..... in and out of the cell.

**B** controls all cell ..... and is important for cell .....

**C** is a ..... substance and allows the cell to change shape. [4]

- 2 (a) Fig 2.1 shows a burger.  
Fill-in-the-blanks **P**, **Q**, **R** and **S** with the correct main nutrients provided by the different parts of the burger using the helping words below. [4]

carbohydrate	calcium	protein	fibre
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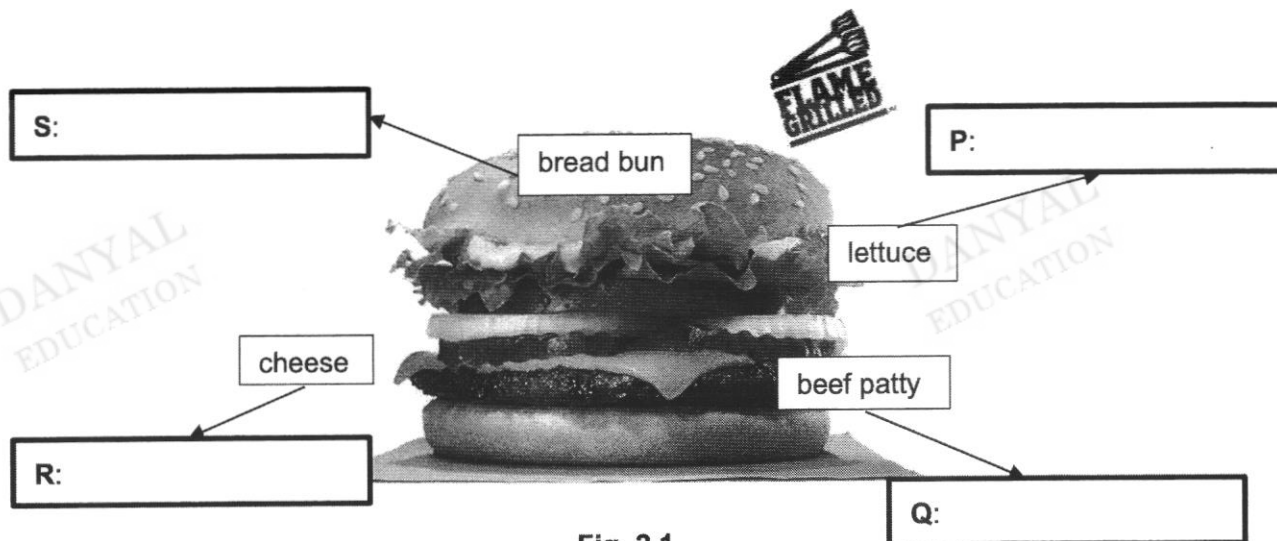


Fig. 2.1

- (a) Draw lines to match the correct function to the respective parts of the digestive system. [4]

**Part of Digestive System**

**Function**

anus

•

- Digests proteins and the acid it secretes kills bacteria

liver

•

- Produces bile which aids digestion of fats

small intestine

•

- Expels faeces from the body

stomach

•

- Almost all of the digestion of food takes place here

- (b) Fig. 2.2 shows the human digestive system.

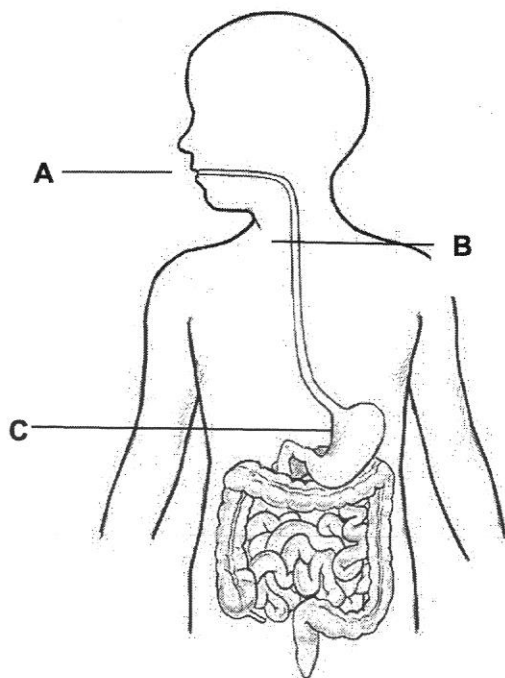


Fig. 2.2

Identify the following parts.

- A: .....  
 B: .....  
 C: .....

[3]

- (c) David conducted an experiment using fluids X, Y and Z taken from three different parts of the human digestive system. He tested each fluid by digesting starch, proteins and fats, and recorded his findings in the following table.

fluid	carbohydrates	proteins	fats
X	digested	not digested	not digested
Y	not digested	digested	not digested
Z	not digested	not digested	not digested

- (i) Name the type of chemical found in the body that is responsible for the digestion of nutrients.

[1]

- (ii) In the table below, state which part of the body (A, B, or C) the respective fluids are taken from with reference to Fig. 2.2.

[3]

fluid	part of body (A, B or C)
X	
Y	

Z	

- 3 Fill in the blanks to show the difference between respiration and breathing.  
Each word may be used once, more than once or not at all.

[4]

oxygen	food	lungs	carbon dioxide
energy	water	faeces	tar

respiration	breathing
<ul style="list-style-type: none"> <li>Respiration is the process of using ..... to break down digested .....to release .....for movement.</li> <li>During this process, ..... and ..... are produced.</li> </ul>	<ul style="list-style-type: none"> <li>Breathing is the forcing of air in and out of the .....</li> <li>Inhaled air contains more ..... and less .....</li> </ul>

- 4 Chloe is doing an experiment to find out the composition of oxygen and carbon dioxide in inhaled and exhaled air. She recorded her results in Fig. 4.1.

gas	percentage in inhaled air (%)	percentage in exhaled air (%)	percentage difference in inhaled and exhaled air (%)
carbon dioxide	0.04	4	
oxygen	21	16	

**Fig. 4.1**

- (a) Complete Fig 4.1 by calculating the percentage difference of carbon dioxide and oxygen between inhaled and exhaled air. [2]

- (b) State which gas has a higher percentage difference.

..... [1]

- (c) State which cell transports oxygen around the body.

..... [1]

- (d) Chloe then conducts a second experiment to find out the percentage of oxygen in the blood of smokers smoking increasing sticks of cigarettes. She recorded her results in Fig. 4.2.

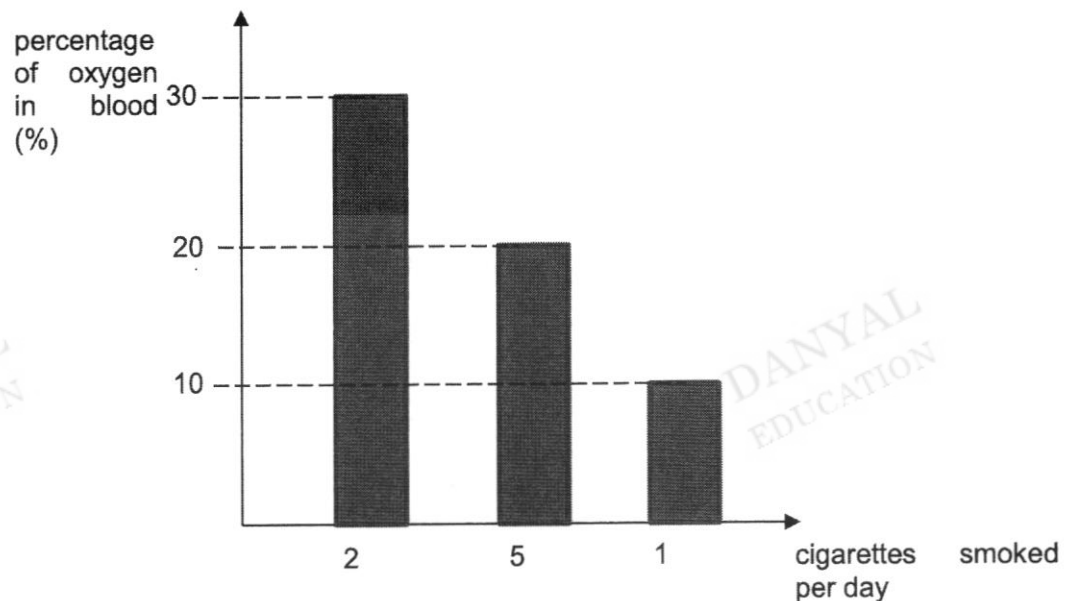


Fig. 4.2

- (i) What is the percentage of oxygen in blood for smokers who smoked 2 cigarettes per day?  
..... [1]
- (ii) What is the percentage of oxygen in blood for smokers who smoked 10 cigarettes per day?  
..... [1]
- (iii) What happens to the percentage of oxygen in blood as the number of cigarettes smoked per day increases?  
..... [1]



- 5 (a) Fig. 5.1 shows the female reproductive system. Label parts **A**, **B**, **C** and **D**.

[4]

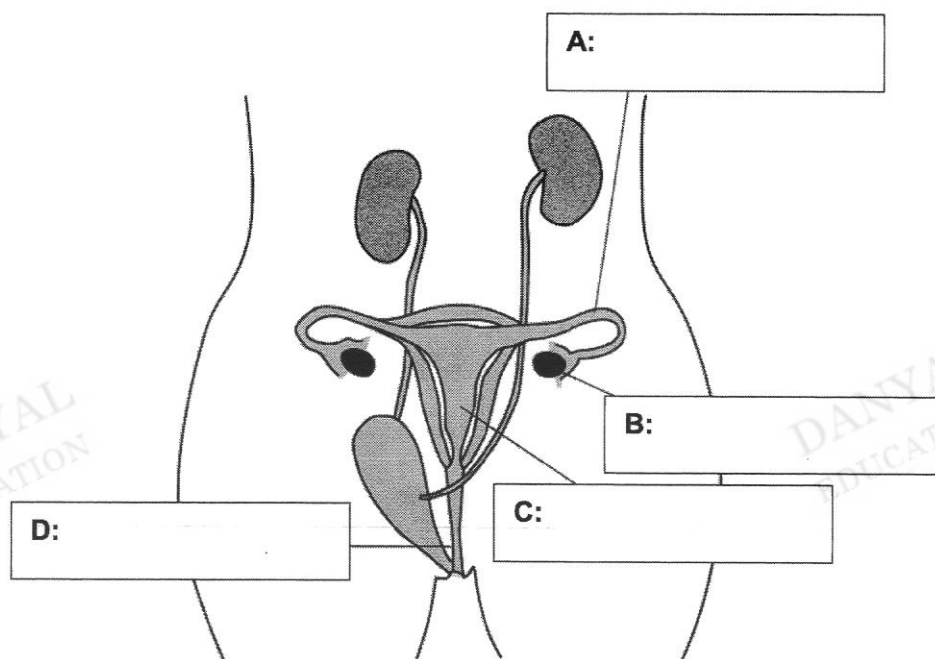


Fig. 5.1

- (b) During ligation, **A** is cut and tied.

Which of the following will happen when **A** is cut and tied?  
Put a tick (✓) where appropriate.

[2]

- There will be no more menstruation. [     ]
- The female will stop producing sex hormones. [     ]
- Fertilisation cannot take place. [     ]
- Sexual intercourse cannot take place. [     ]
- A mature egg will be released each month. [     ]

- (c) State **two** advantages of the use of condom during sexual intercourse.

Advantage 1: .....

Advantage 2: ..... [2]

- (d) Fig. 5.2 shows a device used as females as a form of birth control.



**Fig. 5.2**

- (i) What is this device called?  
..... [1]
- (ii) How does this method prevent pregnancy?  
..... [1]
- (iii) Mark with a letter **P** on Fig. 5.1 to indicate where the device in Fig. 5.2 is placed. [1]

- 6 Rina uses the calendar in Fig. 6.1 to record the dates concerning her menstrual cycle which lasts for 28 days.

Her menstruation started on 2<sup>nd</sup> March, as indicated by the circle on the calendar.

## MARCH 2019

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

Fig. 6.1

- (a) What happens to Rina's uterine lining from 2<sup>nd</sup> to 6<sup>th</sup> March?

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

- (b) On which date is Rina most likely to ovulate?

..... [1]

- (c) If Rina has sexual intercourse on the 29 March, will she become pregnant? Explain your answer.

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

- (d) What is the date of her next menstruation?

..... [1]

- 7 (a) Fill in the blanks for the following question on smoking in Singapore.

sexual	cancer	advertising	public
growth	breathing	entertainment	heart

Cigarette smoke can cause lung ....., mouth cancer, ..... difficulties and ..... diseases.

Some of Singapore's tobacco control measures include:

- Raising the minimum legal age to 21.
- ..... restrictions.
- Mandatory graphic health warnings.
- Smoking ban in ..... places. [5]

- (b) What are **three** ways to avoid picking up the habit of smoking or quit smoking?

1..... [3]  
2.....  
3.....

- (c) Explain how taxing cigarettes controls the rise in the number of smokers in Singapore.

..... [1]

**End of paper**

## SECTION A: Multiple-Choice Questions [40 marks]

Question	1	2	3	4	5	6	7	8	9	10
Answer	C	A	C	B	A	D	D	A	D	C
Question	11	12	13	14	15	16	17	18	19	20
Answer	B	C	B	D	A	A	A	C	D	C
Question	21	22	23	24	25	26	27	28	29	30
Answer	B	A	D	C	D	D	C	C	D	C
Question	31	32	33	34	35	36	37	38	39	40
Answer	A	A	C	B	D	D	B	C	D	D

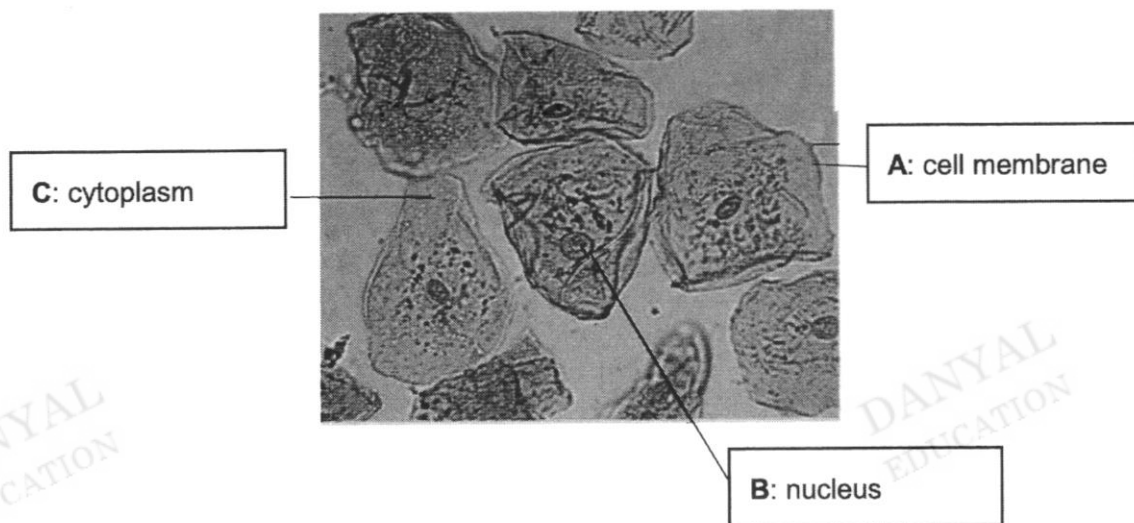
## SECTION B: Short Structured Questions [60 marks]

**Qns Answer scheme**

**Total**

- 1 (a) cheek cell  
(b)

[1]



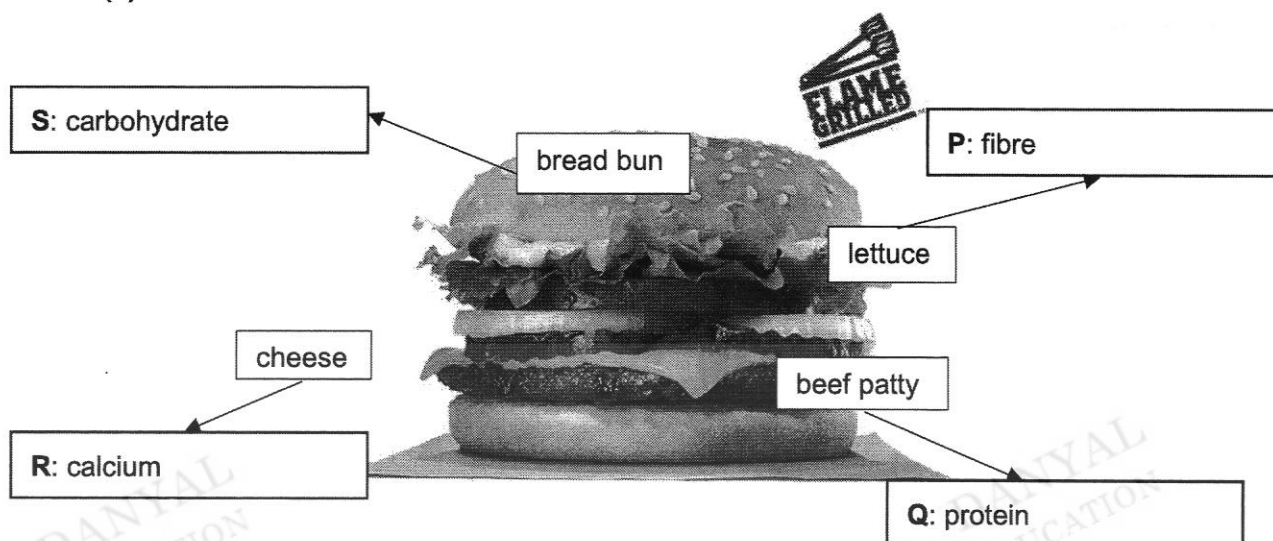
[1] – each correct

[3]

- (c) **A** Control the movement of substances in and out of the cell [1]  
**B** control all cell activities [1] and is important for cell division [1]  
**C** is a jelly-like substance and allows the cell to change shape [1]

[4]

2 (a)



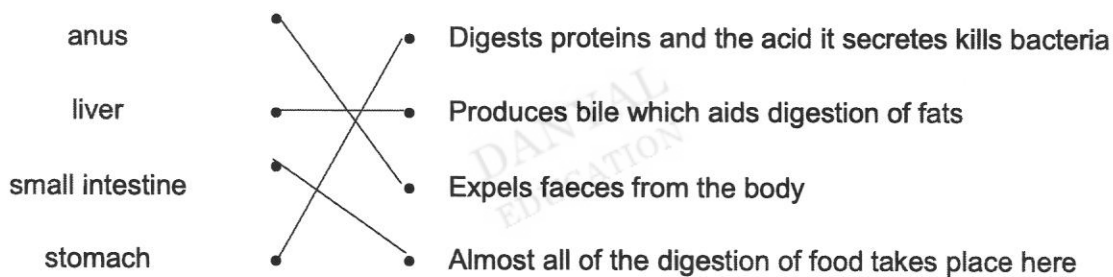
[1] – each correct.

[4]

(b)

Part of Digestive System

Function



[1] – each correct match

[4]

(c)

A: Mouth [1]

B: oesophagus/ gullet [1]

C: stomach [1]

[3]

(d)

(i) enzymes [1]

[1]

(ii)

fluid	A, B, or C
X	A
Y	C
Z	B

[3]

3

respiration	breathing
<ul style="list-style-type: none"> <li>Respiration is the process of using <u>oxygen</u> to break down digested <u>food</u> to release <u>energy</u> for movement.</li> <li>During this process, <u>energy</u> and <u>carbon dioxide</u> are produced.</li> </ul>	<ul style="list-style-type: none"> <li>Breathing is the forcing of air in and out of the <u>lungs</u></li> <li>Inhaled air contains more <u>oxygen</u> and less <u>carbon dioxide</u></li> </ul>

[1] each for 2 correct

[4]

4 (a)

gas	percentage in inhaled air / %	percentage in exhaled air / %	percentage difference in inhaled and exhaled air / %
carbon dioxide	0.04	4	<u>3.96</u>
oxygen	21	16	<u>5</u>

[1] each correct

[2]

- (b) Oxygen [1] **allow ecf (a)**
- (c) Red blood cell
- (d) (i) 30% (units required).  
(ii) 10% (units required).  
(iii) It drops/ decreases/ become lesser.

[1]

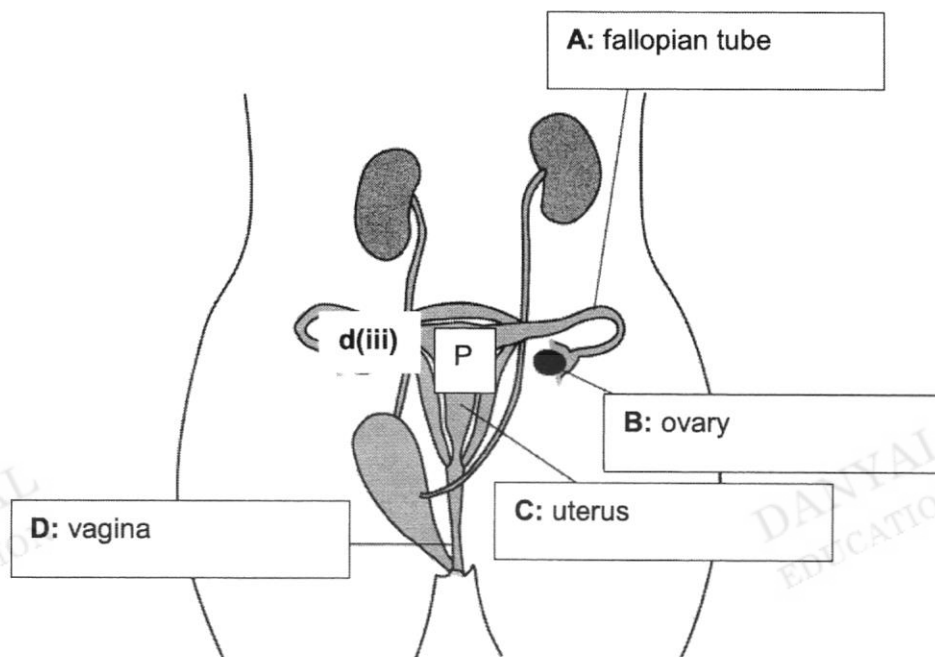
[1]

[1]

[1]

[1]

5 (a)



[1] each correct.

[4]

(b)

- There will be no more menstruation. [ ]
- The female will stop producing sex hormones. [ ]
- Fertilisation cannot take place. [ ✓ ]
- Sexual intercourse cannot take place. [ ]
- A mature egg will be released each month. [ ✓ ]

[1] each correct

[2]

- (c) Advantage 1: sperm will not fertilise egg/ prevent pregnancy [1]  
 Advantage 2: will not get sexually transmitted disease [1]

[2]

- (d) (i) Intrauterine device [1]  
 (ii) prevent implantation of embryo/ fertilised egg [1]  
 (iii) shown in diagram above [1]

[1]

[1]

[1]

- 6 (a) uterine lining breaks down [1] and is discharged from vagina. [1]  
 (b) 15<sup>th</sup> March. [1]  
 (c) No. [1] it is not her fertile period/ ovum is not in fallopian tube. [1]  
 (d) 30 March. [1]

[2]

[1]

[2]

[1]

7 (a)

Cigarette smoke can cause lung cancer [1], mouth cancer, breathing [1] difficulties and heart [1] diseases.

Some of Singapore's tobacco control measures include;

i. Raising the minimum legal age to 21.

ii. advertising restrictions. [1]



- iii. Mandatory graphic health warnings.
- iv. Smoking ban in public places. [1] [5]
- (b)
  - 1. Make a stand not to smoke. [1]
  - 2. learn about the harmful effects of smoking/ [1]
  - 3. keep away from people who encourage you to smoke/ take up healthy activities such as sport [1] [3]
- (c) tax make it more expensive to smoke [1]