Anglo-Chinese School (Barker Road)

PRELIMINARY EXAMINATION 2017

SECONDARY 4 EXPRESS / 5 NORMAL (ACADEMIC)

GEOGRAPHY PAPER 2
(2236/02)

1 HOUR 30 MINUTES

READ THESE INSTRUCTIONS FIRST

Write your name, class and register number on all the work you hand in.
Write in dark blue or black pen on both sides of the paper
You may use an HB pencil for any diagrams or graphs.
Do not use staples, paper clips, glue or correction fluid.

Section A
Answer one Question.

Section B
Answer **one** Question.

Write all answers on the Answer Paper provided.
Candidates are encouraged to support their answers with the use of relevant examples.
Sketch maps and diagrams should be drawn whenever they serve to illustrate an answer.

At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.

*This paper consists of **10** printed pages inclusive of this page.*

Section A

Answer **one** question from this section.

1 (a) Study Fig. 1(a) and 1(b) which show the climographs of 2 different locations.

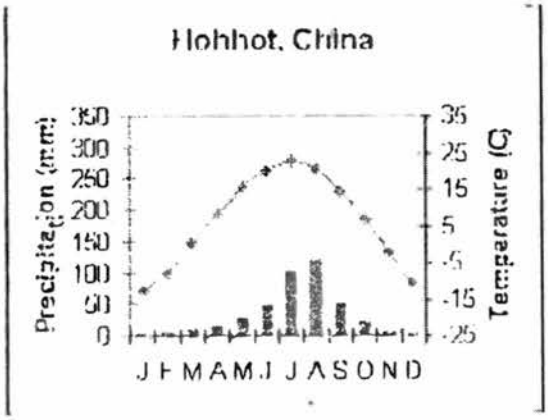


Fig. 1(a)

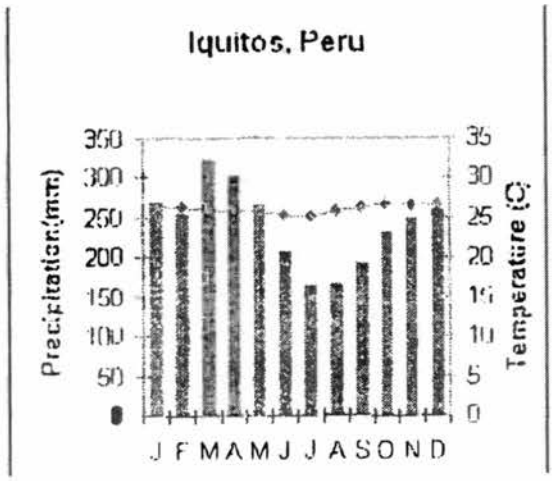


Fig. 1(b)

(i) With reference to Fig. 1(a) and 1(b), compare the climographs of Hohhot and Iquitos. **[4]**

(ii) Describe and explain the reasons for the differences in the temperatures of Holhot and Iquitos. **[5]**

(b) Study Fig. 2 which shows winds moving across the equator during the month of July.

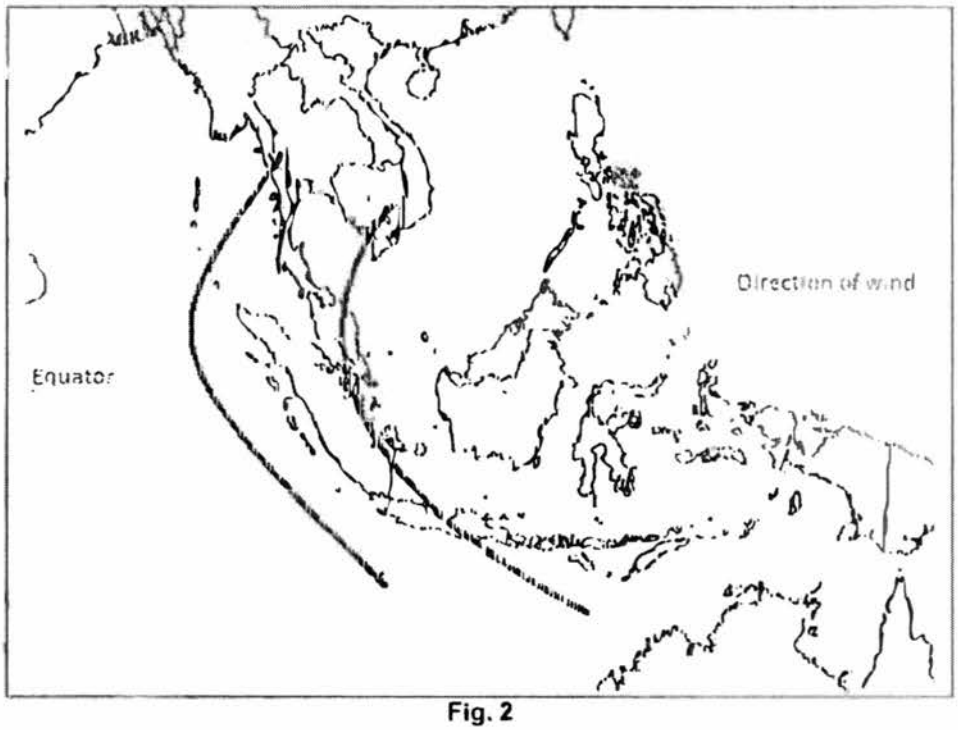


Fig. 2

Using Fig. 2, explain the direction of the winds. **[4]**

(c) Describe and explain how a land breeze is formed. **[4]**

(d) 'Storm surges during a tropical cyclone cause the most damage to people and the environment.'
How far do you agree? Explain your answer with relevant examples. **[8]**

2 (a) Study Fig. 3 which shows how plate movement is caused.

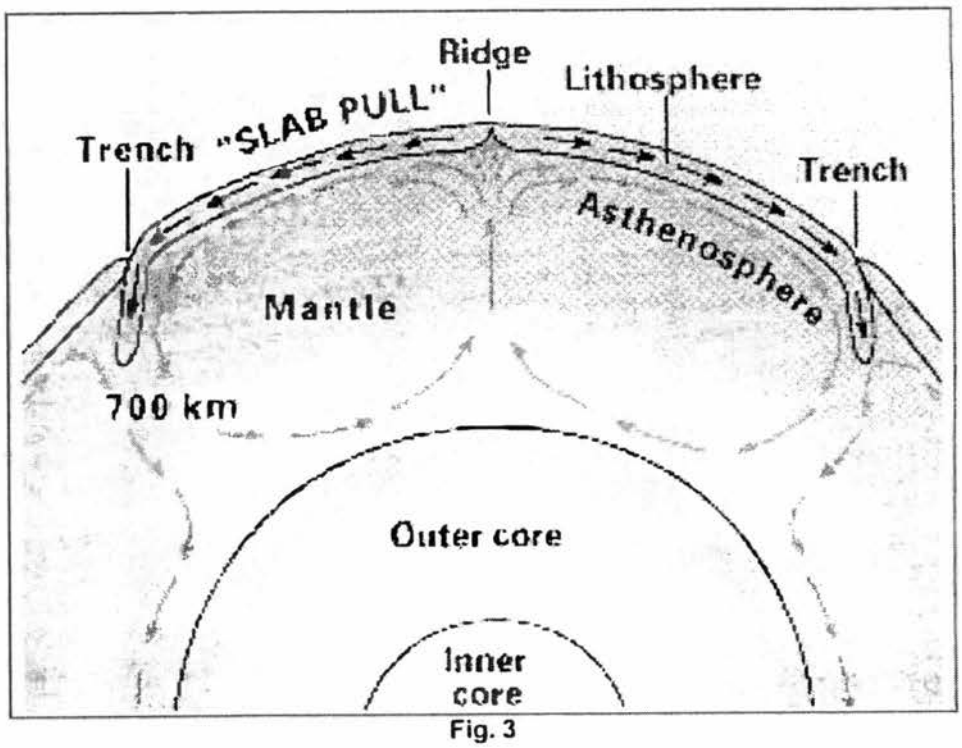


Fig. 3

Using Fig. 3, describe and explain how the slab pull force occurs. **[4]**

(b) Explain how volcanic materials cause massive destruction to the surrounding area during a volcanic eruption. **[4]**

(c) Study Fig. 4 which shows a graph with temperature and relative humidity (RH) data plotted over 24 hours.

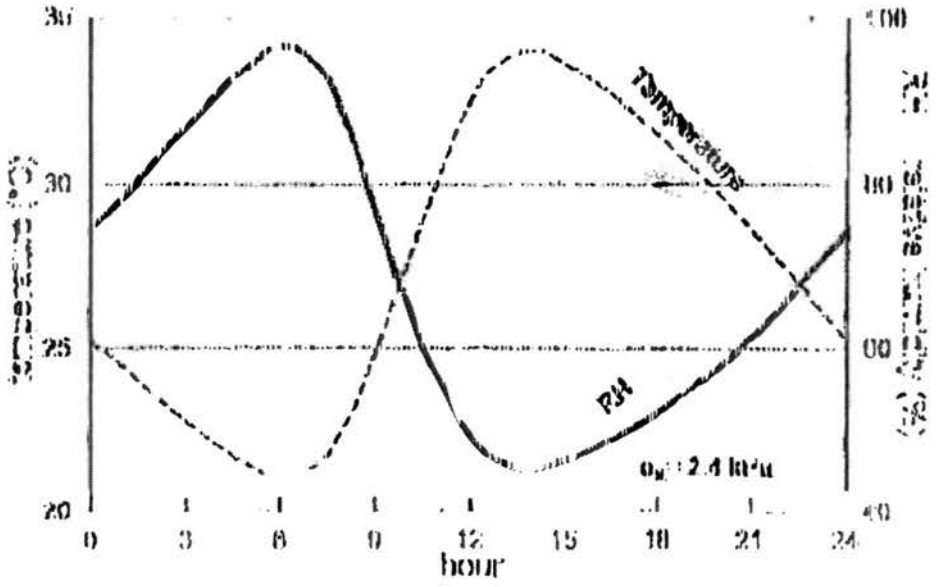


Fig. 4

Using evidence from Fig. 4, describe and explain the relationship between temperature and relative humidity (RH). **[5]**

(d) Study Fig. 5 which shows an excerpt about a natural phenomenon.

> The fact that Earth has an average surface temperature comfortably between the boiling point and freezing point of water, and thus is suitable for our sort of life, cannot be explained by simply suggesting that our planet orbits at just the right distance from the sun to absorb just the right amount of solar radiation. Our moderate temperatures are also the result of having just the right kind of atmosphere due to a natural phenomenon taking place.

Fig. 5

Identify the natural phenomenon discussed in Fig. 5 and outline its effect on Earth's atmosphere. **[4]**

(e) 'Recent climate change is more affected by natural causes than anthropogenic factors.'
To what extent do you consider this statement to be true? Give reasons to support your answer. **[8]**

Section B

Answer **ONE** question from this section.

3 (a) Study Fig. 6 which shows the global demand for meat in 2005 and 2050.

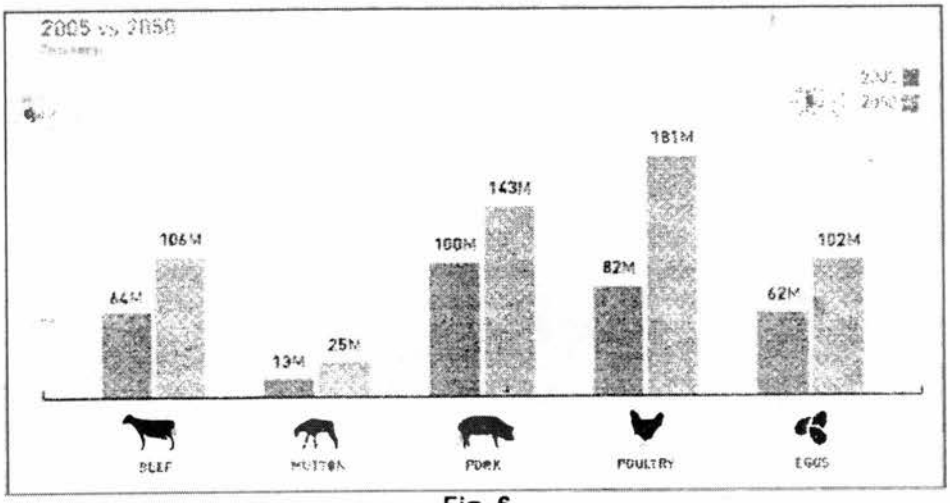


Fig. 6

Compare the changes in demand for meat between 2005 and 2050 and suggest reasons for the changes. **[5]**

(b) Using a relevant example, explain how inadequate food consumption caused political instability in a country. **[5]**

(c) Study Fig. 7 which shows the percentage of HIV-infected people engaged in selected stages of the continuum of HIV care

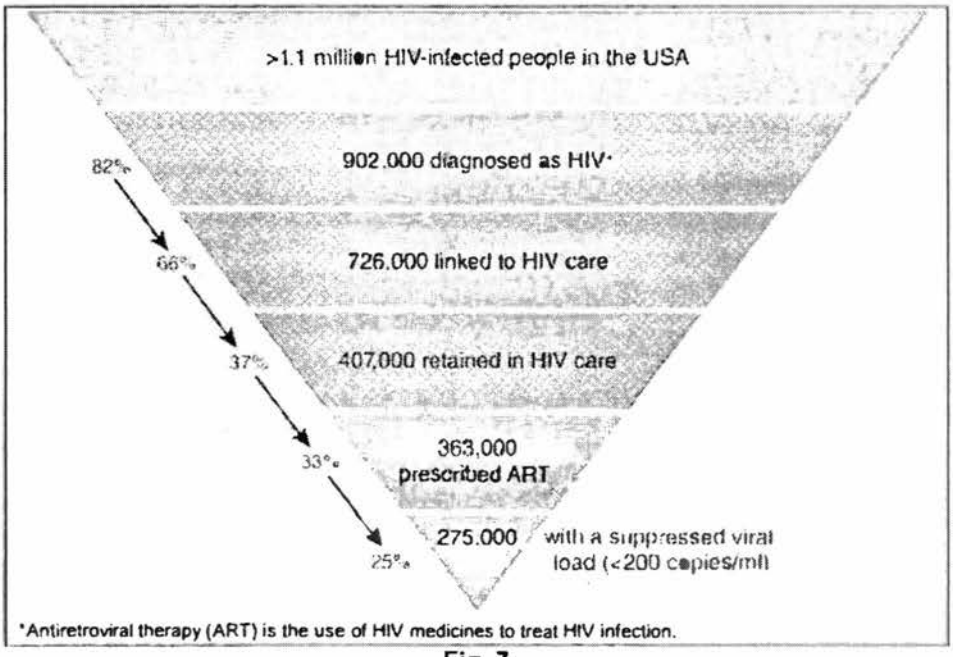


Fig. 7

Describe the changes seen in Fig. 7. Suggest reasons for the changes. **[4]**

(d) Study Fig. 8 which shows an online screenshot discussing one of the reasons for the re-emergence of malaria.

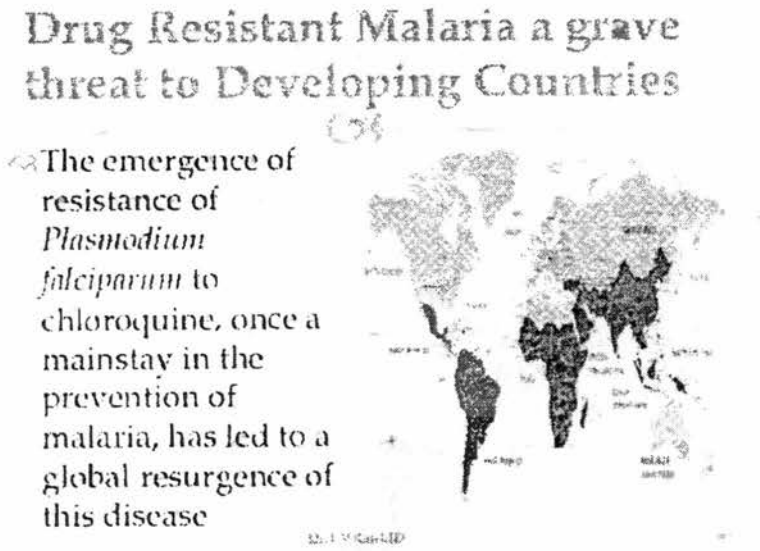


Fig. 8

With the help of information in Fig. 8, explain why there has been a global resurgence of malaria. **[3]**

(e) 'Many countries like Singapore have been quite successful in implementing precautionary and mitigation measures when managing the spread of infectious diseases.'
How far do you agree? Support your answer with examples. **[8]**

4 (a) Study Fig. 9 which shows the price of staples in Singapore from 2007 to 2016.

Goods	2007	2016
Fresh milk (one-litre packet)	$2.63	$2.81 (▲ 6.8 per cent)
Infant milk powder (900g tin)	$25.42	$56.06 (▲ 120.5 per cent)
Cheese (pack of 12 slices)	$3.89	$4.56 (▲ 17.2 per cent)
Hen eggs (10)	$1.69	$2.17 (▲ 28.4 per cent)
Ordinary white bread (400g)	$1.21	$1.62 (▲ 33.9 per cent)
Thai fragrant rice (5kg)	$7.87	$13.13 (▲ 66.8 per cent)

Fig. 9

With the aid of Fig. 9, explain how Singaporeans' food preferences may change over time. **[4]**

(b) What are the differences between organic and non-organic food? **[5]**

(c) Study Fig. 10 which shows the estimated prevalence of diabetes in 2020.

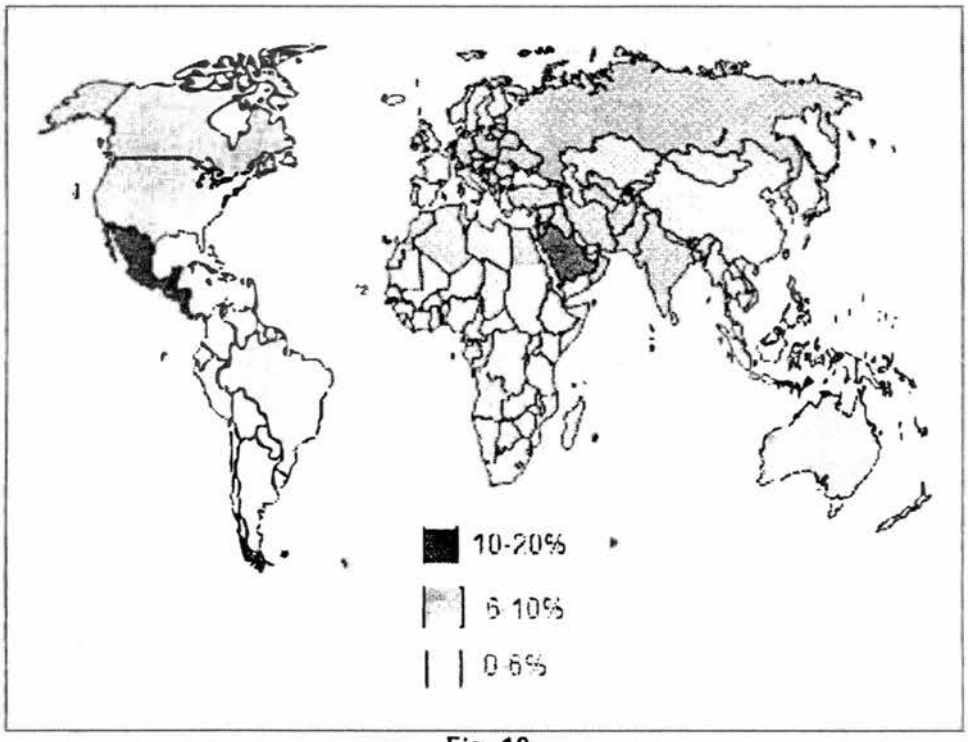
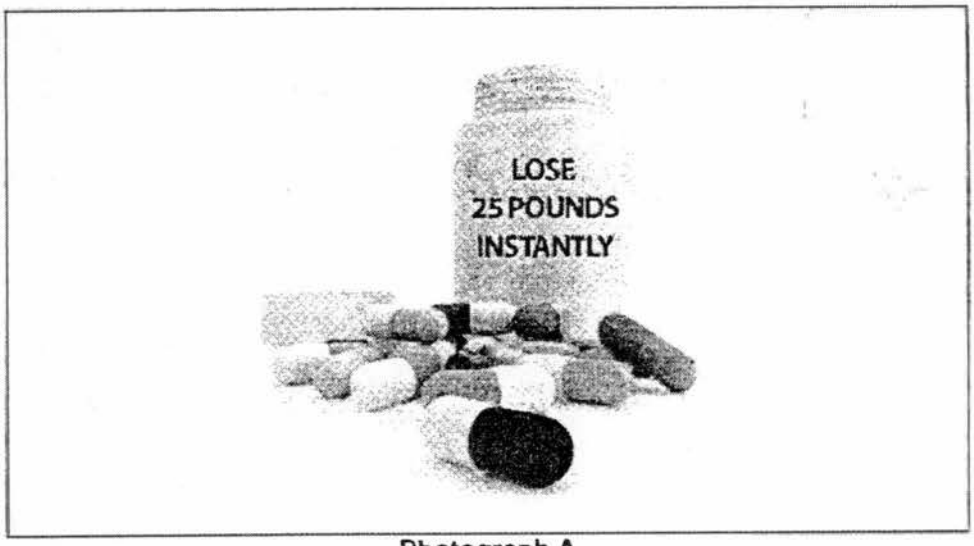


Fig. 10

Using Fig. 10, describe the global trend of diabetes estimated in 2020. **[3]**

(d) Study Photograph A which shows an impact on society due to excessive food consumption.



Photograph A

Describe the impact shown in Photograph A and explain its advantages related to a country's economy. **[5]**

(e) 'Intensification of food production through irrigation and use of fertilisers and pesticides have many benefits and little negative consequences.'
How far do you agree? Give reasons to support your answer. **[8]**

END OF PAPER

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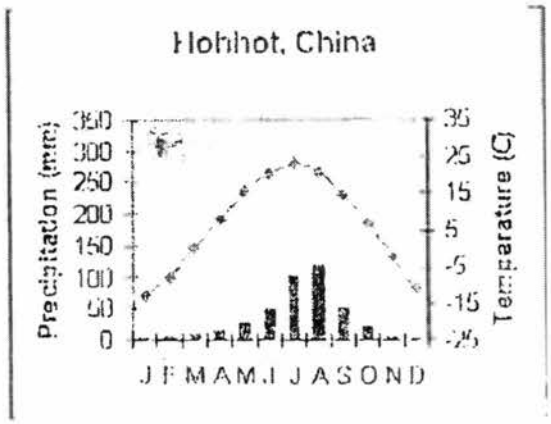

Fig. 1(a)

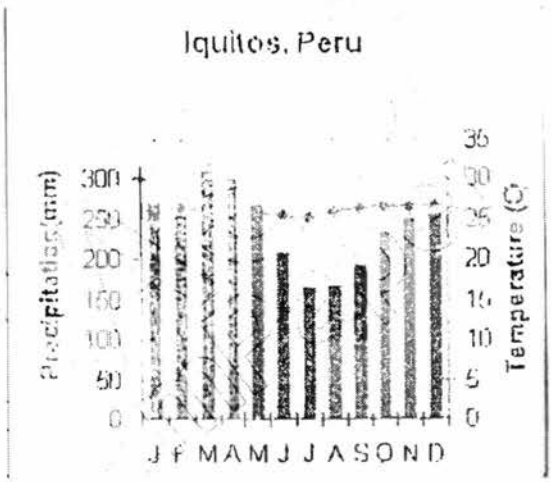

Fig. 1(b)

(i) With reference to Fig. 1(a) and 1(b), compare the climographs of Hohhot and Iquitos. **[4]**

Precipitation

- Low throughout the year, with precipitation highest at 100mm
- High throughout the year, with precipitation highest at 325mm

Temperature

- Lowest at -10°C, highest at 25°C
- Stable at 25-28°C

Wet vs dry spells

(Evidence must be provided otherwise 0m)

(Accept any other relevant comparisions)

(ii) Describe and explain the reasons for the differences in the temperatures of Holhot and Iquitos. **[5]**

- Latitudes which result in different temperatures
- Angle of incidences which result in either more concentrated or less concentrated heat from sun
- Maritime vs Continental effect which affects temperature ranges
- If near the coast, the effect of large ocean bodies will cause small annual temperature range
- If inland, temperatures are not influenced by the sea, thus large annual temperature range

(b) Study Fig. 2 which shows winds moving across the equator during the month of July.

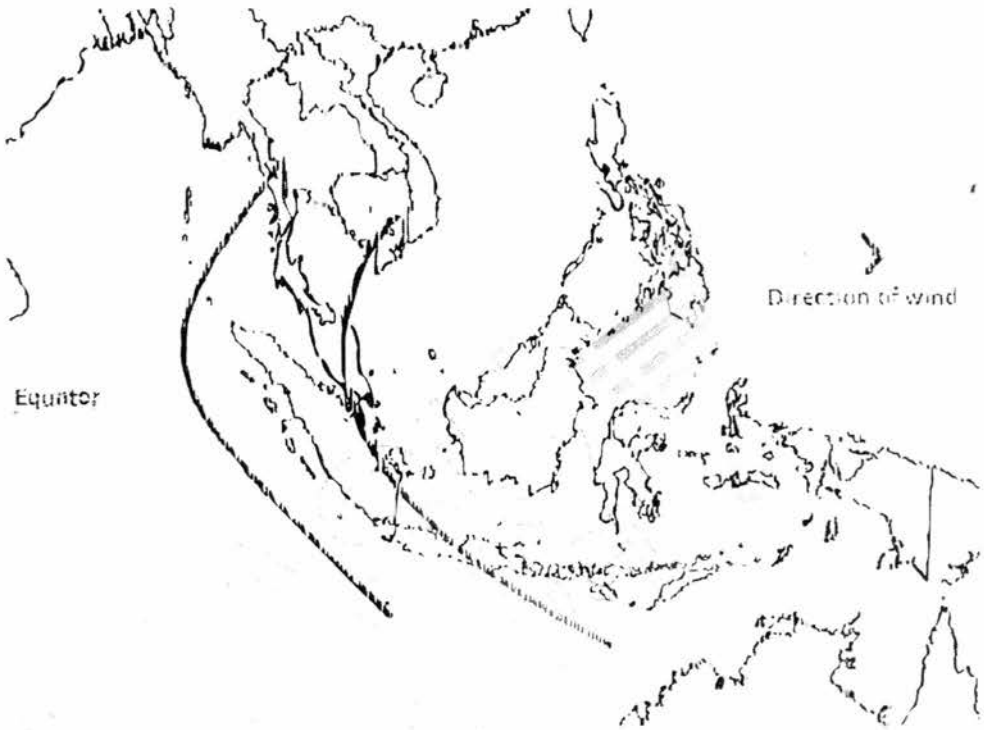

Fig. 2

Using Fig. 2, explain the direction of the winds. **[4]**

- Air over Central Asia heats up, expands and rises, forming a warm region of low pressure over the area
- During the same period, the southern hemisphere experiences winter, the low temperature causes the air to be cold and dense, forming a cool region of high pressure over Australia
- Due to the difference in pressure, air from Australia moves to Central Asia as the southeast monsoon winds
- As the winds cross the Equator, the Coriolis effect deflects the winds to the right, which becomes the southwest monsoon winds

(c) Describe and explain how a land breeze is formed. **[4]**

- Formed by differences in air pressure due to the different rates at which land and water bodies cool
- Land loses heat or cools down faster than water bodies at night

- As a result the sea has a higher temperature and lower air pressure than the land
- As air moves from an area of high pressure to an area of low pressure, it forms a land breeze that blows from the land to the sea at night

(d) 'Storm surges during a tropical cyclone cause the most damage to people and the environment.'
How far do you agree? Explain your answers with relevant examples. [8]

1st para: storm surges (explain with e.g.)
(e.g.) Storm surges are sudden rises of sea level in which water is piled up against a coastline beyond the normal conditions at high tide. Strong winds then push the water towards the coast and create huge waves, giving rise to a storm surge. In 2008, Hurricane Ike caused a storm surge of between 4 and 6 metres above the normal tide level in Texas. It caused massive flooding which destroyed property, with damage estimated at US$24.9b, and caused deaths. The surge might have also resulted in some vessels being swept in from the coast and stranded inland.

2nd para: strong winds (explain with e.g.)
(e.g.) Strong winds can damage or destroy infrastructure as well as injure people by causing loose debris to fly and hit people and buildings. In 1992, Hurricane Andrew attained strong winds of up to 177km/hr which caused widespread damage to the Bahamas and various parts of the United States of America. Damage to infrastructure disrupted power supply and left about 150000 homes without electricity.

3rd para: torrential rain (explain with e.g.)
(e.g.) Tropical cyclones produce torrential rain that can result in inland flooding. This sudden and large amount of rainfall adds to the flow of water in rivers and streams and causes them to overflow. In 2003, Hurricane Isabel flooded rivers that flowed across states of Virginia, Maryland, Delaware and Washington DC in the USA. The flooding affected areas about 120 times the size of Singapore and resulted in damage of more than US$2.23b.

Probable conclusion:
Storm surges during a tropical cyclone cause huge damage to the people and the environment, nonetheless, they do more direct damage to coastal areas and seem to have reduced impacts on inland areas over time. However, impacts of strong winds and torrential rain seem to affect much larger areas than storm surges rather than just coastal areas, thus I do believe that these cause much more damage than storm surges.

2 (a) Study Fig. 3 which shows how plate movement is caused.

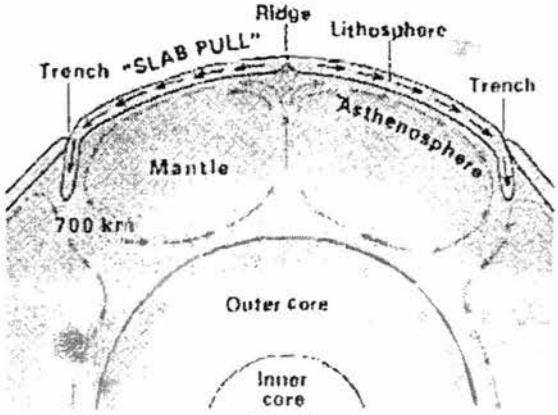

Fig. 3

Using Fig. 3, describe and explain how the slab pull force occurs. [4]

- Material in the mantle is heated by the core, causing the mantle material to expand, rise and spread out beneath the plates
- This causes the plates to be dragged along and to move away from each other
- Then the hot mantle material cools slightly and sinks at the trenches pulling the plates along
- Which results in the slab pull force as the dense, sinking oceanic plate at subduction zones pulls the rest of the plate behind it

(b) Explain how volcanic materials cause massive destruction to the surrounding area during a volcanic eruption. [4]

- Volcanic materials include lava and pyroclasts that consists of ash, rock fragments and volcanic bombs which can lead to widespread damage of property
- Lava has high temperatures of between 500 to 1400°C and burns the area it flows through
- Pyroclastic flow can destroy everything in its path with hot rock fragments ranging from ash to boulders travelling at speeds greater than 200m/s
- Volcanic bombs of heated rocks can fall in areas surrounding the volcano and cause damage to property

(c) Study Fig. 4 which shows a graph with temperature and relative humidity (RH) data plotted over 24 hours.

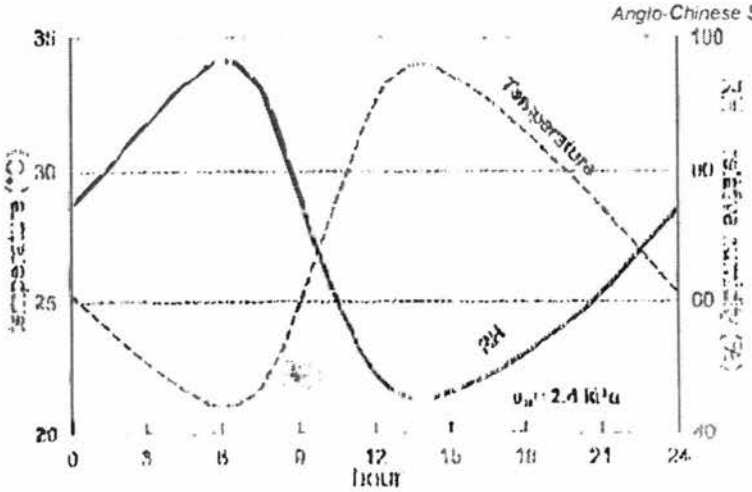

Fig. 4

Using evidence from Fig. 4, describe and explain the relationship between temperature and relative humidity (RH). [5]

- Temperature has an inverse relationship with RH
- as temperature increases and decreases, RH decreases and increases respectively
- Warm air can hold more water vapour than cool air.
- When temperature increases during the 6-12 hour, the amount of water vapour in the air stays the same but the rise in temperature from 21°C to 34°C makes air more able to hold water vapour
- Thus RH decreases from 95% to 45% as temperature increases

(no use of evidence from figure = 0 m)

(d) Study Fig. 5 which shows an excerpt about a natural phenomenon.

> The fact that Earth has an average surface temperature comfortably between the boiling point and freezing point of water, and thus is suitable for our sort of life, cannot be explained by simply suggesting that our planet orbits at just the right distance from the sun to absorb just the right amount of solar radiation. Our moderate temperatures are also the result of having just the right kind of atmosphere due to natural phenomenon taking place.

Fig. 5

Identify the natural phenomenon discussed in Fig. 5 and outline its effect on Earth's atmosphere. [4]

- Greenhouse effect
- Incoming solar radiation from the sun passes into the atmosphere
- Some re-radiated heat escapes into space but some gets reflected back by the presence of greenhouse gases
- which warms the atmosphere to sustain life on earth

(e) 'Recent climate change is more affected by natural causes than anthropogenic factors.' To what extent do you consider this statement to be true? Give reasons to support your answer. [8]

Point 1: Variations in solar output [explain with e.g. and link to question]
(e.g.) In 2000, a peak in the number of sunspots (170) coincided with high solar activity – global temperatures increased during this period
In 2009, when the number of sunspots reached its minimum (2) – global temperatures were the lowest

Point 2: Volcanic eruptions [explain with e.g. and link to question]
(e.g.) In 1991, eruption of Mount Pinatubo in the Philippines released 17m tonnes of sulphur dioxide into the atmosphere forming sulfur-based particles that spread around the earth in 2 weeks. The sulfur-based particles reflected solar energy back into space and lowered temperatures in the northern hemisphere by as much as 0.6°C and the temporary lowering of global temperatures lasted for 2 years in some locations. Change was not permanent as the volcanic dust and ash settled, global climate returned to its original state.

Point 3: Deforestation [explain with e.g. and link to question]
(e.g) Between 2000 and 2010, 52000 km^2 of forest was lost every year Greatest overall loss of forests occur in South America. Southeast Asia experiences the second highest rate of deforestation. The need for development like agriculture and commercial activities is the cause of forest clearance.

Point 4: Changing land use [explain with e.g. and link to question]
(e.g.) Large consumers of fossil fuels include China, the USA, Canada, and the United Kingdom. The world's usage of fossil fuels has increased in recent years, releasing billions of carbon dioxide into the atmosphere each year. In 2010, global carbon dioxide emissions totalled 30.6 billion tonnes, which was a 5.6% increase from 2009.

Probable conclusion:
It is true that recent climate change has been affected by both natural and anthropogenic causes. However, natural causes like huge volcanic eruptions, which do not happen on a daily basis, and solar output variations, which follow an 11 year cycle, seem to be less influential than anthropogenic factors like deforestation and land use changes, which appears to be around-the-clock activities. Thus, I would believe that recent climate changes could be attributed more to anthropogenic causes rather than natural ones.

L1 (0-3m)	• No attempt of question (0 marks) • No relevant examples were given • At least 1 main point was described and explained • At least 1 relevant example was given for point made
L2 (4-6m)	• At least 2 points were described and explained in detail • At least 1 relevant example was given for points made
L3 (7-8m)	• 3 points were described and explained in detail • Relevant examples were given for all points made

Section B

Answer **ONE** question from this section.

3 (a) Study Fig. 6 which shows the global demand for meat in 2005 and 2050.

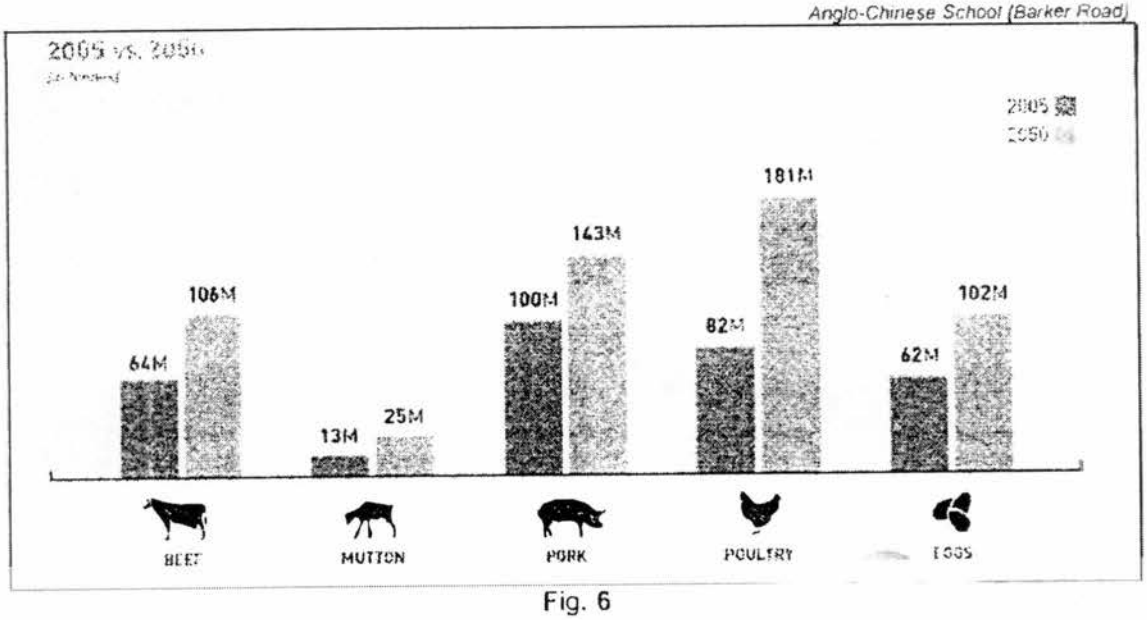

Fig. 6

Compare the changes in demand for meat between 2005 and 2050 and suggest reasons for the changes [5]

- 2005: highest to lowest – pork (100) poultry (82) beef (64) mutton (13)
- 2050: highest to lowest – poultry (181) pork (143) beef (106) mutton (25)
- Greatest changes: poultry (99) pork (43) beef (42) mutton (12)
- Chicken considered a more healthy meat as compared to the rest
- Chicken cheaper / more accessible

(accept any other relevant reasons)

(b) Using a relevant example, explain how inadequate food consumption caused political instability in a country. [5]

- Food prices in Mozambique increased by as much as 30% in 2010
- Caused by a drought in Russia that decreased its wheat production,
- which in turn increased the price of wheat sold to Mozambique
- Meaning that people had not enough money to buy a necessity, thus less to eat
- Resulted in violent protests leaving 400 injured and 10 dead

(c) Study Fig. 7 which shows the percentage of HIV-infected people engaged in selected stages of the continuum of HIV care

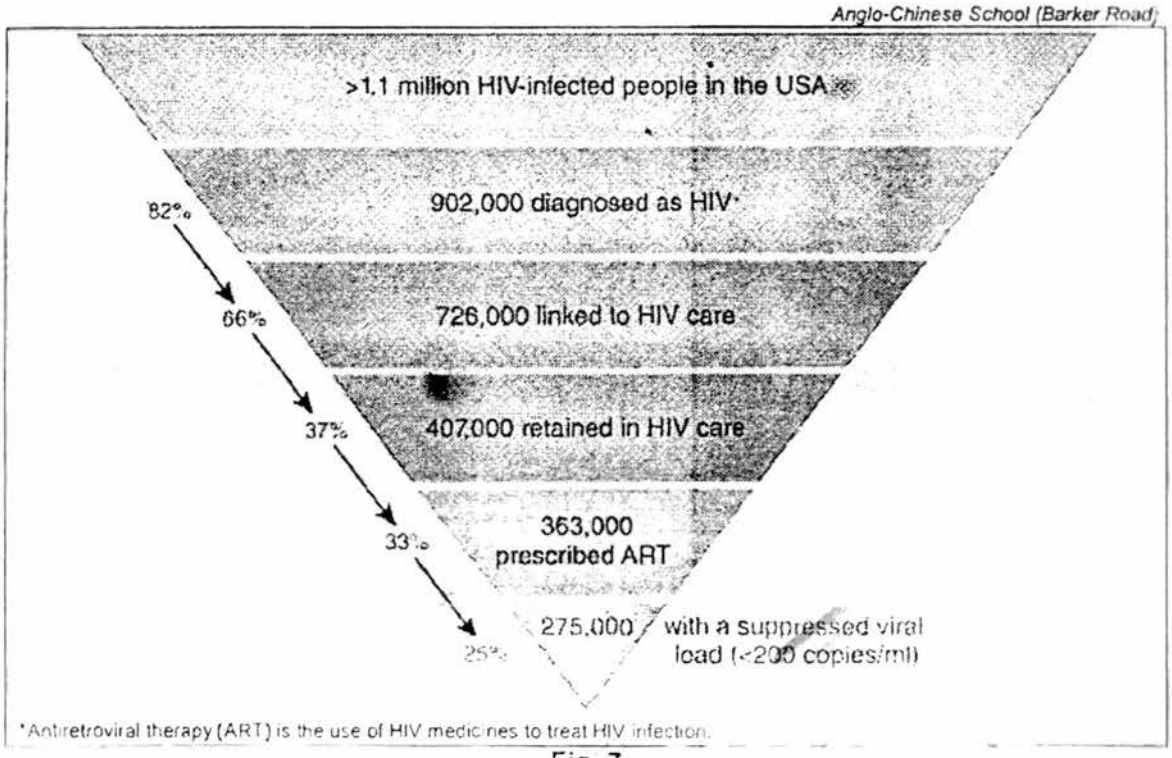

Fig. 7

Describe the changes seen in Fig. 7. Suggest reasons for the changes. **[4]**

- Decreasing trend (state numbers and stages as evidence)
- Biggest drop from linked to HIC care to retained in HIV care (29%)
- Still stick to unsafe lifestyle choices so many still exposed to dangers
- Less social stigma related to disease so many more coming forward to receive treatment

(reasons should deal with both living with HIV and treatment)

(d) Study Fig. 8 which shows an online screenshot discussing one of the reasons for the re-emergence of malaria.

Drug Resistant Malaria a grave threat to Developing Countries

The emergence of resistance of *Plasmodium falciparum* to chloroquine, once a mainstay in the prevention of malaria, has led to a global resurgence of this disease

Fig. 8

With the help of information in Fig. 8, explain why there has been a global resurgence of malaria. [3]

- Resistance to anti-malarial drugs have increased due to the rise in the use of counterfeit or incomplete doses of anti-malarial drugs
- Allows the surviving malaria parasites to build resistance to the drug
- Since the drugs did not kill all the parasites, making existing treatment ineffective against the hardened parasites

(e) 'Many countries like Singapore have been quite successful in implementing precautionary and mitigation measures when managing the spread of infectious diseases.'
How far do you agree? Support your answer with examples. [8]

P1: precautionary (describe + success + limitation+e.g.) Providing vaccinations against H1N1 (e.g.) In 2009, vaccinations provided for population against the H1N1 influenza virus before it emerged. More than 400 family clinics island-wide stocked with vaccines to allow access to prompt treatment. Most cases reported were mild, though there were 18 deaths still. However, vaccinations take up to 2 weeks to take effect and individuals may not want to receive them.

P2: mitigation (describe + success + limitation) Control measures during the SARS outbreak in 2003
(e.g.) People who were detected with SARS were isolated in a dedicated hospital. This was to prevent and control the spread by monitoring both staff and visitors. Potential patients were quarantined at home. These controls allowed the government to stem the spread and WHO approved of such measures and even encouraged other countries to follow suit. However, as some did not display symptoms of SARS till later, these people would have infected others without realising, thus negating the measures the government had put in

(b) What are the differences between organic and non-organic food? [5]

- Fertilisers: organic vs chemical
- Crop yield: smaller vs larger
- Labour: more vs less
- Cost: expensive vs cheap
- Health: healthier vs less healthy

(Points above need to be described to have 1m)

(c) Study Fig. 10 (Insert) which shows the estimated prevalence of diabetes in 2020.

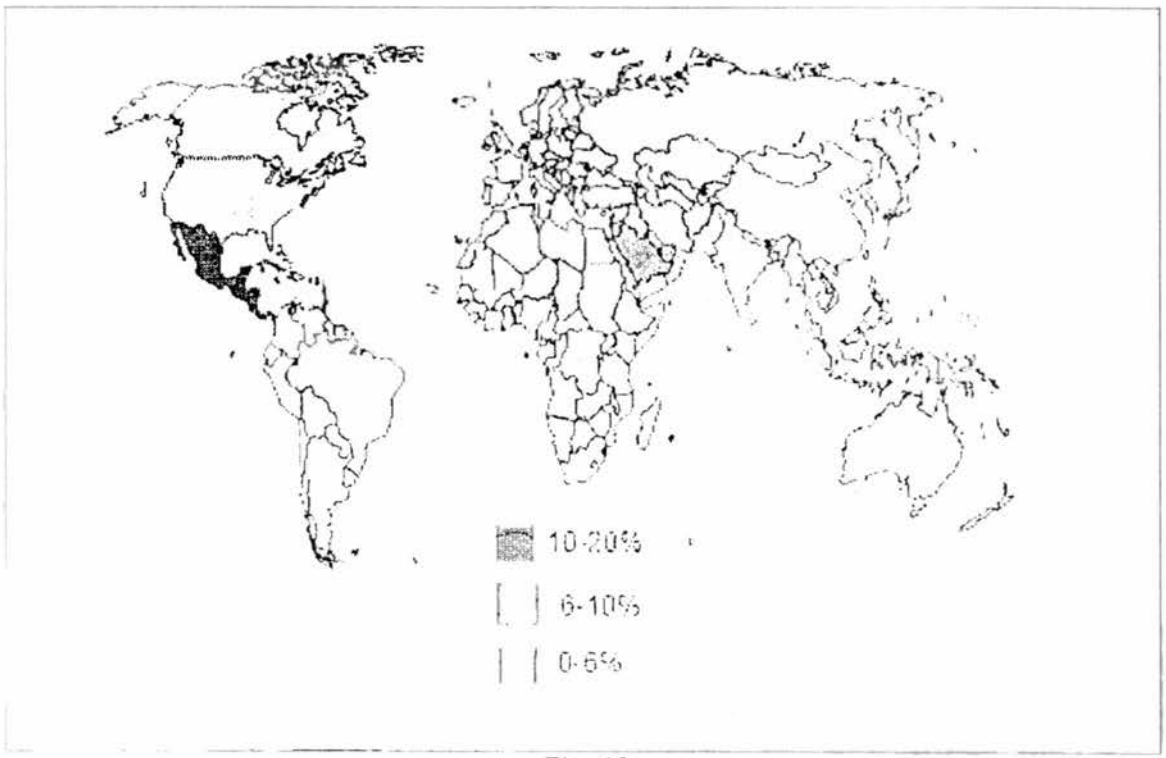

Fig. 10

Using Fig. 10, describe the global trend of diabetes estimated in 2020. [3]

- 10-20%: only 1 area - SW of Middle East
- 6-10%: more seen in the Americas and Europe and Middle East
- 0-6%: seen mainly in South and Southeast Asia, Africa, Australia

(d) Study Photograph A which shows an impact on society due to excessive food consumption.

place.

P3: mitigation (describe + success + limitation) Singapore's National Environment Agency (NEA)'s 5-pronged approach to vector control
(e.g.) By having a 5-pronged approach (surveillance, education, enforcement, research and regulation) to vector control, the NEA could reach out to the masses in many different ways, producing a safer environment in the process. WHO cited Singapore as a good role model in preventing and managing dengue cases for the number of such cases had decreased in recent years since the 2005 dengue fever outbreak in Singapore. Of course, there would be those that would be complacent about such approaches, creating problems for the authorities. The dengue virus would have since mutated as well, infecting people 2-3 days faster than the usual 7.

Probable conclusion
Many countries would have made strong attempts in implementing precautionary and mitigation measures in managing infectious diseases. In order for such measures to be successful, countries would have to take into account the different roles that have to be played by the community. Once all areas are covered, the measures can then be said to be stringent and effective against any infectious disease.

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L3 (7-8m)	• 3 points were described and explained in detail (precautionary and mitigation covered) • Relevant examples were given for all points made

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Thai fragrant rice (5kg)	$7.87	$13.13 (▲66.8 per cent)

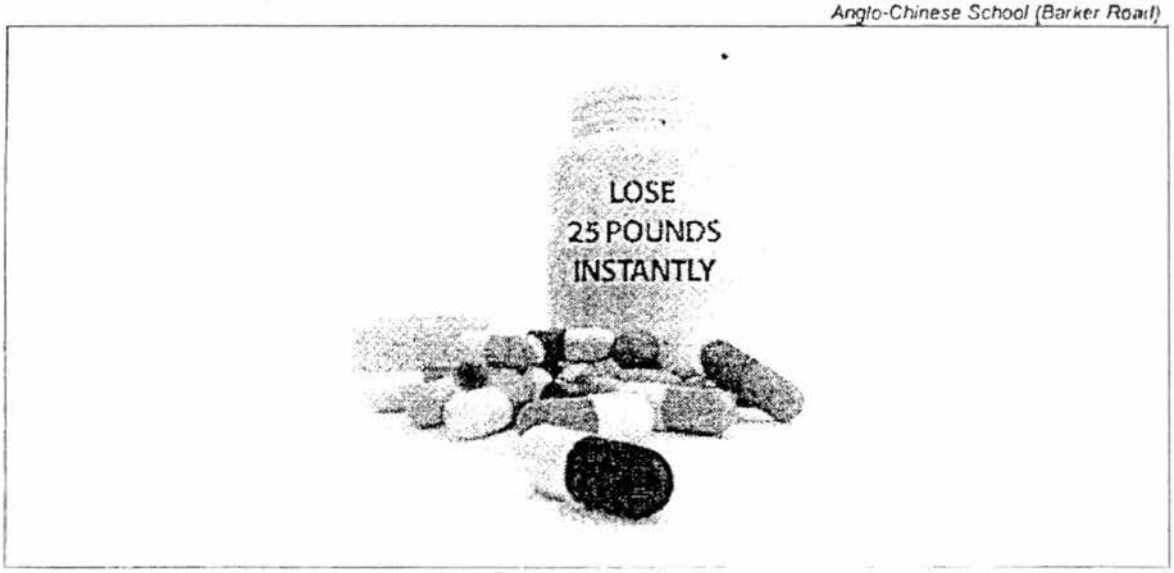
Fig. 9

With the aid of Fig. 9, explain how Singaporeans' food preferences may change over time. **[4]**

- Shows food pricing increasing
- (state any above example to show increase)
- Singaporeans may buy less to consume
- Or switch to cheaper options to satisfy needs

(Accept any other relevant explanations)

Anglo-Chinese School (Barker Road)



Photograph A

Describe the impact shown in Photograph A and explain its advantages related to a country's economy. [5]

- People may become overweight due to excessive food consumption
- These people may choose to go on a diet in order to lose weight
- People who are dieting often also engage in physical exercise
- Dieting provides employment and value to an economy by creating jobs in the health sector through the publishing of diet books, sale of medication and medical procedures

(e) 'Intensification of food production through irrigation and use of fertilisers and pesticides have many benefits and little negative consequences.'
How far do you agree? Give reasons to support your answer. [8]

Para 1: irrigation (explain + e.g.)
(e.g.) in the North African country of Libya, the Great Man-made River is one of the most extensive irrigation projects in the world and has made it possible to grow crops in the Sahara Desert, increasing the amount of arable land and thus increasing food production

Para 2: fertilisers and pesticides (explain + e.g.)
(e.g.) pesticide Malathion was used widely in the 1980s to address a fruit fly problem in fruit orchards in California, USA. With the removal of pests, the crop is protected which in turn increases crop yield

Para 3: salinisation (explain + e.g.)
(e.g.) Murray-Darling Basin in Victoria, Australia where naturally occurring salts became concentrated in some parts due to human activities such as irrigation development and land clearing. With low rainfall and high evaporation rate due to heat, salinisation occurs.

L1 (0-3m)
- No attempt of question (0 marks)
- No relevant examples were given
- At least 1 main point was described and explained
- At least 1 relevant example was given for point made

L2 (4-6m)
- At least 2 points were described and explained in detail
- At least 1 relevant example was given for points made

L3 (7-8m)	• 3 points were described and explained in detail • Relevant examples were given for all points made

- END OF PAPER-