

NUS GEOGRAPHY CHALLENGE 2010

Preliminary Round

Part 1 MCQs

Time 90 minutes

DO NOT FLIP THE PAGE UNTIL YOU ARE TOLD TO DO SO.

There are **26 pages (including bubble sheet)** and **37 questions** in this part.
This paper is 50 marks in total.

Write your name and school clearly at the bottom of this page.

Write your name and school at the top of the bubble sheet, in the spaces provided.

Shade your answers clearly on the bubble sheet. If you would like to change your answer, ensure that the markings of the incorrect answer is erased completely. Incomplete shading or double shading will not be considered as an attempt to the question. Answers written in the question papers will not be marked and counted towards your score.

Question 36 and 37 are attached to the bubble sheet provided.

You are allowed to use a calculator in this round.

You are allowed to communicate with the invigilators *only*. If you have any problems, raise your hand and an invigilator will attend to you shortly. Do not attempt to communicate with other participants.

All electronic devices, including mobile phones, electronic dictionaries and notebook computers, are not allowed in the test. Any attempt to use mobile phones or other electronic devices during the test constitutes cheating.

Hand in the answer sheets and question paper separately. Neither the answer script nor the question paper is to be brought out of the lecture theatre. Teams caught removing the question paper answer script out of the lecture theatre will be liable for **disqualification**.

NAME	
SCHOOL	

Questions 1 to 26 are 1 mark each.

Question 1:

The figure below shows a list of a few notable earthquakes that took place in the past 25 years. However, a section of it was not filled up completely.

List of notable earthquakes in the last 25 years			
Country	Year of earthquake	Magnitude of Earthquake	No. of deaths in affected country (est.)
?	?	7.0	222,570
?	?	9.1	236,000
?	2003	6.6	26,721
?	1989	6.9	63

Data from <http://earthquake.usgs.gov>

Which of the following is correct?

	Country	Year of Earthquake			Country	Year of Earthquake
A.	Australia	2010		B.	Haiti	2010
	Java	2006			Sumatra	2004
	Iran	2003			Iran	2003
	Vietnam	1989			San Francisco	1989

	Country	Year of Earthquake			Country	Year of Earthquake
C.	Sichuan	2010		D.	Vietnam	2010
	Java	2006			Sumatra	2006
	Iran	2003			Britain	2003
	Thailand	1989			Japan	1989

Question 2:

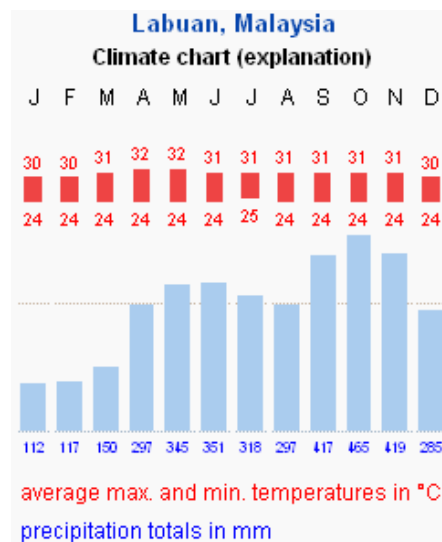
Which of the following factor does not account for the intensity of incoming insolation?

- A. Seasonality
- B. Cloud cover
- C. Altitude of the moon
- D. Urban heat island effect

Question 3:

Climograph of Labuan, Malaysia.

Source: http://en.wikipedia.org/wiki/Template:Climate_chart/How_to_read_a_climate_chart



The graph above shows the climate graph of Labuan, East Malaysia in South East Asia. Which of the following option is **NOT** characteristic of the natural vegetation of Labuan, Malaysia?

- A. Thick and dense undergrowth layer
- B. Thin and smooth barks
- C. Waxy, large, broad leaves
- D. Large variety of plant species

Question 4:

Which is **NOT** a factor influencing the temperature of locations?

- A. Latitude
- B. Altitude

- C. Relative humidity
- D. Continental and maritime effect

Question 5:

In March 1991, Mount Pinatubo in Philippines awoke from a 500 year slumber as magma moved upwards from a depth of 32km. This volcano then produced the largest recorded eruption in the 20th century. The following details of the eruption were extracted from a volcanologist’s diary:

“20 million tonnes of sulphur dioxide gas and 10 billion metric tonnes of gas-charged magma were recorded during the large and explosive reactions. The eruption column height reached astonishing heights of up to 24m. ”

With regards to the characteristics of the eruption given, which of the following options characteristic of the 1991 Pinatubo effect is most possible?

	Type of plate margin	Type of eruption
A	Divergent	Hawaiian
B	Divergent	Strombolian
C	Convergent	Plinian
D	Convergent	Peléan

Question 6:

The figure below shows part of a river bed.

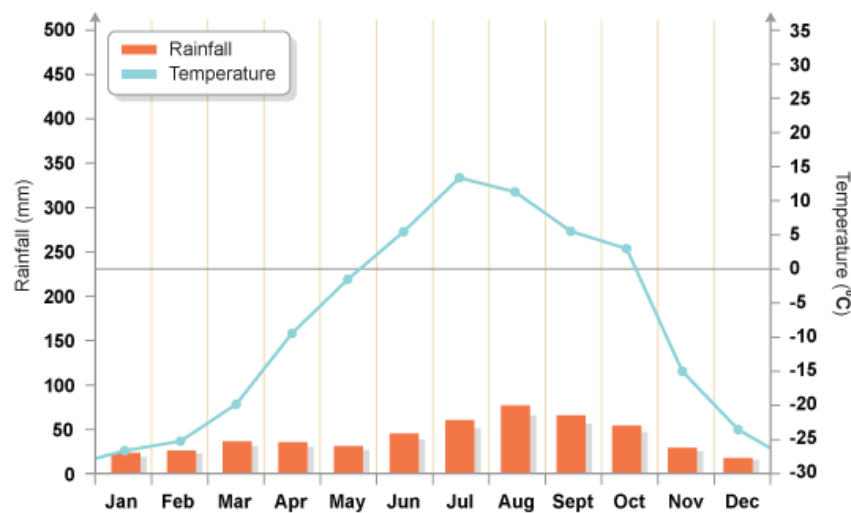


Source: <http://www.gemmadickens.com/archive.html>

- I What are the holes in the bed called, and
- II What river process produced the holes shown in the figure above?

	I	II
A	plunge pools	Solution
B	pot holes	Abrasion
C	pot holes	Attrition
D	swallow holes	Abrasion

Question 7:



Source: http://www.bbc.co.uk/schools/gcsebitesize/geography/ecosystems/con_woodlandrev1.shtml

Climographs are graphical representations of the amount of precipitation and temperature conditions throughout a year. By observing the data shown above, identify the two countries which are likely to experience such conditions.

- A. Mexico & United States of America
- B. Japan & Russia
- C. Finland & Sweden
- D. Canada & Chile

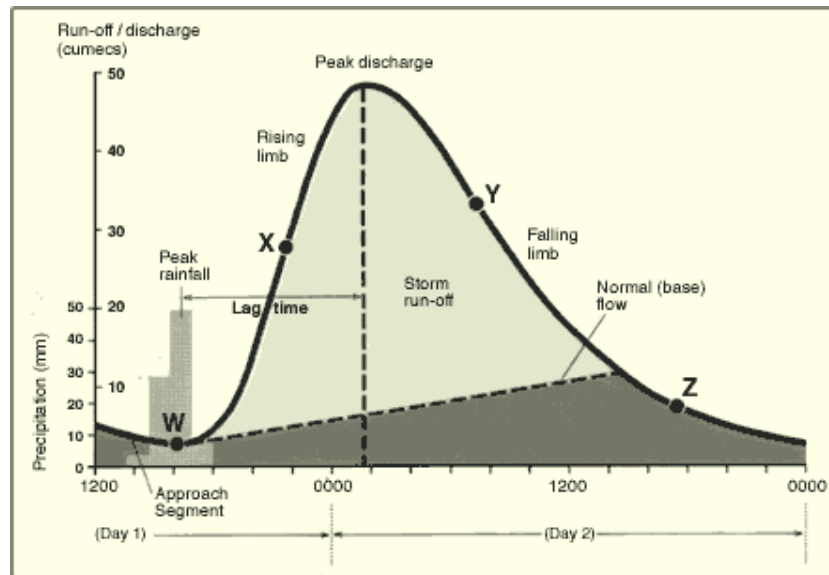
Question 8

In an article published by the New York Times in August 2010, it was said that global warming is 'unequivocal', causing most of the rise in temperatures since 1950. What are the evidences that

support the above statement?

- I Sea level rise
 - II Increase in micro-earthquakes
 - III Keeling Curve
 - IV Increase in frequency of hurricanes
- A. I & IV
 - B. II & III
 - C. I, II & IV
 - D. I, III & IV

Question 9:



Source:

<http://coolgeography.co.uk/A-level/AQA/Year%2012/Rivers.%20Floods/Hydrographs/Hydrographs.htm>

Hydrographs are graphical representations of the changes in the discharge of a river over a period of time. The hydrograph above is plotted for a forested area. What changes would you observe on the hydrograph if the same amount of rainfall occurred in an urbanized area?

- I Lag time increases
 - II Lag time decreases
 - III Peak discharge increases
 - IV Peak discharge decreases
- A. I only.
 - B. II & III

- C. IV only.
- D. II & IV

Question 10:

Which part of a Singaporean’s diet is the most environmentally friendly?

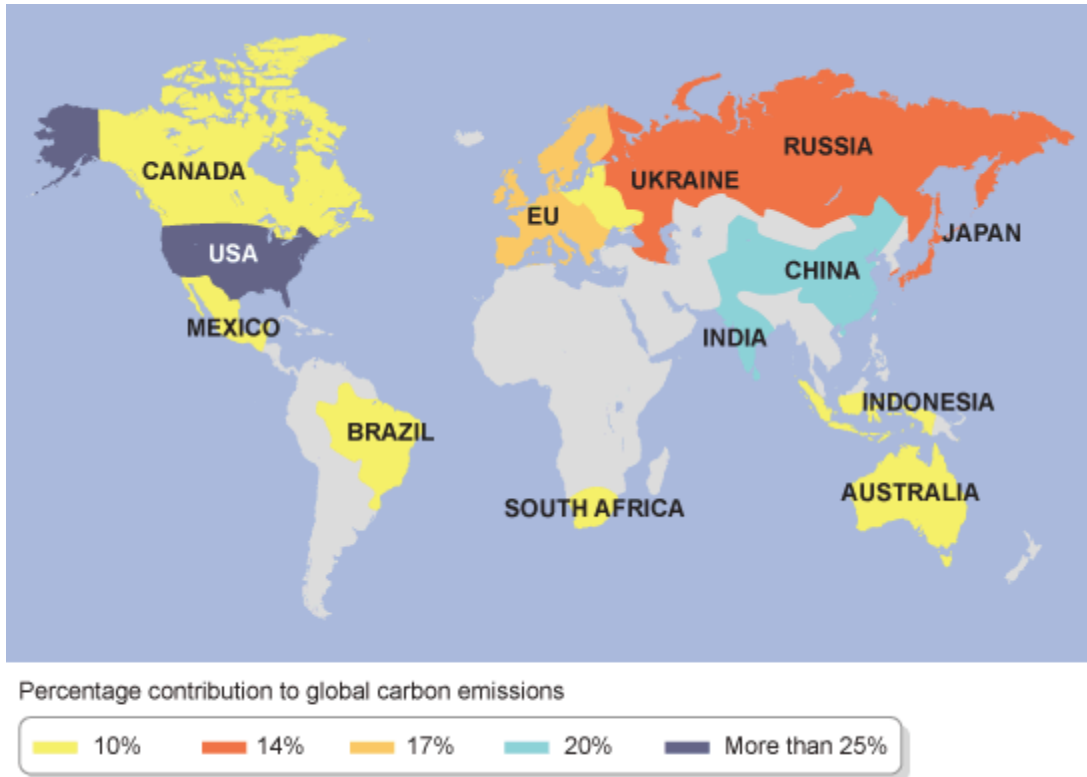
- A. Beef from Australia
- B. Hydroponic cabbage from Lim Chu Kang
- C. Organic apple from Thailand
- D. Beef from Malaysia

Question 11:

Which of the following options showcase a complete list of sustainable green technologies?

	Green Technologies		
A	Solar Panel	Fossil Fuels	Electric Cars
B	Solar Panel	Algae Biofuel	Electric Cars
C	Electric Cars	Roof Top Wind Power	Fossil Fuels
D	Solar Panel	Petroleum	Molten Salt Storage

Question 12:



Source of image:

http://www.bbc.co.uk/schools/gcsebitesize/geography/managing_resources/what_resourcerev3.shtml

With reference to the map above, which country do you think will have the highest likelihood of experiencing acid rain?

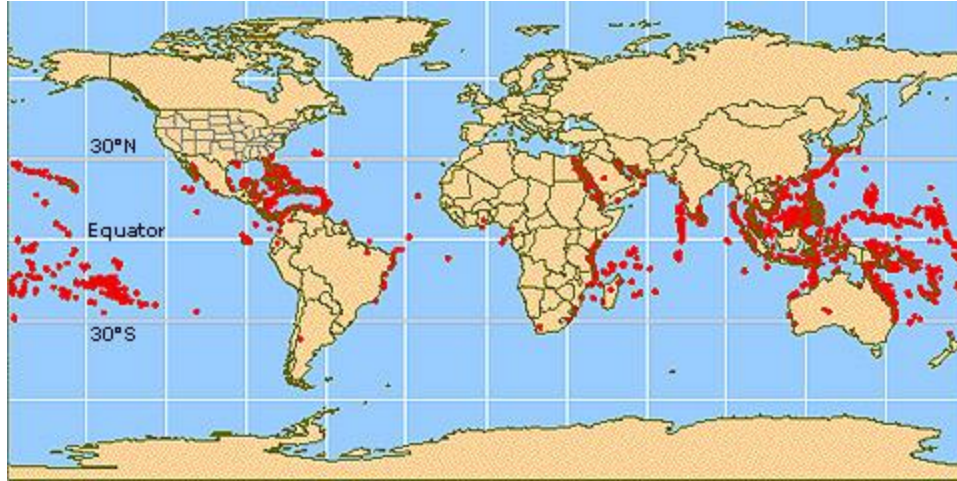
- A. United States of America
- B. Russia
- C. Ukraine
- D. China

Question 13:

A renewable resource is one that can be replaced after it is used. Two examples of renewable resources are:

- A. Coal and Natural Gas
- B. Forests and Soil
- C. Sedimentary and Metamorphic rocks
- D. Triceratops and Pteranodon

Question 14:



Source: <http://biomesthird10.wikispaces.com/Coral+Reef+Home>

The figure above shows the world distribution of coral reefs. Coral reefs are known as the “rainforests of the ocean”, and are integral part of ecosystem services to tourism, fisheries and shoreline protection. However, they occupy less than one tenth of one percent of the world ocean surface. With reference to the distribution map above, which of the following statement is **FALSE**?

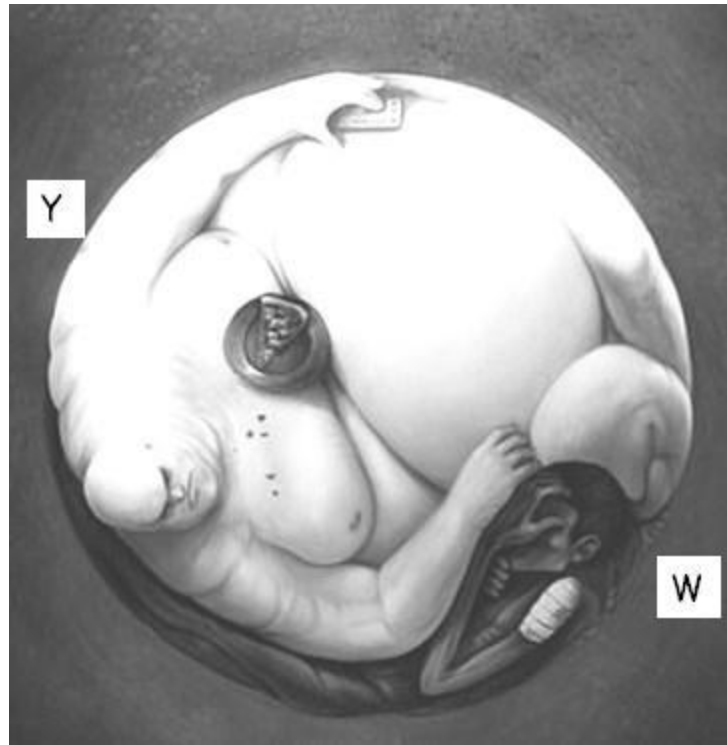
- A. The Indo-Pacific region accounts for the highest concentration of coral reefs.
- B. Coral reefs are abundant along the American West Coast.
- C. Coral reefs thrive in the zone extending from 30° N to 30° S of the equator.
- D. They are most commonly found at shallow depths in tropical waters.

Question 15:

Which of the statements best describes the term Tourism Enclave?

- A. There is maximum tourist-host interaction
- B. It is usually visited by Allocentric tourists
- C. Tourism is controlled by both the core and the periphery
- D. Tourists have large ‘environmental bubbles’

Question 16:



Source: <http://deevad.cgsociety.org/gallery/917008/>

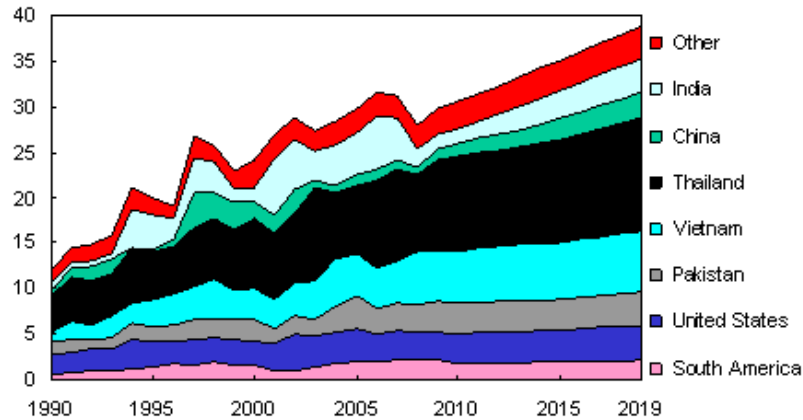
The image above is titled “The Yin & Yang of World Hunger”. What do W and Y represent?

	W	Y
A	Periphery	Core
B	Core	Semi-periphery
C	Semi-periphery	Periphery
D	Core	Periphery

Question 17:

Global rice exports

Million metric tons



Source: *USDA Agricultural Projections to 2019*, February 2010.
USDA, Economic Research Service.

Examine the diagram above. Which continent is the largest global exporter of rice?

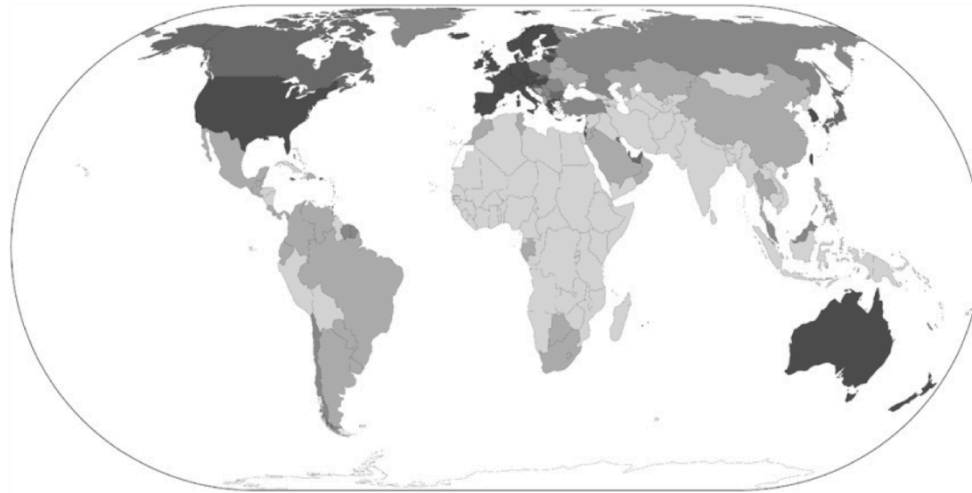
- A. Thailand
- B. Asia
- C. South America
- D. North America

Question 18:

According to the Food and Agricultural Organization, starvation still affects more than 1 billion people or 1 in 6 on the planet. Which is **NOT** a reason for this phenomenon?

- A. Uneven distribution of food
- B. Preference of cash crop plantation over staple crop plantation
- C. Insufficient staple food for the world
- D. Natural disasters

Question 19:



0-30 31-60 61-90 91-120 over 120

From ITU (2005) *World Telecommunication/ICT Development Report*
2006: *Measuring ICT for Social and Economic Development*.

The figure above shows the global telephone subscribers per 100 inhabitants in 2004. Which sentence most aptly describes the distribution of telephone subscribers across the globe?

- A. Southern hemisphere has the highest concentration of telephone subscribers.
- B. Australia has the lowest concentration of telephone subscribers of 0 to 30 per 100 inhabitants.
- C. Clear digital-divide between the northern and the southern hemisphere.
- D. African continent has an average of 91-120 telephone subscribers per 100 inhabitants.

Question 20:

Which one of the following statements best describes an informal economy of a city?

- A. They are economic activities that are not formally regulated by the government
- B. They are economic activities that are highly valued by the urban government
- C. They do not contribute in any way to urban economy
- D. They are mostly associated with illegal activities (e.g. 'black market')

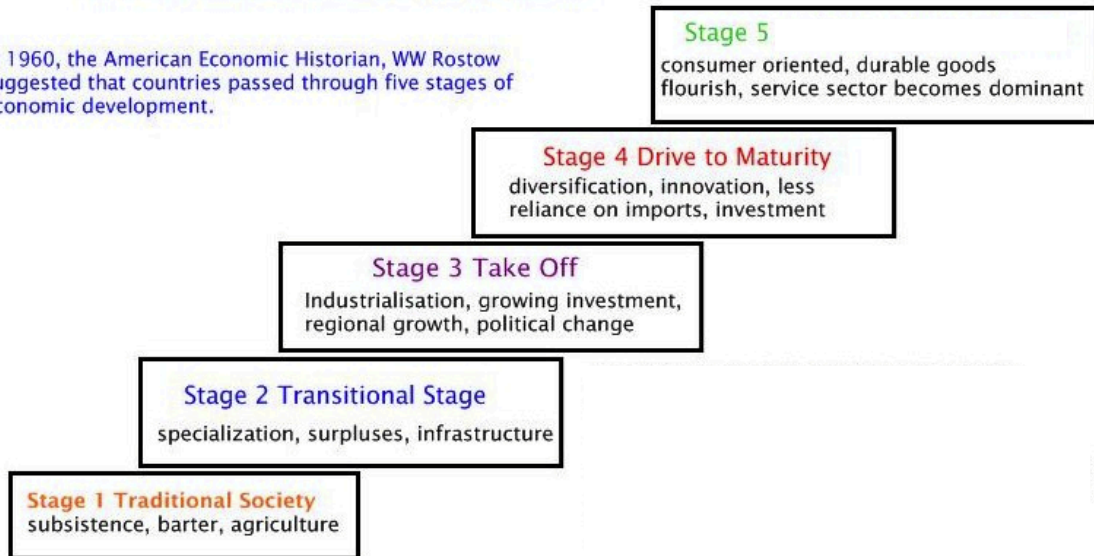
Question 21:

Walt Rostow, an economic theorist on modernization argued that, based on his analysis of the prior experience of the UK, USA and other industrialised economies, all societies need to pass through five stages of economic growth:

Rostow's Model - the Stages of Economic Development

<http://www.bized.co.uk/virtual/dc/copper/theory/th9.htm>

In 1960, the American Economic Historian, WW Rostow suggested that countries passed through five stages of economic development.



Source: www.bized.co.uk/virtual/de/copper/theory/th9.htm

At stage 5 of the Rostow's model, which process is likely to occur?

- A. Pre Take-Off condition
- B. Age of mass consumption
- C. Growth of suburbs
- D. Restructuralization of industries

Question 22:

Source: www.edupics.com

Social Polarisation can be illustrated of the following best illustrates the term



using an hourglass, as shown above. Which 'Social Polarisation'?

- A. Rich becoming poorer, poor becoming richer
- B. Burgeoning middle-income class
- C. Dual city outcome
- D. Growth in middle-income white-collar positions

Question 23:



Before



After

Sources:

http://www.qsakamaki.com/#/gallery/tompkins-sq-park-legacy/TSP_01_01 (left)

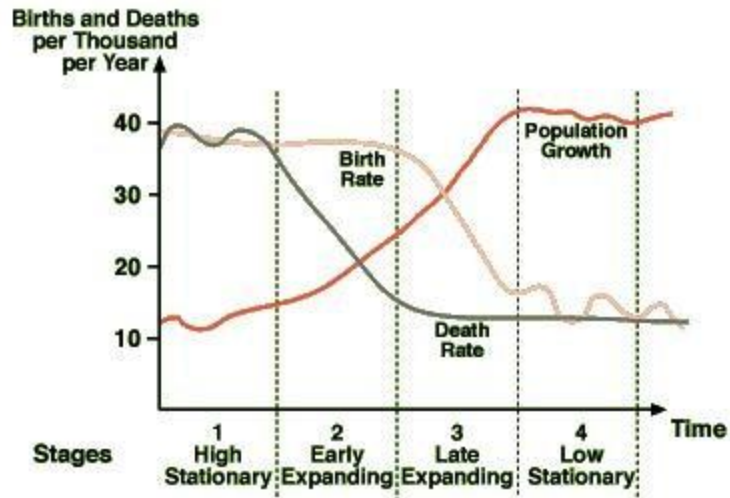
<http://www.pbase.com/dmajfsharp/image/70066352> (right)

According to your understanding of the diagram above, what does the term gentrification means?

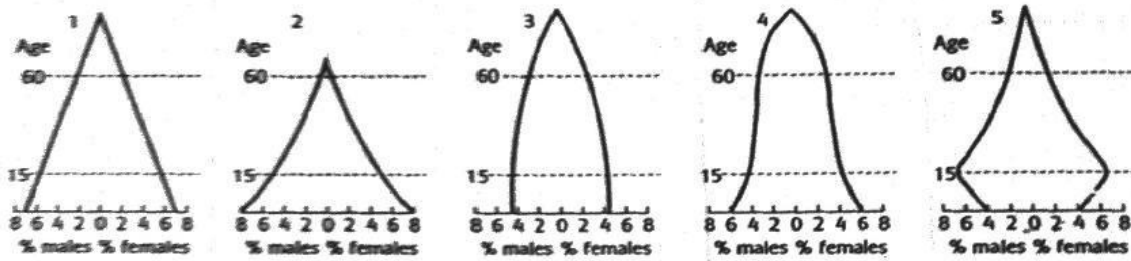
- A. People moving from the inner city to council estates located on the edge of the city.
- B. Migrating from rural to urban areas.
- C. Migrating from urban to rural areas.
- D. Wealthy middle class people moving into the inner city and redeveloping the housing.

Study the Demographic Transition Model and the five population pyramids that follow. Answer questions 24 and 25.

Demographic Transition Model



Source: <http://geographyfieldwork.com/DemographicTransition.htm>



A.

(B)

(C)

(D)

(E)

Question 24:

Which pyramid shows a country with high birth rates and high death rates?

Question 25:

Which pyramid best represents a country at stage 3 in the demographic transition model?

Question 26:

Study the figure below.



Source: <http://mustangs.coloradoacademy.org/~pkim/>

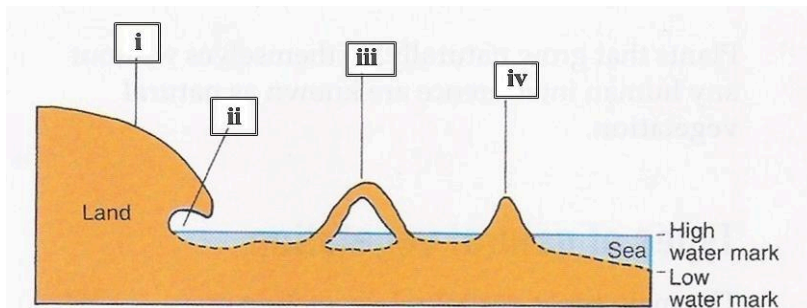
What is the religion of most people who live at Location X?

- A. Animism
- B. Hinduism
- C. Islam
- D. Judaism

Questions 27 - 35 are 2 marks each.

Question 27:

Source: *Reading Tropical Maps*, Longman, 5th Edition.



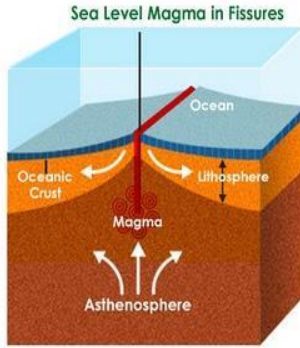
The figure above showcases a few common landforms at a coastal zone. Which of the following correspond to the features labelled i, ii, iii and iv?

	i	ii	iii	iv
A	head	stack	arch	stump
B	stack	cliff	stump	cave
C	cliff	arch	cave	stump
D	cliff	cave	arch	stack

Processes and landforms at the divergent plate boundary

- I Sea floor spreading
- II Trench
- III Basaltic cone volcano
- IV Ridges
- V Andesitic cone volcano
- VI Hydro thermal vents

Question 28:



Divergent Boundaries

Source: www.geography-site.co.uk/pages/physical.html .

The figure above shows a divergent plate margin. The box beside it shows some of the possible processes and landforms at this plate boundary. Which of the following options reflect the processes and landforms at a divergent plate boundary?

- A. I, II, III & V
- B. I, III, IV & V
- C. II, III, V & VI
- D. I, III, IV & VI

Question 29:



Source: <http://picasaweb.google.com/lh/photo/oUT9KBfh7N5apZOwDaU0oA>

The picture above shows a meandering stream in the Amazon Basin. Study the areas marked “W” and “Y”. Which of the following options correspond correctly to areas W and Y in the picture?

	Area W		Area Y	
A	Convex bank	Slip off slope	Concave Bank	River cliff
B	Convex bank	River cliff	Concave Bank	Slip off slope
C	Concave Bank	Slip off slope	Convex bank	Slip off slope
D	Concave Bank	River cliff	Convex bank	River cliff

Question 30:

Employment Figures of Brentwood, Western Los Angeles, United States of America from 1991 to 2001

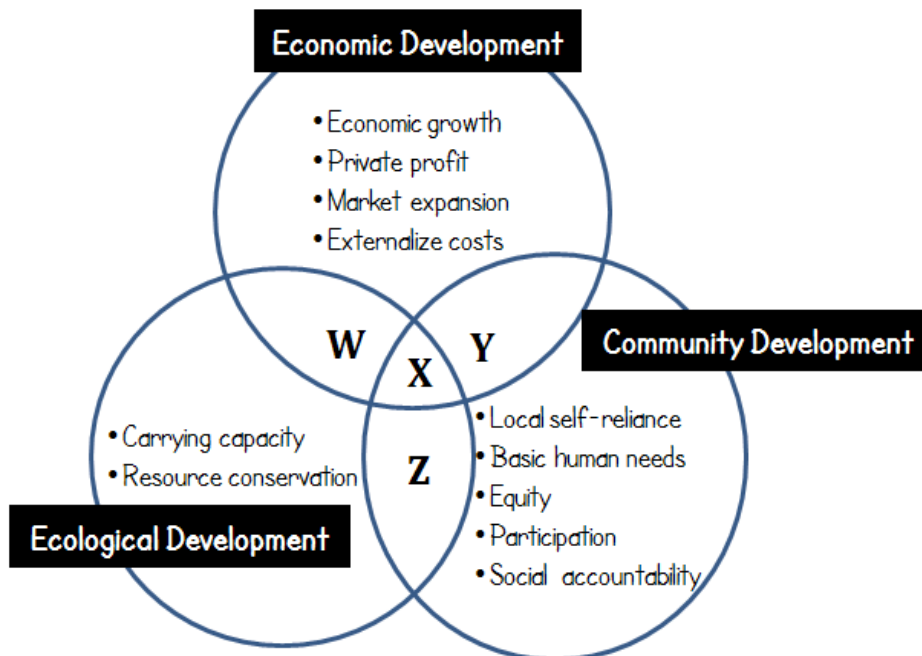
	1991	1993	1995	1997	1999	2001	Change from 1991 – 2001
All Industries	25600	25400	27900	28000	29000	30100	
Agriculture, Forestry & Fisheries	300	300	200	300	200	200	
Production and Construction	1300	1300	1400	1700	2300	2100	
Manufacturing	4400	1800	3300	2700	2700	2300	
Service Industry	19600	22000	23000	23200	23900	25500	

(Source: http://www.brentwood.gov.uk/brentwood_local_plan/chapter4.html)

The table above shows the employment figures of Brentwood from 1991 to 2001. Which is the correct change in employment for the secondary sector?

- A. +1800
- B. -2100
- C. -300
- D. +5900

Question 31:

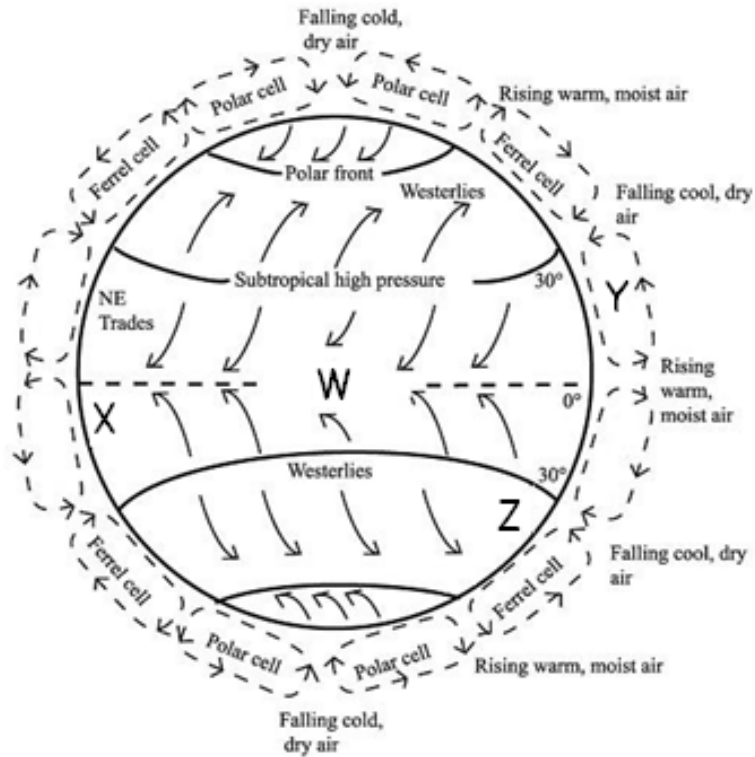


Source: <http://www.trp.dundee.ac.uk/library/pubs/set.html>

Sustainable development is defined as “*development that meets the needs of the present without compromising the ability of future generations to meet their own needs*” by the Brundtland Commission in 1987. The Venn diagram on the previous page aims to illustrate this concept. Label the Venn diagram accordingly.

	W	X	Y	Z
A	Viable	Sustainable	Equitable	Bearable
B	Practical	Sustainable	Biased	Tolerable
C	Impractical	Sustainable	Just	Supportable
D	Realistic	Sustainable	Prejudiced	Unbearable

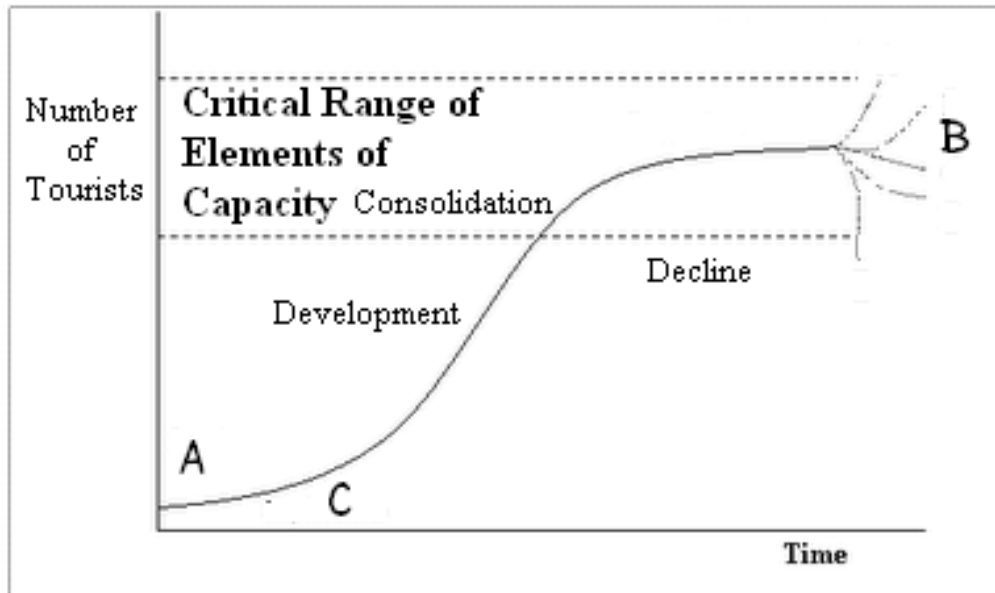
Question 32:



The diagram above shows the atmospheric circulation on the surface of the Earth. Label the diagram accordingly.

	W	X	Y	Z
A	ITCZ	SW Trades	Henley Cell	65°
B	ITCZ	SE Trades	Hadley Cell	60°
C	ITCA	SW Trades	Henry Cell	60°
D	ITCA	SE Trades	Hadley Cell	65°

Question 33



The diagram above shows a model known as Tourism Area Life Cycle (TALC), proposed by Richard Butler in 1980. The basic idea of Butler’s 1980 TALC is that a destination starts relatively unknown and visitors initially come in small numbers, restricted by lack of infrastructure and local knowledge.

As more people discover the destination, the amenities increase in quantity and quality. Tourist arrivals begin to grow rapidly, often involving social and environmental carrying capacity limits. The destination’s rise in popularity increases very rapidly, as implied by the exponential nature of the growth curve.

The possible trajectories are indicated by the dotted lines, indicating possible scenarios to the tourism destination. Scenarios include a possible drop of visitor arrivals due to destruction of habitat or an increase in visitor arrivals due to addition of tourist attractions.

Study the diagram above. Name the processes A, B and C.

	A	B	C
A	Exploration	Involvement	Stagnation
B	Exploration	Stagnation	Involvement
C	Involvement	Stagnation	Rejuvenation
D	Involvement	Rejuvenation	Exploration

Question 34:

Global demand for biofuel has increased in recent years since the oil prices increases in 2003. In addition to more land being converted from growing of crops for food to that of crops for biofuels, a larger share of commodities (such as maize and sugar cane) which can be used for either food or biofuels has been destined to the latter use.

What are the implications of a country diverting its farmlands for biofuel production in detriment of food supply?

- I Increase in staple food prices
 - II Decrease in arable land
 - III Pressure on scarce water supplies
 - IV Rural Urban Migration
- A. I only
 - B. I & II
 - C. I, II & III
 - D. I, II & IV

Question 35:

Region	Number in Millions			Percent		
	1950	2006	2050	1950	2006	2050
World	2,521	6,555	9,243	100.0	100.0	100.0
More developed regions	813	1,216	1,261	32.2	18.6	13.6
Less developed regions	1,709	5,339	7,982	67.8	81.4	86.4
Africa	221	924	1,994	8.8	14.1	21.6
Asia	1,402	3,968	5,277	55.6	60.5	57.1
Europe	547	732	665	21.7	11.2	7.2
Latin American/Carribbean	167	566	797	6.6	8.6	8.6
Northern America	172	332	462	6.8	5.1	5.0
Oceania	13	34	48	0.5	0.5	0.5

Population of the major regions of the world in 1950, 2006 and 2050

Source: Population Reference Bureau

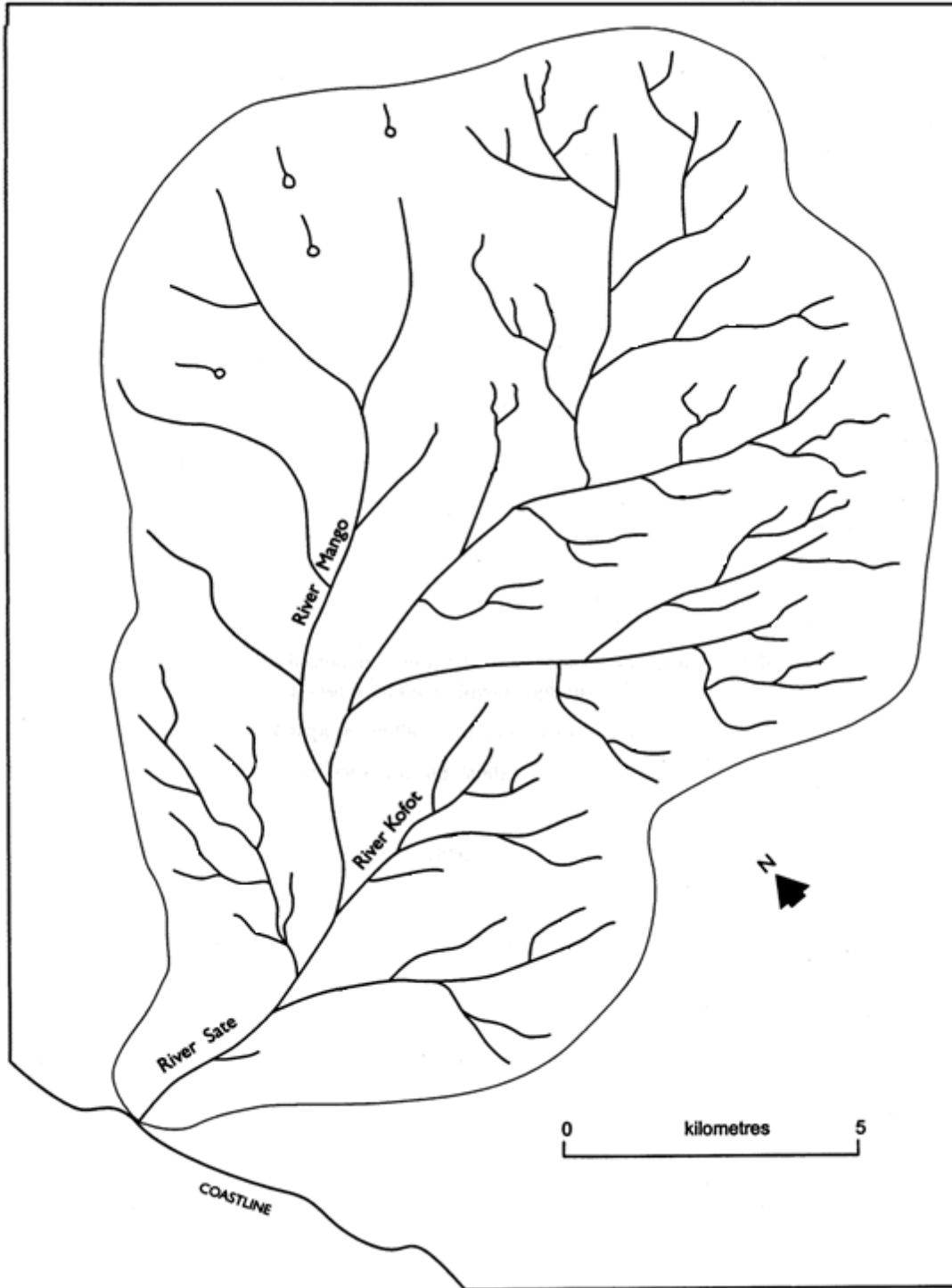
From the table above, which region is expected to have the highest rate of population growth between 1950 and 2050?

- A. Africa
- B. Asia

- C. Latin America/ Carribean
- D. North America

Question 36 and Question 37 are 16 marks in total. Please write legibly.

Question 36



Drainage Basin of the River Sate

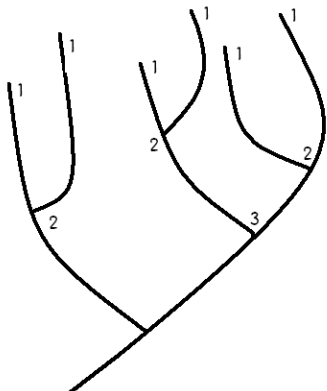
- a. On the diagram on Page 24, mark the order of each stream in different colours (e.g. 1st order, 2nd order, etc.) using Strahler’s method of stream ordering. The diagram below is an example of how stream ordering is done. (2 marks)

Example:

Number of 1st order streams: 6
 Number of 2nd order streams: 3
 Number of 3rd order streams: 1
 Overall order of basin: 3rd Order

Strahler’s Stream Ordering

$1 + 1 = 2$	$1 + 2 = 2$
$2 + 2 = 3$	$2 + 3 = 3$
$3 + 3 = 4$	$3 + 4 = 4$
$4 + 4 = 5$	$5 + 5 = 6$



- b. What is the order of the basin? (1 mark) _____
- c. Construct a bar graph below showing the number of streams in each stream order. (2 marks)

- d. There are two main tributaries of the River Sate, called the Rivers Mango and Kofot. The two tributaries drain an area of limestone geology and igneous geology respectively. On the diagram, use different colours or patterns to shade in the parts of the drainage basin that you think have

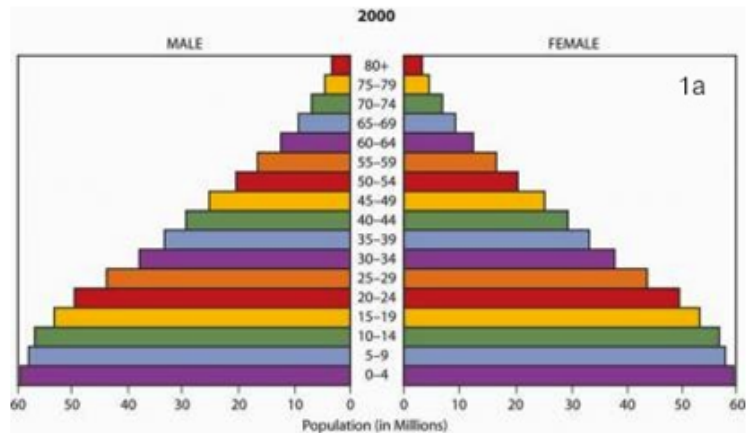
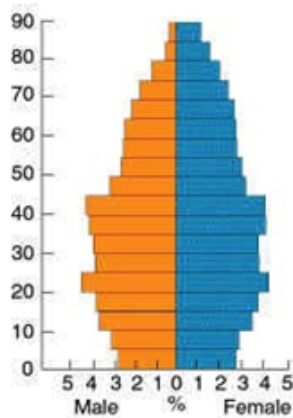
limestone and igneous rock geology. Add a key to the map. Explain the evidence that you used to work this out. (3 marks)

- e. The government is planning to construct a dam to reduce the river discharge along River Kofot. Where are the ideal alternatives to construct this dam? Indicate 2 ideal locations on the map. (1 mark)

Question 37

Denmark

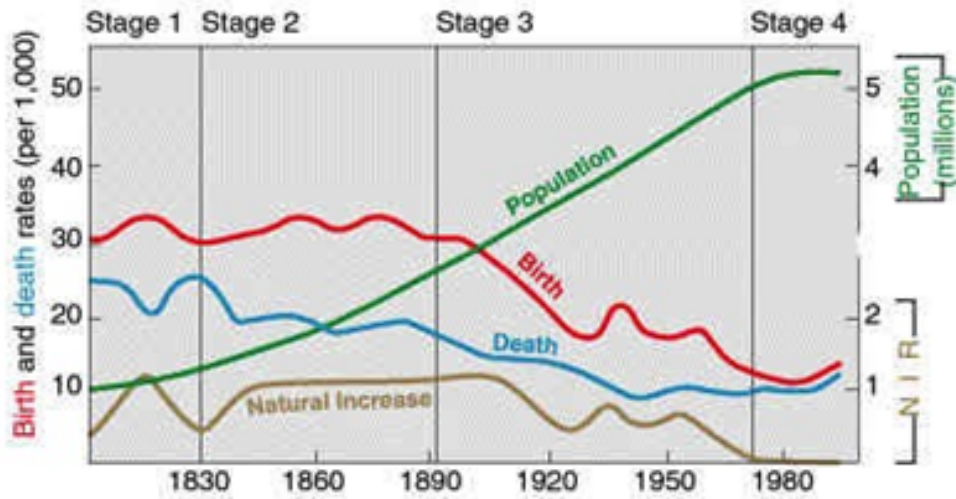
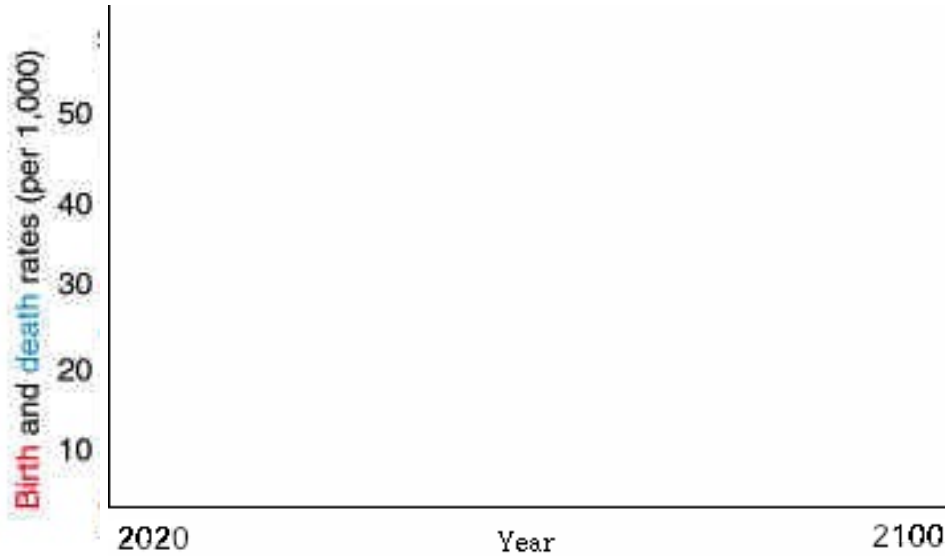
Indonesia



Study the population pyramids carefully and answer the following questions.

- (a) Describe three differences in the population pyramid of Denmark and Indonesia. (3 marks)

(b) Predict and draw the likely demographic pattern of Indonesia after year 2020. (1 mark)



(c) 'All societies eventually go through the 4 stages of the demographic transition model'. How far do you agree with this statement? Explain your answer. (3 marks)

THE END