

**SECTION A [50 MARKS]**  
**ANSWER ALL QUESTION**

**Question 1**

- a) **Direction: For multiple choice questions, there are four alternatives: A, B, C, and D. Choose the correct alternative and circle it. Do not circle more than ONE alternative. If there is more than one choice circled, NO score will be awarded.** [10]
- i. Bhutan lies in the
- A North Torrid Zone.
  - B South Torrid Zone.
  - C North Temperate Zone.
  - D South Temperate Zone.
- ii. The presence of Mesosaurus fossils in South America and Africa indicates that these continents were a single landmass during
- A early Cenozoic era.
  - B early Mesozoic era.
  - C late Mesozoic era.
  - A late Paleozoic era.
- iii. Read the following statements.
1. *It is renewable.*
  2. *It is non-renewable.*
  3. *It is depleting at a faster rate.*
  4. *Formation of minerals is a slow process.*
- Conservation of minerals is important because
- A 1, 2 and 3.
  - B 2, 3 and 4.
  - C 1, 3 and 4.
  - A 1, 2 and 4.
- iv. Gradation is the combined process of
- A erosion, aggradation and deposition.
  - B erosion, transportation and deposition.
  - C erosion, denudation and transportation.
  - D transportation, aggradation and deposition.
- v. The sub-tropical climate zone typically has cool dry winters and hot wet summers. Which of the following places fall under this climatic zone?
- A Paro, Samtse and Chhukha
  - B Sarpang, Gasa and Samtse
  - C Sarpang, Samdrup Jongkhar, Haa
  - D Samtse, Sarpang and Samdrup Jongkhar

- vi. Tigers are enlisted as one of the endangered animals in the world. The leading cause for this is
- A developmental activities.
  - B construction of roads.
  - C illegal hunting.
  - D forest fires.
- vii. Which of the following factors are causes of population growth in Bhutan?
- 1. *early marriages*
  - 2. *high illiteracy rate*
  - 3. *immigration*
  - 4. *family planning*
- A 1 and 3
  - B 1 and 4
  - C 1 and 2
  - D 3 and 4
- viii. The minimum number of people necessary before particular goods or services can be provided in an area is known as
- A range of goods and services.
  - B threshold population.
  - C hinterland.
  - D centrality.



- ix. The picture given above can be classified under
- A Primary Industry.
  - B Tertiary Industry.
  - C Quaternary Industry.
  - D Secondary Industry.

- x. Landslide is the movement of a portion of the Earth's surface due to earthquakes, heavy rainfall, flooding and human activities.

Which of the following method helps to mitigate landslides?

- A identifying safety evacuation zone
- B construction of embankments
- C modifying slope geometry
- D set up warning sirens

- b) **Direction: Match each item under Column A with the most appropriate item in column B. Rewrite the correct pairs by writing the alphabet against the number in the space provided.** [5]

Answer	Column A	Column B	
	i. Terrestrial planets	a. convergent movement of the plates	
	ii. International dateline	b. Jupiter, Saturn, Uranus and Neptune	
	iii. Formation of Mid-Atlantic ridge	c. sink hole	
	iv. Metallic mineral	d. Mercury, Venus, Earth and Mars	
	v. Funnel shape depression	e. divergent movement of plates	
		f. nickel	
		g. 180 <sup>th</sup> Line of Longitude	
		h. dolomite	

- c) **Direction: Write TRUE or FALSE for the following statements in the space provided.** [5]

i. Karpola and his family from Trashiyangtse decided to migrate to Thimphu due to low wage rate, lack of service facilities, poor transport and communication. These are known as Pull factors.		
ii. The threshold population of a community is an important factor to set up a successful business.		

iii. Land fragmentation is the result of the inheritance system, which leads to the shrinking of land holdings size, posing a severe challenge in commercial farming.		
iv. Industries are also classified into four types based on size.		
v. Fire disasters like forest and structural fire are caused mainly by human negligence and natural phenomena like lightning.		

- d) **Direction: Fill in the blanks with appropriate words and write in the space provided below** [5]

i. The movement of people from one place to another place within a country is called _____.	
ii. The solar system and all other objects are formed from a collection of dust and gas known as _____.	
iii. During the beginning of mid-20 <sup>th</sup> century, global agricultural productivity increased significantly due to the advancement of new technologies. This period was known as _____.	
iv. The seasonal change in the climate of Bhutan is caused by _____.	
v. The complex system of interaction between an organism and the physical environment in any unit area is called _____.	

- e) **Direction: Study the extracted map of Mongar, No.78M/3 and answer the following questions.**

- i. Differentiate between contour interval and index contour. [2]


- ii. The statement scale of the map 78M/3 is 2 cm is equal to 1 km. However, if the statement scale of the map is 5 cm is equal to 2 km, what would be the R.F of the given map? [2]

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- iii. Why are there fewer settlements in grid square 2050 as compared to 8020? Give **TWO** reasons. [2]


- iv. Mr. Tshering plans to settle on a location in the grid square 8050. Would you recommend him to settle there? Justify your answer with **TWO** reasons. [2]


- v. Determine the height of Dangrim in grid square 8050. [1]

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- vi. Calculate the direct distance between the lhakhang in grid square 3080 and the lhakhang in grid square 7050. [2]

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- vii. One of the modes of transport in the topographic map 78M/3 is motor road. Mention any **TWO** drawbacks of this mode of transport. [2]


- viii. Why are contour lines numbered? Give **ONE** reason. [1]


- ix. Find the six-figure grid reference of spot height •1950. [1]

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- f) In the outline map of Asia provided: [4]

- Shade and name South China Sea.
- Mark with a thick dot (•) and name Singapore.
- Shade and name Plateau of Iran.
- Mark with a thick line and name river Ganga

- g) In the outline map of Bhutan provided:** [6]
- i. Mark with 'X' and name Me La and Mon La Karchung.
  - ii. Shade and name the rivers Amo Chhu and Ngyera Ama Chhu
  - iii. Write "TD" over Trongsa Dzong.
  - iv. Mark with a dot (•) and name Merak.

**SECTION B [50 MARKS]**  
**ATTEMPT ANY FIVE QUESTIONS**

**Question 2**

- a) The 2021 Tokyo Olympics Gymnastics men's team final was held on 26 July at 6 A.M. at Tokyo (140°E). At what time did the people of Bhutan watch the live broadcast from Tokyo? [2]

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- b) According to the study conducted by NSB, the fertility rate of Bhutan is expected to decline below 1.8 per cent by 2030, as shown in the table below.

[2]

**Total Fertility Rates of Bhutan, 2005-2030**

Year	TFR
2005	3.59
2010	2.34
2015	2.34
2020	2.09
2025	1.95
2030	1.87

*Source: National Statistic Bureau (NSB)*

This indicates that women will give birth to two or less than two children by 2030. If such a trend continues, there will be a negative population growth in the country which will have an adverse effect on the country's workforce.

If you are the Prime Minister of Bhutan, what **FOUR** immediate measures would you initiate to solve this issue?


- c) Should Bhutan establish more number of mineral-based manufacturing industries or agro-based manufacturing industries? Support your stand with **TWO** points. [2]


- d) Agricultural sector in Bhutan employs more than 60% of the population and contributes about 17.37% of the country's gross domestic product (NSB 2017). [2]

Will the agriculture sector be able to contribute more to the country's GDP in future?  
Justify with **TWO** points.



- e) There are many theories that describe the origin of the universe and the formation of the solar system. The Earth, along with the other planets, is believed to have been evolved about 4.5 billion years ago. Discuss the formation of the solar system with reference to the Solar Nebula Theory. [2]


### Question 3

- a) His Majesty The King Jigme Kheser Namgyel Wangchuck reiterated about the Delta Variant on Saturday, 24<sup>th</sup> July 2021 at 7:00 P.M. through BBS. At what time and day did the Bhutanese living in New York (75°W) view the live broadcast? [2]

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- b) Distinguish between metallic and non-metallic minerals with **TWO** points each. [2]

Metallic minerals	Non-metallic minerals	



- d) Air pollution has emerged as a major issue in urban centres due to the increase in the number of people. Briefly explain with **TWO** points how the rise in population contributes to deteriorating air quality? [2]


- e) Recommend any **TWO** health safety measures for the people working in industries. [2]



**Question 4**

- a) The impact of population on forest ecosystem is increasing due to increase in the consumption of timber for construction and fuel wood. Suggest **TWO** alternative measures to reduce the consumption. [2]


- b) Explain any **TWO** critical events of the Paleozoic era. [2]



- c) Due to increase in rural-urban migration, socio-economic problems are on rise in the urban centres. Mention any **TWO** socio-economic issues and suggest ways to resolve them. [3]


- d) “Drop, Cover and Hold” is the most common earthquake preventive safety measure practised in schools in Bhutan. Explain how this is implemented. [3]



**Question 5**

a)     What is Global Positioning System? **[1]**


- b) Find the longitudinal position of a place when its local time is 9 A.M. when the GMT is 16 hours. [2]

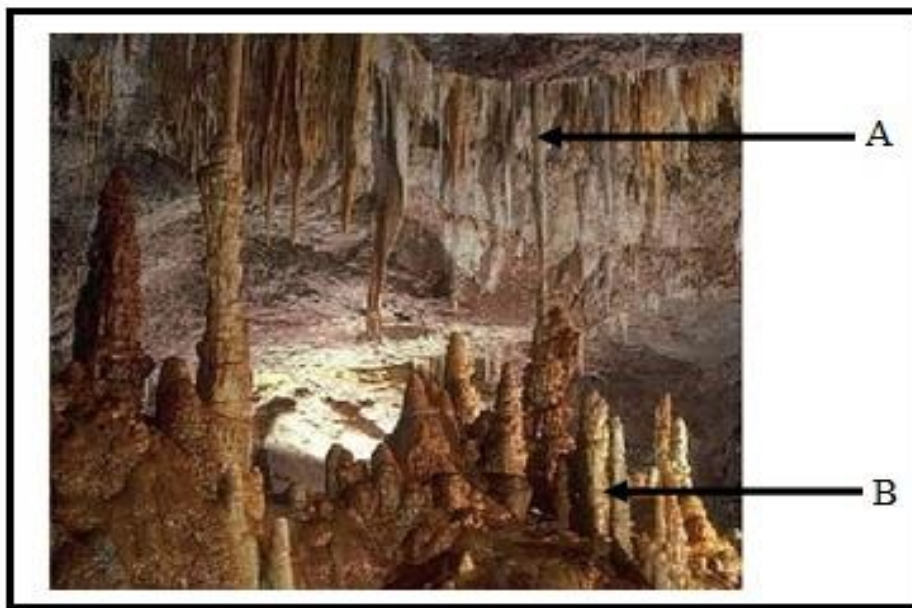
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- c) One of the evidences to support continental drift theory was geographical similarities between the opposite coasts of the Atlantic Ocean. How does this evidence justify that the continents were once together as a single landmass? Explain. [2]



d) Study the diagram given below and answer the question that follow.

[2]



Name the parts marked A and B.

A.
B.

e) Study the pictures A and B given below and distinguish between them.

[3]



Picture A



Picture B

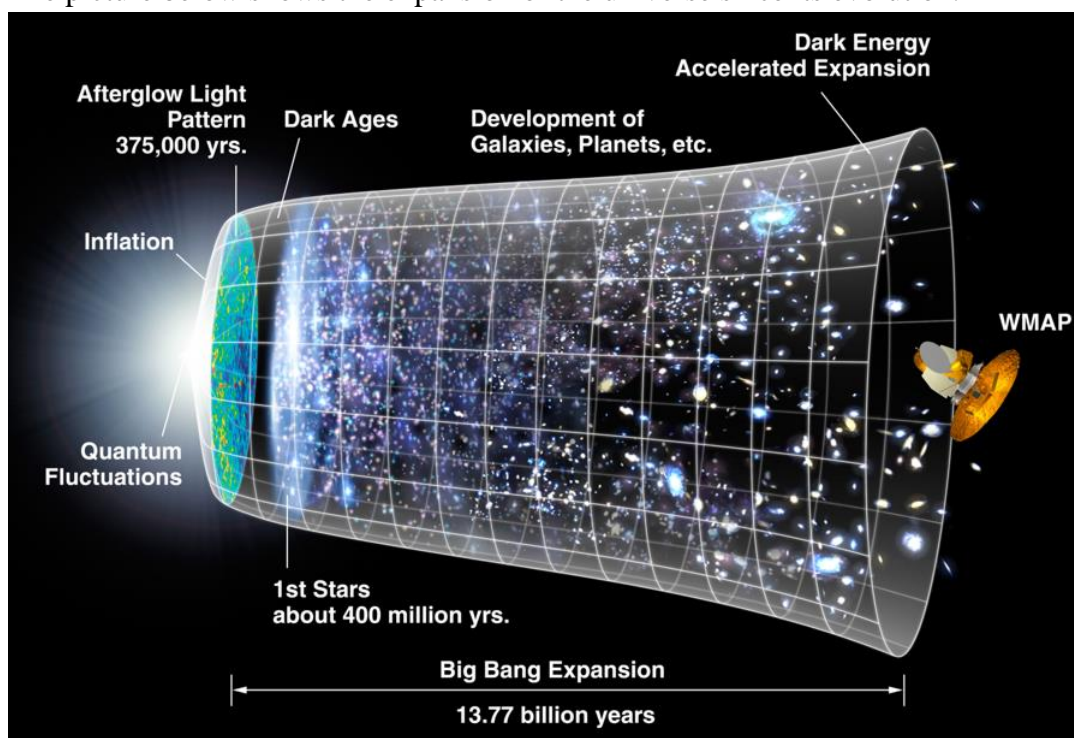

**Question 6**

- a) Explain how swallow holes are formed with a diagram. [2]



b) The picture below shows the expansion of the universe since its evolution.

[2]



Mention any **TWO** evidences to prove that the universe is still expanding.



- c) The Himalayan mountain system is one of the factors that influence the climate of Bhutan. If it did not exist, how would it affect us? Mention any **TWO** effects. [2]


- d) Glacial Lake Outburst Floods (GLOFs) occur when an unstable natural dam is formed during a glacial retreat. Mention any **TWO** consequences of a GLOF. [2]



- e) Selling finished products is one of the challenges of agro-based industries in Bhutan. [2]  
Suggest any **TWO** strategies to overcome this challenge.


### Question 7

- a) The assumptions made by Walter Christaller's theory of central place does not [2]  
generally hold true in the real-world situation. Why? Give **TWO** reasons.



- b) Biodiversity has come under threat with modernization. Suggest any **TWO** strategies to protect it. [2]


- c) Human beings are responsible for climate change. Justify the statement with **THREE** reasons. [3]



d) Mining activity has both positive and negative impacts on the environment. Explain any **THREE** negative impacts. [3]

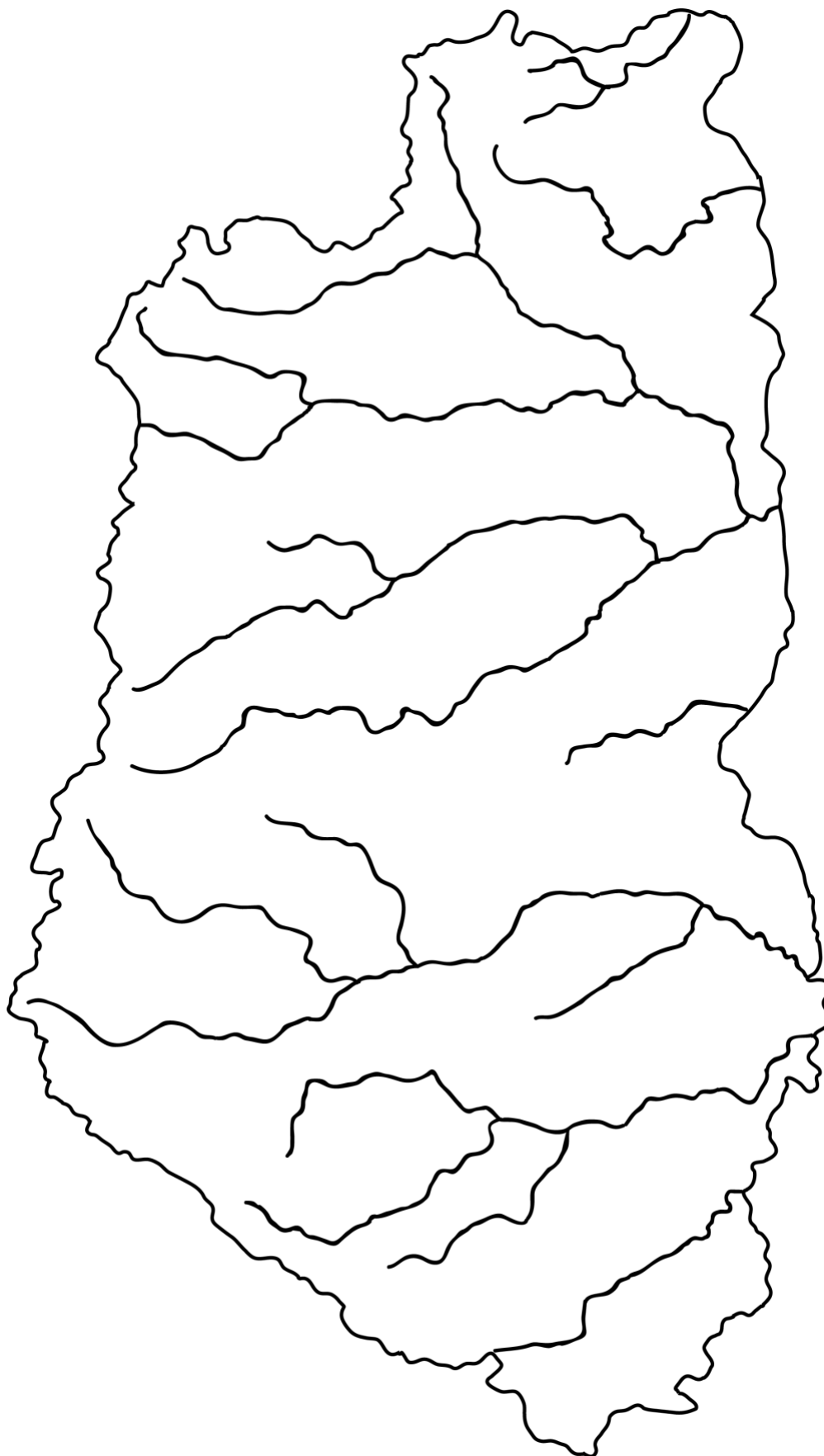

### Map of Asia

This map is to be used for Question 1 (f).



### Map of Bhutan

This map is to be used for Question 1 (g).



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