NATIONAL
Junior College

National Junior College
JC2/IP4 Preliminary Examinations 2008

GEOGRAPHY **9730/01**
Higher 2 20 Aug 2008

Paper 1 Physical Geography 3 hours

READ THESE INSTRUCTIONS FIRST

Section A
Answer **all** questions.

Sections B and C
Answer **two** questions, each from a different topic.

At the end of the examination, fasten all your answer scripts securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.
Insert 1 contains all the Figures referred to in the question paper.
Insert 2 contains the Photographs referred to in the question paper.
Diagrams and sketch maps should be drawn whenever they serve to illustrate an answer.
The world outline map may be annotated and handed in with relevant answers.
You are reminded of the need for good English and clear presentation in your answers.

This document consists of **6** printed pages and **1** blank page.

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Section A

Answer **all** the questions in this section.

Questions 1, 2 and 3 carry 12 marks and Question 4 carries 14 marks.
You should allocate your time accordingly.

Lithospheric Processes, Hazards and Management

1 Photograph A shows a form of mass movement at Holbeck Hall, Scarborough.

(a) **(i)** Identify the type of mass movement shown in Photograph A. [1]

(ii) Draw a labelled sketch of the main features of mass movement in Photograph A. [4]

(b) Account for the occurrence of mass movement shown in Photograph A. [5]

(c) Describe and explain **one** management scheme you would introduce to help reduce the hazard along this stretch of coastline. [2]

Atmospheric Processes, Hazards and Management

2 Fig. 1A shows the diurnal changes in solar radiation input and temperature on a clear day.
Fig. 1B shows the diurnal temperature changes for two sites receiving the same amount of solar radiation input.

(a) **(i)** Describe the relationship between solar radiation input and temperature shown in Fig. 1A. [3]

(ii) Suggest how the relationship in **(i)** would differ if this is an urban area. [3]

(b) Explain the differences in the diurnal temperature ranges shown on Fig. 1B. [6]

Hydrological Processes, Hazards and Management

3 Study Figs 2A and 2B and Photograph B.
Fig. 2A shows the relationship between channel slope and bankfull discharge on braided and meandering streams in the USA.
Fig.2B shows the relationship between channel slope and sediment load for the same two types of stream.
Photograph B shows meandering on the River Cuckmere, Sussex, UK.

(a) (i) Using Fig. 2B, give the approximate threshold values of sediment load and channel slope for braided streams. [2]

(ii) Briefly describe the differences between braided and meandering streams that are suggested in Figs. 2A and 2B. [4]

(b) The meandering course of the River Cuckmere has been straightened. Suggest how far Photograph B helps to understand the decision to straighten the river. [6]

Atmospheric and Hydrologic Processes, Hazards and Management

4 Figs. 3A, B and C give information about the Aral Sea catchment area.

(a) Describe the climate of Nukus and outline the changing features of the Aral Sea catchment area. [4]

(b) Explain how the changes in the Aral Sea catchment area might affect water quality and supply and local climatic patterns. [6]

(c) Outline how you would study and show the seasonal distribution of temperature and rainfall in your local area. [4]

Section B

Answer **two** questions, one from a different topic. All questions carry 25 marks.

Lithospheric Processes, Hazards and Management

5 EITHER

(a) Fig. 4 shows the volcanoes that form a continental volcanic arc in the Cascade Range of North America.

Describe and account for the distribution and formation of the Cascade volcanoes shown in Fig. 4. [9]

(b) Knowledge of plate tectonics helps us to understand many geomorphological processes but has not significantly increased our ability to manage tectonic hazards. Discuss this view. [16]

5 OR

(a) Define the term 'tectonic plate'. Using diagrams and examples, show how fold mountain building occurs at tectonic plate margins. [9]

(b) Identify and suggest reasons for the contrasts between weathering processes in tropical regions. Assess the extent to which these weathering processes contribute to the formation of **either** granite **or** limestone landforms in the tropical environments. [16]

Atmospheric Processes, Hazards and Management

6 Either

(a) Discuss why rainfall totals vary through the year from place to place in areas of tropical climates. [9]

(b) Fig. 5 shows the tracks of tropical cyclones (hurricanes) in the tropics.
Using diagrams, explain the formation of tropical cyclones and where they are most frequently hazardous. Describe the nature of the hazards that they produce. [16]

6 Or

(a) Explain how urban heat islands develop. Discuss the extent to which they can influence the weather experienced in cities. [9]

(b) 'The poorest developing countries will be hit earliest and hardest by climate change, even though they have contributed little to causing the problem' (Stern Review, 2006).

To what extent is it possible to manage the impacts of the enhanced greenhouse effect, in countries at different levels of development? [16]

Hydrologic Processes, Hazards and Management

7 EITHER

(a) With the aid of a labelled diagram, explain how rivers transport their sediment load. [9]

(b) With reference to examples, discuss how the abstraction (removal) and storage of water by humans affect flows and stores within a drainage basin. [16]

7 OR

(a) State and explain **two** relationships that exist between a river's characteristics and the nature of its catchment area. [9]

(b) Using an example or examples, assess the relative importance of management strategies like (i) abatement, (ii) protection and (iii) adjustment in mitigating river floods. [16]

Photograph A

Figs. 1A & 1B for Question 2

Fig. 1A for Question 2

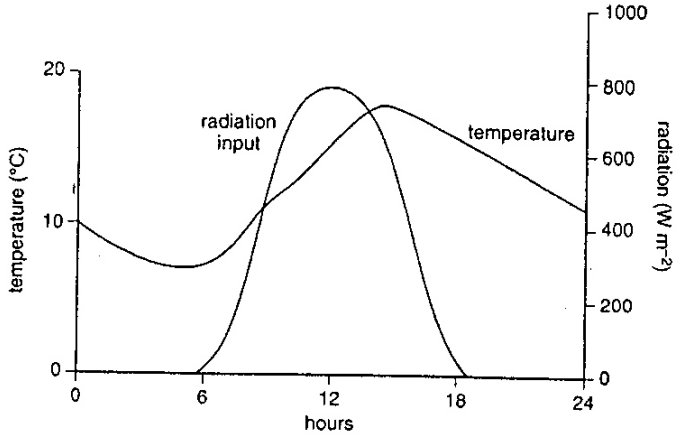


Fig. 1B for Question 2

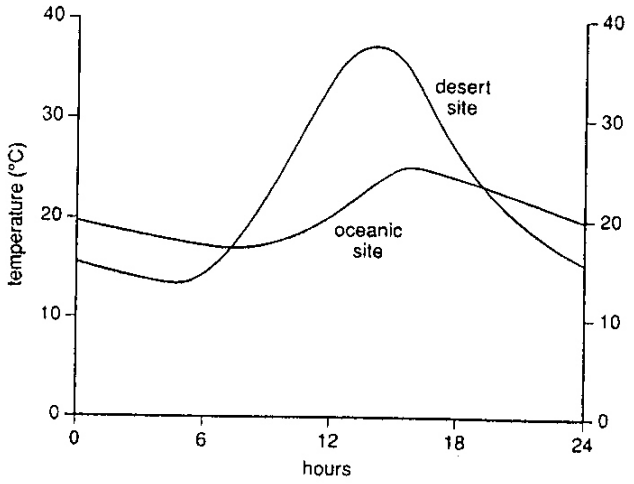


Fig 1B

Figs. 2A and 2B for Question 3

Fig. 2A for Question 3

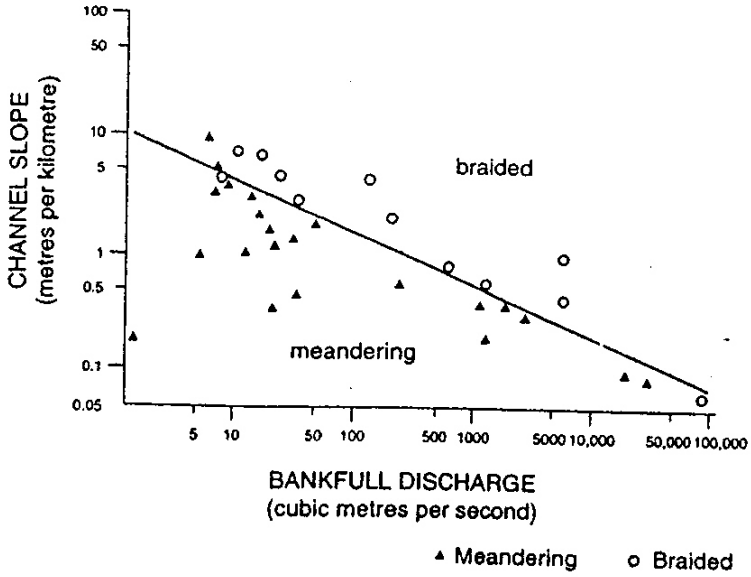
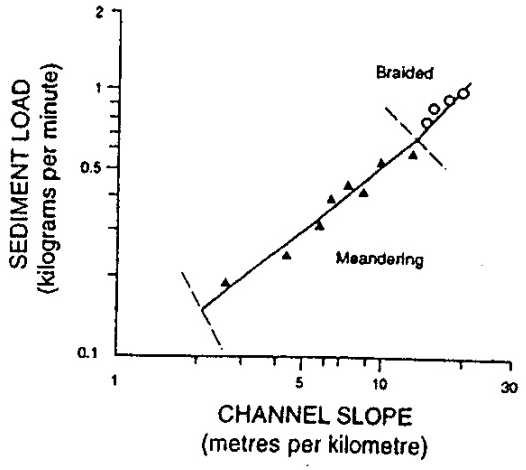


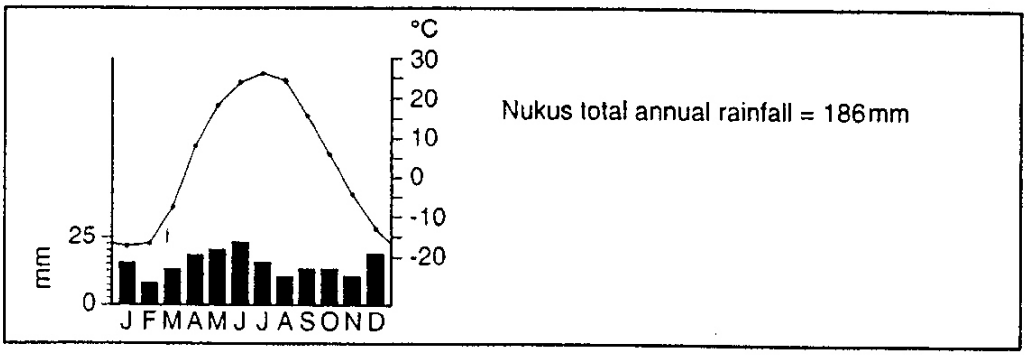
Fig. 2B for Question 3



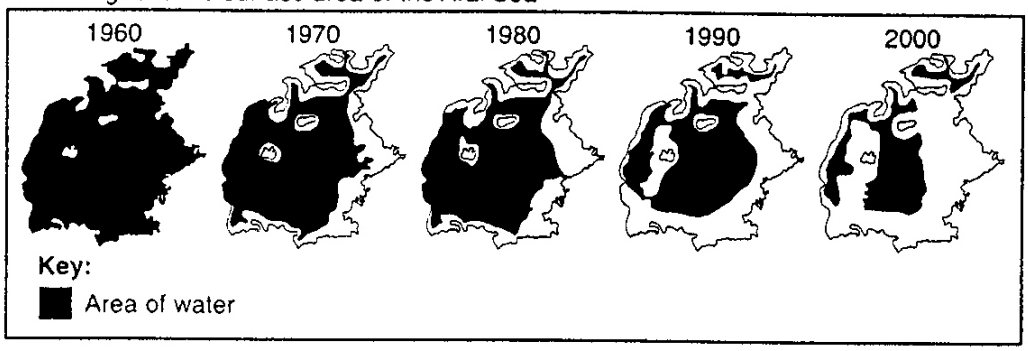
Photograph B

Figs. 3A, 3B and 3C for Question 4

A Climate chart for Nukus



B Changes to the surface area of the Aral Sea



C Irrigated areas in Central Asia

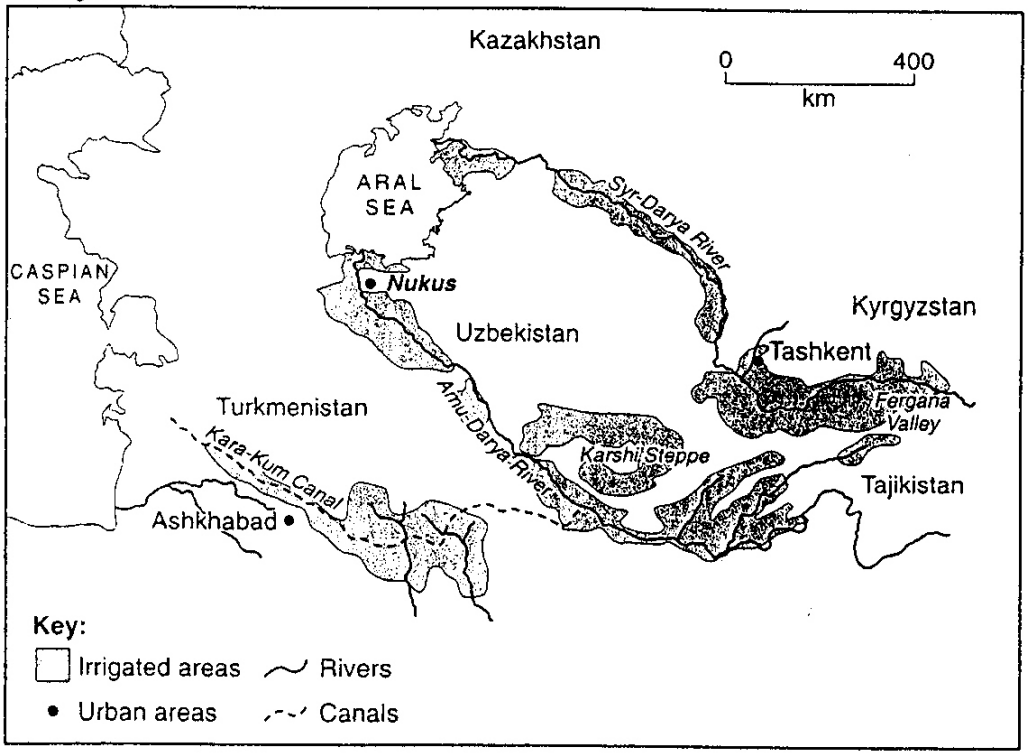


Fig. 4 for Question 5 (a) EITHER

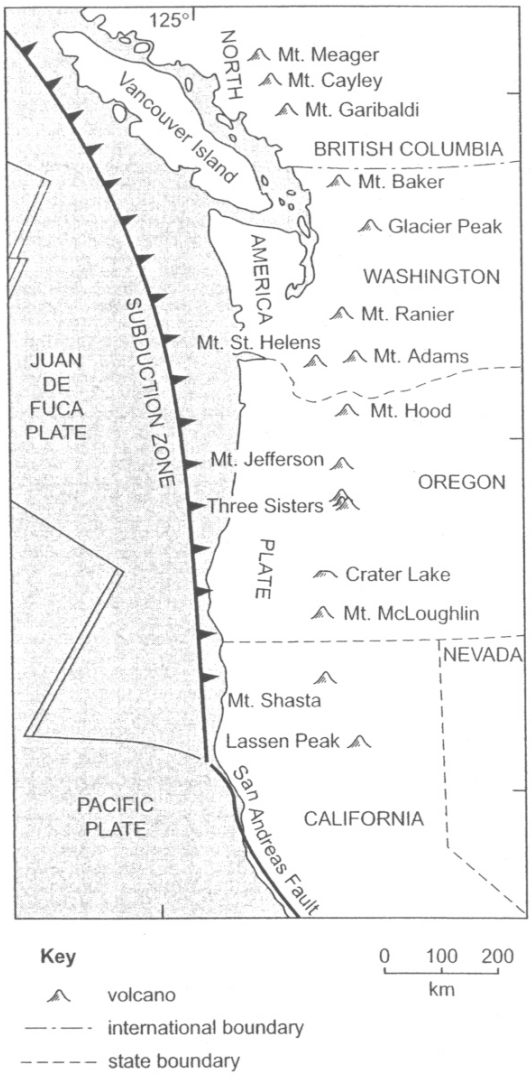


Fig. 5 for Question 6 (b) EITHER