## **RVHS H2 GEOGRAPHY PAPER 1 PRELIMS 2018**

1 (a) Explain how channel morphology changes downstream in a humid tropical drainage basin. [12]

## Indicative Content:

A humid tropical drainage basin is characterised by abundant total annual precipitation, yet there might be seasonality of rainfall in the Am climate or negligible seasonality in Af climates. In any case, this signals the conditions enabling the work of perpetual streams due to a sufficiently shallow water table that constantly feeds streams through baseflow.

In such a context, Bradshaw's model and Schumm's model would be suitable for explaining how channel morphology changes downstream in tandem with parallel changes to discharge and velocity.

To account for these changes, it is helpful to analyse the interactions between channel form, channel energy and the contextual hydrological environment at different parts of the river's long profile.

(b) Using examples, discuss the factors contributing to the variation in channel patterns in a tropical drainage basin. [20]

## Indicative Content:

Some of the largest drainage basins in the world occur in the tropical latitudes: the Mekong, Amazon and Nile river basins are obvious examples. Yet, they span a range of climatic, altitudinal and geological regions and hence display a variety of channel forms and patterns (even within different parts of the drainage basin. This essay discusses the interplay between these factors and contends that in view of a longer time scale in geological time, the current channel patterns and forms cannot be attributed to a dominant factor alone.

Climate as a factor is central for the primary role of rainfall amount and seasonality in determining river regime. Most saliently humid hydrology differs significantly from arid hydrology and both are characterized by distinct channel pattern and forms.

Topographical factors like altitude and slope changes, as well as geological factors like jointing and rock type should be discussed through examples like braided channels and karst hydrology that demonstrate the influence of these factors together with tropical climates.

Attempts to make synoptic links to human actions like deforestation and engineering are possible but should always relate clearly to the hydrological concepts directly altering channel pattern.

# 2 (a) Explain the role of water in the development of soils in the semi-arid and arid tropics. [12]

## Indicative Content:

Soil development begins with the physical and chemical weathering of rocks and regolith exposed to the atmosphere and to the action of water percolating down from the earth surface. Even though the semi-arid and arid tropics experiences general moisture deficit, there can still be the occurrence of rainfall when the ITCZ is overhead.

*Processes of calcification and salinization should be discussed to explain the role water plays in the development of soils in the semi-arid and arid tropics.* 

Characteristics of thin soils and limited soil profile development should also be discussed to illustrate the largely restricted processes of weathering and soil formation.

(b) The distinctive fluvial and aeolian landscapes of the arid tropics are shaped primarily by the ambient climatic conditions. Discuss. [20]

## Indicative Content:

While it is valid to assert that the characteristic dryness of the arid tropics helps to create distinctive aeolian and fluvial landscapes, it is also important to highlight that landforms found in such arid environments are also a product of their underlying geological structure. The examples of yardangs, dunes and loess can be used and discussed to illustrate this understanding.

Yardangs are formed by both fluvial and aeolian processes and sand dunes and loess are essentially aeolian landforms. However, their development also requires specific geological and topographical conditions.

*Opportunities to make synoptic links include references to the factors of geological time and climate change in influencing the development of yardangs, dunes and loess.* 

**3 (a)** Explain how global divisions of labour have changed since the start of the 20th Century. [12]

## Indicative Content:

The notion of a global division of labour is founded on the observation that there is a geographical distribution of different forms of economic activity and production concentrating in different parts of the world, particularly along the division between what dependency theory and later world systems theory called the Core and the Periphery.

The definition of the key phrase 'global divisions of labour' may include both the traditionally named NIDL, as well as the subsequent shifts in tertiary industries (what some term the '2<sup>nd</sup> global shift').

Key patterns observed should include the changes in the distribution of manufacturing activity between the core economies and the periphery economies, the emergence of the semi-periphery and the accompanying shifts in services.

Explanation of the key driving forces behind the New International Division of Labour (NIDL) should take into account the technological forces enabling economic globalization, vertical disintegration of manufacturing production as well as corporate rationalization by TNCs to establish global production networks through offshoring and outsourcing of different stages of vertically disintegrated manufacturing production or service provision.

# (b) With reference to examples, assess the role of international organisations in promoting development worldwide.

#### Indicative Content:

The highly integrated and interconnected nature of the global economy today is one with multiple participants and stakeholders, and whose increasingly volatility and dynamism is as much influenced by free market forces as by the machinations and strategic planning of TNCs and national governments. The response should be prefaced by knowledge about the intended and potential role of international organisations such as global financial institutions: for regulation and promotion of trade, for lending and bolstering languishing economies, and for arbitration and accountability beyond the national scale.

In recognizing that while international financial institutions like the IMF and the World Bank exist to promote development worldwide (largely through encouraging and regulating free trade), and have concretely intervened with such intentions, a critical evaluation also suggests that their influence has not promoted development universally, and may even have perpetuated the development gap that still exists in today's global economy.

Perceptive responses may discuss the unequal power between developing and developed member countries in deciding the rules of global governance.

[20]

Examples may include countries at lower levels of economic development for whom structural adjustment plans have been recommended following economic crises, and a balanced response would critically evaluate both positive and negative implications of these recommendations.

4 (a) Explain the environmental impacts of extractive industries in countries at low levels of development. [12]

## Indicative Content:

The extractive industry consists of any operations that remove metals, mineral and aggregates from the earth. Examples of extractive processes include oil and gas extraction, mining, dredging and quarrying.

The value to society of the products of the extractive industry is undeniable. Nevertheless, despite their potential positive economic impacts, extractive activities tend to leave a strong environmental footprint that must be addressed.

Discussions of the environmental impacts of extractive industries can include impacts on the natural ecosystem and habitat destruction, geomorphological changes to the surrounding landscapes, as well as pollution problems associated inappropriate surface disposal of waste rocks or 'tailings'.

(b) 'Natural resource endowments would enable developing countries to make the transition from underdevelopment to industrial 'take-off', just as they have done for developed countries such as Australia, the United States and the United Kingdom.' (Walter Rostow, 1961).

To what extent do you agree with this statement?

[20]

## Indicative Content:

At first glance, it seems intuitive that countries with natural resource abundance will have the comparative advantage and potential to break out of the cycle of poverty, develop through the five linear stages, and ultimately reach what Walter Rostow termed as 'economic maturity'. However, many observers also believe that reliance on natural resources has adverse consequences for economic growth. Being richly endowed with natural resources can threaten a country's long-term economic prosperity as natural resource-intensive economies grow slower over time than economies that are less natural resource-intensive. This is the so-called 'resource-curse' thesis as propounded by geographer Richard Auty in 1993. Essay response should include reasons for underperforming resource-rich countries as explained by the 'resource-curse and also discuss the exceptions to the thesis. Opportunities to make synoptic links can include the different ways of thinking about development, role of the state and the need for good governance in the management of natural resources.

**5** (a) Explain how human activities in countries at various levels of development are contributing to the enhanced greenhouse effect. [12]

## Indicative Content:

The response should be founded on a technically sound definition of the enhanced greenhouse effect, not just in terms of the concept of 'forcings' essential for maintaining a net radiative surplus in the earth's atmosphere and the key role of greenhouse gases, but also in acknowledging the central role of human activities in the adjective 'enhanced'.

While the essential part of the answer should cover the key forces driving the enhanced greenhouse effect (population growth and increasing affluence driving rising demand for energy, loss of carbon sinks to deforestation and land-use change), there should be discussion of the variation and differences between contributions from countries at different levels of development, illustrated using examples.

(b) Using examples, discuss the extent to which the pursuit of economic growth is compatible with the principles of sustainable development. [20]

## Indicative Content:

While sustainable development is neatly defined in the Brundtland Report as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs', its applied meaning is often contested and ambiguous. Nevertheless, the fundamental ideas of 'needs' and 'limitations' should highlight that equity lies at the heart of this ideal and acknowledges that the earth has a carrying capacity imposed by the state of technology and social organization. The response should be built upon the following key ideas:

- Sustainable development takes into account the environmental, social and economic needs and limitations, and 'trade-offs' are often necessary
- This is because the present model of development is founded on capitalist definitions of economic valuation, based on a linear metabolism of resource extraction and consumption.
- The existing mode of economic valuation is founded on financially measurable output and does not necessarily factor in environmental costs and services
- The extent to which the pursuit of economic growth is compatible with the principles of sustainable development hinges upon whether the 'trade-offs' between economic development and environmental and social costs can be minimised.

Responses should outline possibilities of economic reform towards a 'green economy', with investment in innovation into alternative energy, application of principles of circular metabolism and proper valuation of goods and services to factor in environmental and social costs. Responses should acknowledge the inherent difficulties of such endeavors through examples of the differing agendas between countries at different levels of development. Case in point would be the difficulty of reaching consensus in multinational environmental agreements like the Paris Agreement.

6 (a) Explain how the concepts of ecological footprint and urban metabolism are important in the understanding of sustainable urban development in cities with fast growing populations. [12]

## Indicative Content:

fast growing populations.

At the urban scale, for a city to display the hallmarks of sustainable urban development, it should exhibit records of small ecological footprint, circular metabolism, as well as the ability to promote greater urban liveability, social equity and environmental justice. Hence, concepts of ecological footprint and urban metabolism are important in helping us to understand the ways and challenges of pursuing sustainable urban development in cities with

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Essay discussions should include an examination of the concepts of 'ecological footprint', 'compact cities', 'linear vs circular urban metabolism', and 'sustainable urban development'. In brief, applying the understandings of concepts of ecological footprint and urban metabolism to cities enables a greater appreciation of the practices that could help to achieve sustainable urban development.

(b) Assess the effectiveness of strategies used to manage non-hazardous solid waste in a sustainable manner.

## Indicative Content:

Non-hazardous solid waste management has become one of the major environmental issues facing cities today. As urban populations increase, so too, has the amount of waste generated. While there currently exist many strategies, from recycling to incineration and landfills, to deal with the burgeoning problem of solid urban waste, few of them are truly sustainable, and the essay response should aim to fully evaluate the effectiveness of these waste management strategies.

Strategies and concepts of 'landfills', 'incineration', 'not-in-my-backyard syndrome', 'social and environmental injustice', 'Extended producer responsibility policies', as well as 'Reduce, Reuse and Recycle' can be discussed.

Synoptic thinking can be achieved by referring to ideas of sustainable development and climate change, as well as role of the state in promoting development.

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