**The total of all marks is 40.**

## Topic 1: River environments

**1. Identify the meaning of the term 'groundwater flow'.** *(max 1 mark)*

A) Movement of water over the Earth's surface

B) Movement of water within the soil

C) Movement of water through the rocks below the soil

D) Movement of water through plants and trees

**2. Identify one process of river erosion.** *(max 1 mark)*

A) Suspension

B) Abrasion

C) Channelisation

D) Traction

**3. State one physical factor affecting the rate of river erosion.** *(max 1 mark)*

**Answer**

Award 1 mark for any of the following:
- climate/temperature/rainfall
- slope/gradient
- geology/resistance of rocks
- altitude
- aspect
- velocity/energy.

Accept any other appropriate response.

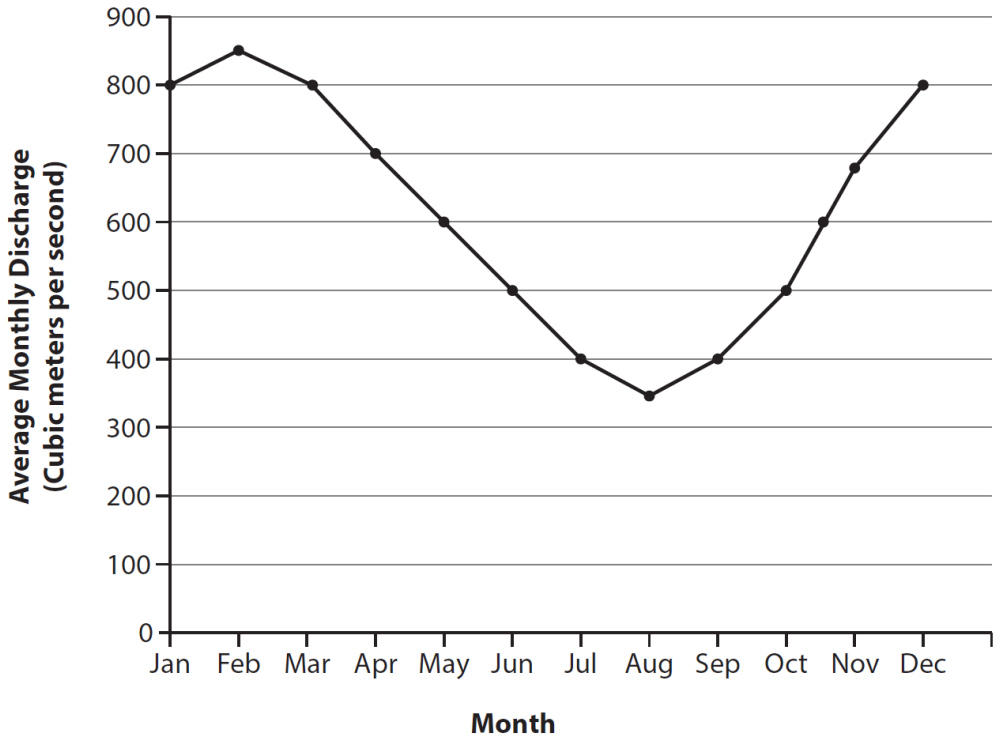
**4. Explain one type of physical weathering in river valleys.** *(max 1 mark)*

**Answer**

Award 0,5 mark for a point about physical weathering and 0,5 mark for further explanation, up to a maximum of 1 mark.
- Rocks on the valley side expand when hot and contract when cold (0,5). If a rock is heated and cooled many times, this can result in cracks forming and/or pieces of rock breaking off (0,5).
- The wind can blow tiny grains of sand against a rock (0,5), which can result in the rock wearing away (0,5).
- When water gets into rocks in the river valley and freezes, it expands (0,5), which can result in it pushing the crack further apart until it breaks the rock (0,5).

Accept any other appropriate response.

**5. Study figure below. Suggest <u>two</u> factors that have led to the river regime shown on figure.** *(max 4 marks)*




River regime of the River Severn in England

**Answer**

Award 1 mark for a factor that may have led to this river regime and a further 1 mark for its impact on the river regime shown on figure, up to a maximum of 2 marks each.

• Discharge is much lower in the period May/June to October as rainfall is normally lower than at other times of the year (1). This means that there will be less surface run-off into the river (1).

• Discharge is much lower in the period May/June to October because there might be higher temperatures (1). This means that more of the water in the river is evaporated (1).

• Discharge is higher in the period November to April because there might be less vegetation growing in the area at that time of year (1). This reduces the amount of interception (1).

Accept any other appropriate response.

**6. Explain <u>one</u> way that human activity has reduced water quality.** *(max 3 marks)*

**Answer**

Award 1 mark for identification of an impact and 2 marks for development and further explanation, up to a maximum of 3 marks.

• In villages in the developing world, people have many uses for river water (1), e.g. washing bodies/washing pots/disposing of human waste (1). This means that people in the next village will have to drink this polluted water (1).

• Smoke from chimneys/cars can contain harmful chemicals (1), such as those which create acid rain (1). These can find their way into the water supply via surface run-off/throughflow/groundwater flow (1).
• Farmers spray chemicals onto fields and crops to maximise yields (1), such as pesticides to kill insects (1), which can soak into the soil/get washed into the river when it rains (1).
Accept any other appropriate response.

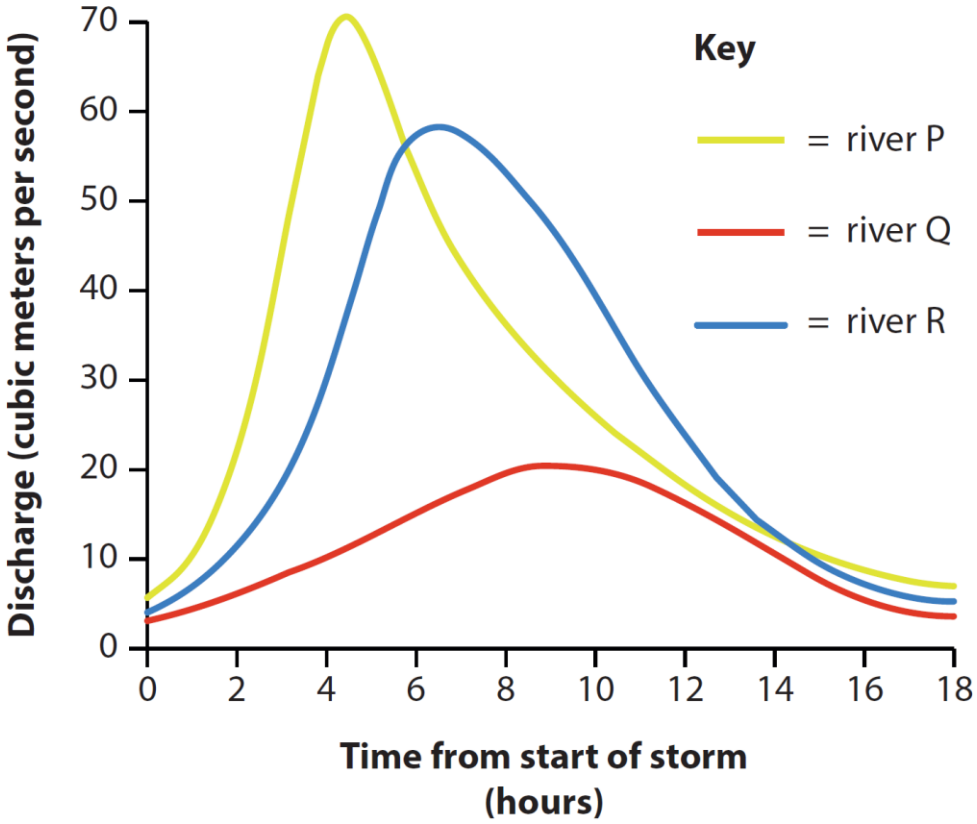
**7. Study figure below. Identify landform X shown in figure.** *(max 1 mark)*


A river landscape in Arkansas, USA

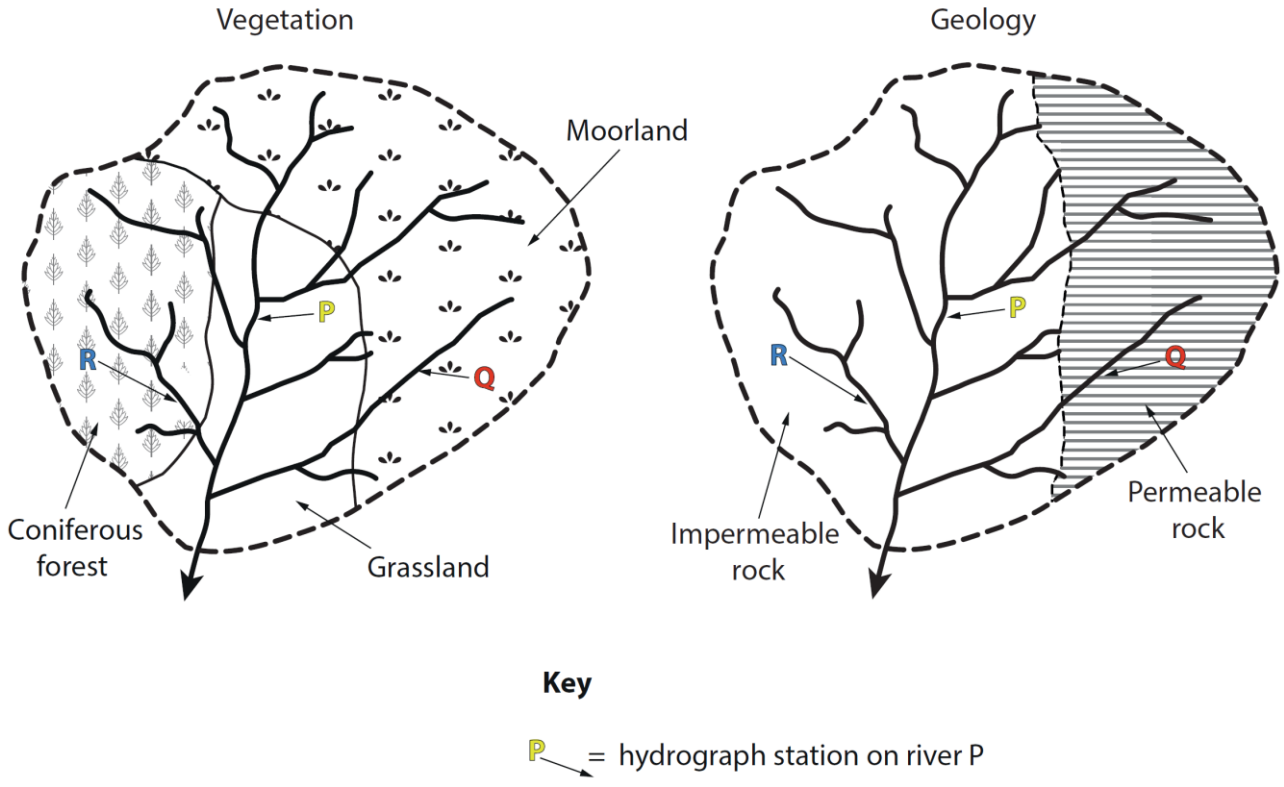
**Answer**
Award 1 mark for the following: levee.

**8. Explain the formation of a waterfall.** *(max 4 marks)*
**Answer**
Award 1 mark for initial point, and 3 further marks for the extension of this point, up to a maximum of 4 marks.
• Waterfalls occur where a band of hard rock overlies a softer rock (1). This softer rock is eroded more quickly than the harder rock (1) and, over time, this creates an overhang of hard rock (1). This overhang is unsupported so it collapses (1).
Accept any other appropriate response.

**9. Study figures below. Analyse the differences in the hydrographs for rivers P, Q and R.** *(max 4 marks)*




Hydrograph for river P, river Q and river R




Types of vegetation and geology in the drainage basin of river P, river Q and river R

**Answer**

Award 1 mark for identifying a reason and further 1 mark for an explanation of that reason up to a max of 2 marks for each explanation.

Relevant points may include the following:

• Geology figure shows that river Q is located in an area of permeable rock. Also, Hydrograph figure shows that it has a larger lag time and a low peak discharge of just over 20 cumecs.

• Geology figure shows that rivers P and R are on impermeable rock. This is supported by the steep rising limbs and shorter lag times for these rivers in Hydrograph figure.

• Geology figure shows that rivers P and R are located in areas of the same geology (impermeable rock), but the two rivers are located in areas of different vegetation.

• As river P has the ‘flashier’ hydrograph, it is concluded that in this area, geology is having a greater impact on a river’s discharge compared to types of vegetation.

## Topic 2: Economic activity and energy

**1. Identify the meaning of the term 'HEP'.** *(max 1 mark)*

A) Hydroelectric power

B) Hydro-energetic power

C) Hydroelectric pulse

D) Hydrostatic energy power

**2. Define the term 'renewable energy source'.** *(max 1 mark)*

**Answer**

A renewable energy source can be used repeatedly/replaced naturally/is infinite/never runs out.

Accept any other appropriate response.

**3. Identify the economic sector that includes activities such as web design and medical research.** *(max 1 mark)*

A) Secondary

B) Tertiary

C) Quaternary

D) Primary

**4. Study figure below. Explain one factor that could have influenced the location of the car manufacturing factory shown in figure.** *(max 1 mark)*

**Answer**

Award 0,5 mark for a basic locational factor evident from the photograph and a further 0,5 mark for extension through explanation, up to a maximum of 1 marks.

• Flat land (0,5), which is easy to build the factory on (0,5).
• Near to housing (estates) (0,5) for workers/customers (0,5).
• Near (main) road (0,5) for access/providing good transport links (0,5).
• Large area (of open space) (0,5) for further expansion (0,5).

Accept any other appropriate response.

**5. State <u>one</u> example of an economic activity in the primary sector.** *(max 1 mark)*

**Answer**

Award 1 mark for any of the following:

• forestry (1)
• farming (1)
• fishing (1)
• mining (1)
• quarrying (1).

Accept any other appropriate response.

**6. Explain <u>two</u> reasons why the number of people employed in the primary sector has fallen in some parts of the world.** *(max 4 marks)*

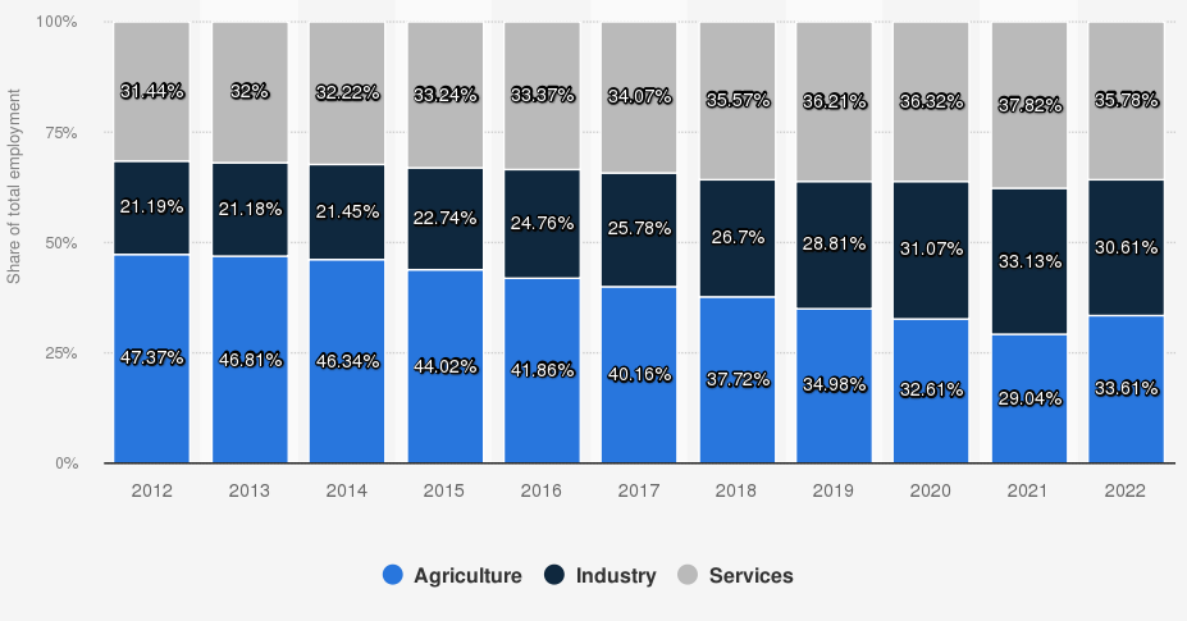
**Answer**

Award 1 mark for a point about why there has been a decline in the primary sector and a further 1 mark for a development of this point, up to maximum of 2 marks per explanation.

• A depletion of raw materials (1) due to increased demand as countries become more industrialised (1).
• Increased mechanisation so fewer workers are needed (1) due to advances in agricultural/harvesting technology (1).
• It is cheaper to import raw materials (1) because they are less accessible in the home country (1).
• Ideas linked to social change, e.g. perception that coal mining is dangerous/dirty/low-paid (1), with further detail or explanation (1).
• The rise in numbers employed in the tertiary sector (1) due to perceptions of higher pay/safer working environments (1).

Accept any other appropriate response.

**7. Study figure below. Suggest <u>one</u> reason for the changes in the tertiary and quaternary sectors.** *(max 3 marks)*




Changes in employment by economic sector in Vietnam, a developing country

**Answer**

Award 1 mark for a basic reason for an increase in the tertiary and quaternary sectors and a further 2 marks for extension through explanation or description, up to a maximum of 3 marks.

• The rise in levels of disposable incomes (1) due to people receiving higher wages/paid holidays (1), which has increased the demand for leisure services (1).

• Advances in technology have created a whole new range of products (1), which has stimulated the growth of new jobs in this industry (1), such as software designers/ICT technicians (1).

• The growth in the tertiary/quaternary sector is partially the result of a fall in the primary and secondary sectors (1) as people are developing different skills/receiving a better education (1) and they are attracted by better paid jobs in the tertiary sector (1).

• People are spending more money on services (1) because they have more leisure time/disposable income (1) as they are generally marrying later nowadays (1).

Accept any other appropriate response.

**8. For a developed country (make your own choice), explain <u>two</u> ways that energy resources are being managed in a sustainable way.** *(max 4 mark)*

**Answer**

Award 1 mark for initial explanation of a sustainable management response and an additional 1 mark for development through further explanation or exemplification. Maximum of 2 marks when no named developed country is used in context.

Different countries and examples could be chosen, based on either increasing production, switching to using 'greener' approaches, or reducing demand, e.g. with policies and incentives.

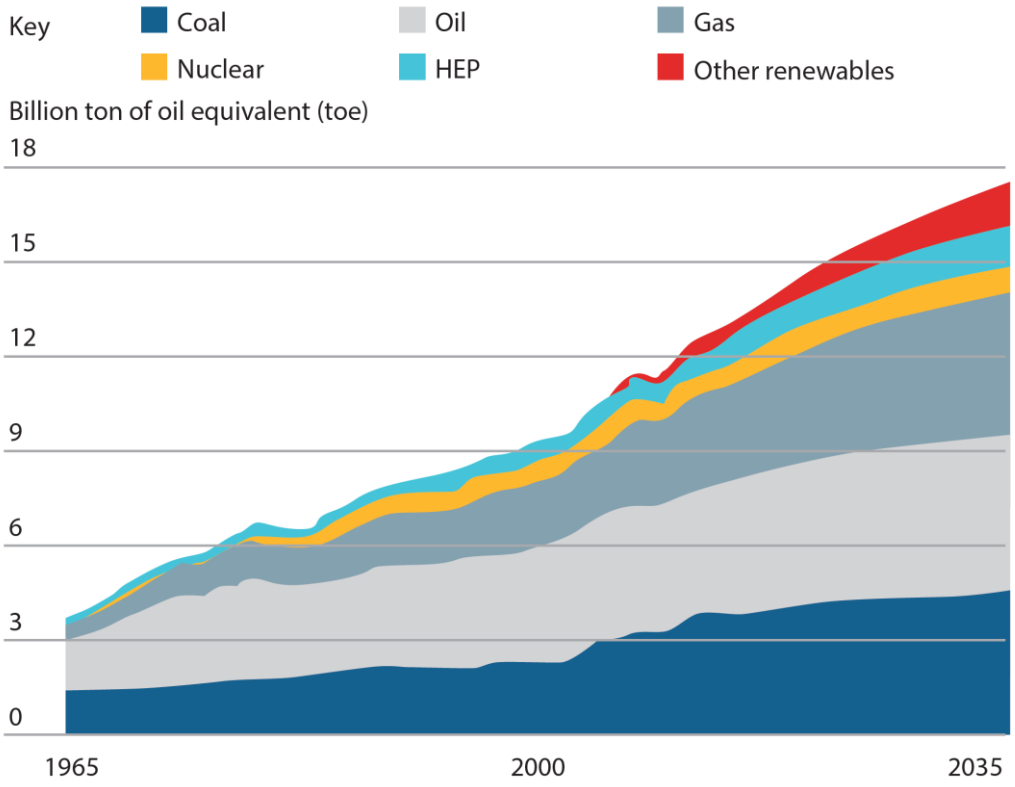
• In the UK, the government has been working with EDF to encourage more nuclear power stations, e.g. Hinkley Point (Somerset) (1). This risky project will; however, reduce the country's total carbon emissions, therefore creating greener electricity (1).

• Canada and the USA have become much more energy self-sufficient through the use of government policies to encourage HEP (1). This is a cleaner technology that does not rely on harmful fossil fuel combustion (1).

• In Spain, the government has recently encouraged all new buildings to have better insulation for hot summer temperatures (1), therefore reducing electricity demand for electric A/C in the summer (1).

Accept any other appropriate response.

**9. Study figure below. Analyse the reasons for the past and predicted changes in energy demand.** *(max 4 mark)*



**Answer**

Award 1 mark for identifying a reason and further 1 mark for an explanation of that reason up to a max of 2 marks for each explanation.

Relevant points may include the following:

• Figure shows an increase in renewables in the period 2000– 2035, meaning that governments will have to encourage more development of alternative technologies.

• Figure shows that coal consumption continues to be dominant and actually increases rapidly to around 5 billion toe by 2035. This will lead to more pressure from some agencies and groups to reduce greenhouse gases, especially in rapidly developing economies, such as India and China, where coal is a cheap source of fuel.

• In Figure, it can be seen that hydro and nuclear energy use has remained constant from the 1980s, but that gas has risen considerably due to the ease of global transport and fears over $CO_2$ emissions from fossil fuels.

• Oil remains constant and dominant throughout the 1965–2035 period, peaking at around 4 to 5 billion toe. Oil is important as an energy source for Small Island Developing States (SIDS) and for use in transport.

• Overall, there is a substantial total increase in energy demand from all sources.