

Please write clearly in	block capitals.		
Centre number		Candidate number	
Surname			
Forename(s)			
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INTERNATIONAL A-LEVEL GEOGRAPHY

UNIT 3 PHYSICAL GEOGRAPHY 2

Date of Exam Session Time allowed: 1 hour 30 minutes

Materials

For this paper you must have:

- · a ruler with millimetre measurements
- a calculator, which you are expected to use where appropriate.

Instructions

- Use black ink or black ball-point pen.
- Fill in the boxes at the top of the page.
- Answer **all** questions.
- You must answer the questions in the spaces provided.
 Do not write outside the box around each page or on blank pages.
- All working must be shown.
- Do all rough work in this book. Cross through any work you do not want to be marked.

Information

- The marks for questions are shown in brackets.
- The maximum mark for this paper is 80.
- You may use a bilingual dictionary for this exam.
- You may not use an English dictionary.

For Examiner's Use		
Question	Mark	
1		
2		
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7		
8		
TOTAL		

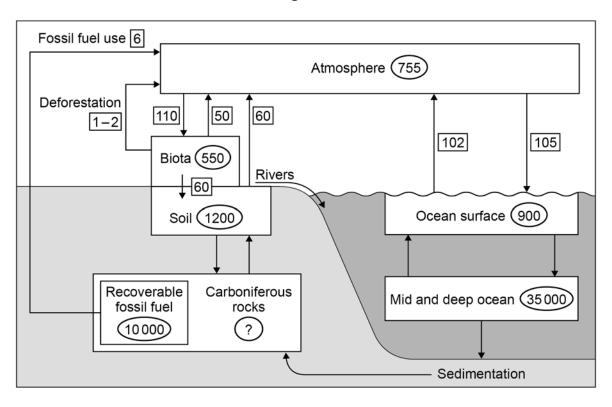
Section A – Water Carbon and Life on Earth

Answer **all** questions in the spaces provided

	Only one ar	nswer per question is allowed.	
	For each an	swer completely fill in the circle alongside the appropriate answer.	
	CORRECT METH	OD WRONG METHODS W	
	If you want	to change your answer you must cross out your original answer as sho	wn.
	If you wish t select as sh	o return to an answer previously crossed out, ring the answer you now own.	wish to
0	1 . 1	Which of these system diagrams shows a correct sequence of events the water cycle?	s within
			[1 mark]
	Α	Precipitation, infiltration, interception, channel flow, flow into sea	0
	В	Precipitation, run off, channel flow, evaporation, uptake by vegetation	0
	С	Precipitation, run off, through flow, evaporation, cloud formation	0
	D	Precipitation, surface storage, infiltration, through flow, soil water storage	0
0	1 . 2	Which of the following groups consists of human activities that are all	adding
		to the concentration of greenhouse gases in the atmosphere?	[1 mark]
	A	tracking for snale gas, formula 1 motor racing	0
	В	Burning coal in power stations, using diesel fuel in cars, intensive rearing of cattle, felling and burning rain forest	0
	С	Flying long-haul aircraft, sustainable forestry, building pipelines across permafrost, destroying coral reefs	0
	D	Intensive rice growing, line fishing for tuna, off shore wind power, poor insulation of buildings	0

0 1 . 3	Which of the following shows the four major layers of the planet that of the majority of Earth's water in solid, liquid or gaseous form?	ontain
	the majority of Earth's water in solid, liquid of gaseous form:	[1 mark]
A	Atmosphere, bathysphere, cryosphere, ionosphere	0
В	Hydrosphere, cryosphere, exosphere, troposphere	0
С	Ionosphere, exosphere, troposphere, bathysphere	0
D	Lithosphere, atmosphere, hydrosphere, cryosphere	0
0 1 . 4	Which of the following are all ways of transferring carbon within the cacycle?	arbon [1 mark]
A	Combustion, infiltration, distribution, carbon capture	0
В	Photosynthesis, combustion, respiration, decomposition	0
С	Respiration, decomposition, discrimination, transpiration	0
D	Sequestration, precipitation, carbon capture and storage, photosynthesis	0
0 1 5	A system is in a state of dynamic equilibrium when:	[1 mark]
0 1 · 5	A system is in a state of dynamic equilibrium when: All the feedback loops are producing positive changes to improve the system	-
	All the feedback loops are producing positive changes to improve	
A	All the feedback loops are producing positive changes to improve the system	0
A B	All the feedback loops are producing positive changes to improve the system It has developed to the point where nothing happens	0
A B C	All the feedback loops are producing positive changes to improve the system It has developed to the point where nothing happens It is in a state of constant and unpredictable change The system is still changing but it constantly adjusts and appears	0 0

Figure 1



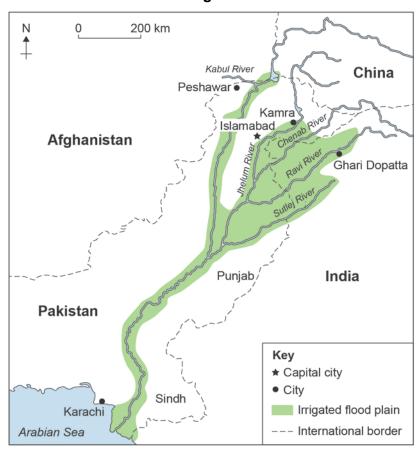
Global carbon cycle showing major stores and flows, the values shown are in billion Tons of carbon.

Study **Figure 1**, which shows transfers of carbon between the atmosphere and the Earth and oceans.

0 2	Analyse the total flows between the atmosphere and the Earth and oceans in year and calculate the net effect on atmospheric carbon.		
	[6 marks]		
	·		

Trans area for the most area than	
Turn over for the next question	

Figure 2



The 2010 flood—which affected all the provinces and regions of Pakistan —killed 1,600 people, caused damage totalling over \$10 billion, and inundated an area of about 38,600 km2 . This flood was Pakistan's most damaging on record. Sindh Province, the most downstream section of the Indus Basin, suffered the highest damage (43% of the total).

High evaporation over the Indian Ocean caused severe monsoon weather in 2010. A 24-hour rainfall on 29 July 2010, for instance, ranged from 21 mm to 280 mm at 18 stations in the Indus Basin, with an average of 128 mm. The next day, a 24-hour rainfall of 240 mm was recorded in the city of Kamra, Punjab, and 189 mm in Ghari Dopatta, Northeast Pakistan. The average rainfall for the 18 Indus Basin stations was estimated at 290 mm in July and 189 mm in August, almost double the historical levels. For the same month's river flow at some of the flood control schemes in the basin was at record levels: it severely damaged some schemes and washed away others altogether.

Analyse and explain the causes of	the flooding in the Indus basin in 2010.
	[9 marks

In tropical rain forests the year-round supply of heat and moisture leads to the rapid re-cycling of the carbon stored in the organic material of the forest vegetation. Explain the importance of this statement for the development of soils, agriculture and other human activities in one or more rain forest areas that you have studied. [20 marks]		
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agriculture and other human activities in one or more rain forest areas that you have studied.	4	rapid re-cycling of the carbon stored in the organic material of the forest
		agriculture and other human activities in one or more rain forest areas that you
		[20 marks]
		

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Section B – Ecosystems Under Stress

Answer **all** questions in the spaces provided

C	Only one ansv	wer per question is allowed.	
F	or each answ	ver completely fill in the circle alongside the appropriate answer.	
С	ORRECT METHOD	● WRONG METHODS	
lf	you want to	change your answer you must cross out your original answer as sh	own.
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0 5	5 · 1 In	an ecosystem a primary producer is:	[1 mark]
	Α	A single-cell organism that is the simplest part of the food chain	0
	В	An organism that uses photosynthesis to capture energy from the sun	0
	С	The most common species in that ecosystem	0
	D	The organism at the top of the food chain that consumes other carnivores	0
0 5	5 · 2 As	seral progression is:	[1 mark]
	Α	A classification of plants, going from simple organisms to more complex ones	0
	В	The stages that a plant community goes through before reaching its climatic climax	0
	С	The work done by scientists to improve the yield or disease resistance of rice or wheat	0
	D	When an interrupting factor stops an ecosystem reaching its plagio-climax	0

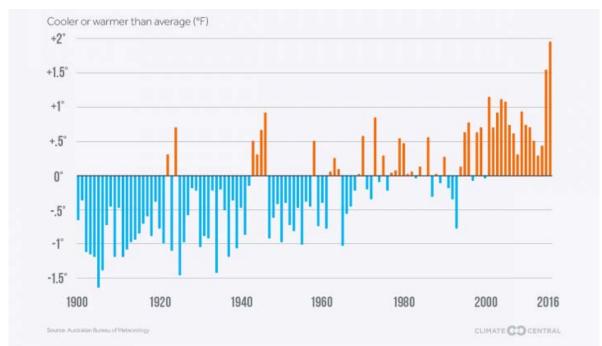
0 5 . 3	Which of the following groups are all biomes?	[1 mark]
А	Bare rock, psammosere, plagio-climax vegetation, halosere	0
В	Desert, forest, prairie grassland, ice sheet	0
С	Mediterranean vegetation, taiga (or coniferous forest), temperate deciduous forest, tundra	0
D	Sand dunes, salt marshes, semi desert scrub, coral reefs	0
0 5 . 4	The savanna grassland biome is found in areas with:	[1 mark]
А	average monthly temperatures over 25 degrees C for at least 9 months every year	0
В	hot dry summers and warm wet winters	0
С	mainly hot and dry with occasional, unpredictable, torrential rain	0
D	wet summer seasons when the sun is overhead, followed by a dry season	0
0 5 . 5	The rainforest biome is characterised by:	[1 mark]
Α	A canopy of trees, cutting out the light and stopping any plant growth beneath the canopy	0
В	A large variety of plant species, which can form several distinct layers in the forest	0
С	Deep, fertile soils because of decayed leaves being carried to greate depth in the soil	at 👝
D	Huge areas covered with just one species of tree, which is perfect adapted to the temperature and moisture	ly 🔾

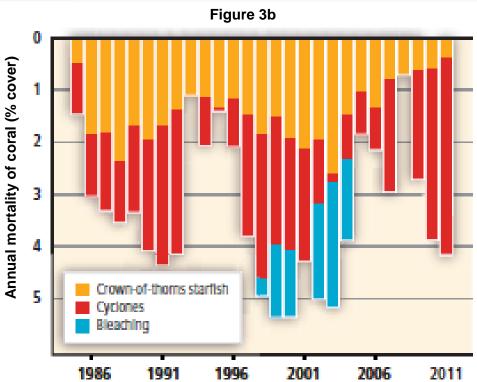
Figure 3a and Figure 3b both show data for the Great Barrier Reef, Australia.

Figure 3a shows sea surface temperatures recorded between 1900 and 2016.

Figure 3b shows annual mortality (death) of coral between 1985 and 2011 alongside the recorded cause.

Figure 3a





0 6	Analyse the data provided in Figure 3a and Figure 3b.	[6 marks]

Figure 4

SYDNEY, Australia. November 2016

Recent press reports have referred to a catastrophic loss of coral on large parts of Australia's Great Barrier Reef. It is the northern part of the reef that has been most affected as the area has been affected by a flow of warmer water coming into the area from equatorial waters. A strong El Niño effect was the main cause of this warming and the currents carrying the water southwards, adding to the more general long-term warming of the global oceans.

The warming of the water caused corals to die off at an unprecedented rate. Up to two thirds of the coral in a 430-mile stretch of the reef was destroyed, leaving the reef bleached and weakened. Fortunately the southern parts of the reef were not affected in the same way. A tropical cyclone had brought cooler water into this southern area and this had protected the coral so there had only been a 6% loss in the central areas of the reef and only a 1% loss in the south, where the reef is still a vibrant colour and seems to be in good condition.

0 7	Read the extract in Figure 4 .
	Analyse the causes and impact of changing sea conditions on the Great Barrier Reef.
	[9 marks]
	<u> </u>

	
	
0 8	'The idea of a Climatic Climax Vegetation Community is a useful concept in the study of ecology. However, climate change is now so widespread that there are probably few areas of the world where Climatic Climax communities still exist in a stable condition.'
	To what extent do you agree with this statement?
	[20 marks]

10	
END OF QUESTIONS	



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Figure 3a: Figure CR-1 (e) from Gattuso, J.-P., 0 . Hoegh-Guldberg, and H.-0. Portner, 2014: Cross-chapter box on coral reefs. In: Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Field, C.B., V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, AN. Levy, S. MacCracken, P.R. Mastrandrea, and LL White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

Figure 3b: source: Climate Central

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