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GCE MARKING SCHEME

SUMMER 2017

GEOLOGY - GL1 1211/01

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INTRODUCTION

This marking scheme was used by WJEC for the 2017 examination. It was finalised after detailed discussion at examiners' conferences by all the examiners involved in the assessment. The conference was held shortly after the paper was taken so that reference could be made to the full range of candidates' responses, with photocopied scripts forming the basis of discussion. The aim of the conference was to ensure that the marking scheme was interpreted and applied in the same way by all examiners.

It is hoped that this information will be of assistance to centres but it is recognised at the same time that, without the benefit of participation in the examiners' conference, teachers may have different views on certain matters of detail or interpretation.

WJEC regrets that it cannot enter into any discussion or correspondence about this marking scheme.

GCE GEOLOGY - GL1

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1.	(a)	(i)	A Ocean trench (1) B Volcanic island arc (1)	2
		(ii)	Increase in depth from Y to X or East to West or towards Fiji (1) ma Appropriate use of numbers e.g.10 km – 680 km (1)	x 2
			Dip in a line at 45 degrees to the west (1)	
			Mainly confined to oceanic lithosphere of Pacific plate/subducting plate (1)	
			Shallow focus cluster near A (1)	
			Very few in the asthenosphere (1)	
		(iii)	Reference to subduction/Benioff zone (1)	2
			Reference to friction/tension/tectonic stresses (1)	
	(b)	(i)	Lower values at ocean trench/higher values at Tongan Islands (1)	3
			Low values-subduction of cold lithosphere/reduces temp (1)	
			High values as magma /volcanoes/partial melting at depth (1)	
		(ii)	Spreading from oceanic ridges to east/west (1)	2
			Ridge push or equivalent (1)	
			or	
			Slab pull/drag or equivalent e.g. ref to gravity (1)	
			of denser Pacific plate (1)	
			or	
			Thermal convection in the mantle (1)	
			Descending limbs of mantle convection (1)	
		(iii)	Pacific Plate is colder (1) and denser (1) than Ind-Aus Plate ma	x 2
			or	
			Ind-Aus Plate is hotter/warmer (1) and less dense (1) than Pacific Plate	
			No reference to heat/heatflow then max 1	

		(iv)	Pacific Plate is subducted (1) Water released from upper part of subducted Pacific Plate (1) Causes partial melting of the mantle/base of Ind-Aus Plate(1) Produces magma with a higher silica content/viscosity (1) Credit evolution of magma to become more silicic (1) Assimilation of mantle/oceanic lithosphere for silica increase	max 3 (R) = 0 Total 16
2.	(a)	Modal Fewer Bars a	grain size is ¼ to ½ mm and up to 60% (1) than 5 bars on the graph (1) add up to 100% (1)	3
	(b)	(i)	Quartz (1)	1
		(ii)	Clastic/detrital/fragmental/granular (1) Any reference to poorly sorted (quite, very) (1) zero for well so Reference to particle size range less than 1/16mm to 1.0mm Overall medium grained/arenaceous (1) Reference to a range of grain shape including some reference angular/subangular to rounded/subrounded (1) Reference to mix of clast support/matrix support (1) Texturally immature (1)	max 3 orted (1) e to
		(iii)	Feldspar more angular due to having 2 cleavages (1) Quartz more rounded as it has no cleavage (1)	2
		(iv)	Arkose (1)	1
		(v)	Size appropriate for fluvial – arenaceous/sandstones (1) Shape: quartz particles sub-rounded due to fluvial abrasion/at Poor sorting indicates short transport distance/rapid depositio High feldspar content indicates short transport distance/rapid deposition (1)	max 3 trition (1) n (1)

- 3.
- (i)

(a)

- Marine (1) max 2 + 1R
 Shallow (1)
 Tropical/sub-tropical/warm (1))
 Normal salinity (1)
 Well oxygenated (1)
 Sediment free or clear water (1)
 Reference to uniformitarianism or implied (1) (R)
- (iii) S or Graptolites evolved rapidly /(L) corals did not (1) max 3 Reference to changes in graptolite morphology (1) Reference to graptolites having a shorter time range than corals (1) Graptolites planktonic/corals attached to sea bed (1) Graptolites facies free/corals facies restricted (1) Graptolites have worldwide distribution/corals restricted to tropics/subtropics (1) Max 2 if only refer to characteristics of graptolites Must contrast with corals for 3 marks
- (b) (i) Volume/area/zone of older/country/sedimentary rocks (1) 2
 That have undergone recrystallization/contact metamorphism/affected by heat from an igneous body(1)
 - (ii) Locality F or G (1)In shale (1)Near edge of aureole (so low grade) (1)

If F chosen then Max 2, If E chosen then can credit "near edge of the aureole"

(c) Crystalline texture/interlocking (1) 3
 Crystals roughly equal in size (1)
 Crystal sizes 1.0 – 1.5 mm (3-5 crystals across the circle on the diameter (1)
 Total 16

2

3

4.	(a)	(i)	Angle of dip 30 – 40 degrees (1)			
			Direction of dip West (1)			
		(ii)	Unconformity (1)	1		
		(iii)	Any location in the lower limb of the fold (1)	1		
		(iv)	Reference to desiccation cracks (1)	2		
			Reference to baked margin (1)			
	(b)	(i)	Appropriate line drawn through the shale core bed (1)	1		
		(ii)	Anticline (1)	3		
			North-South (1)			
			Insufficient information (1)			
	(c)	Lava flow (1) 2				
		Has o	only one baked margin (1)			
		Dyke	or sill scores 0			
	(d)	Yes, fault is older than breccia as fault stops at breccia (does not cut it) (1) 3				
		Yes,	fault formed by compressional forces as reverse fault (hanging wall ha	as		
		gone	up) (1)			
		No, n	ot a normal fault as this would have been formed by extension/hangin	g		
		wall c	downthrown/it is a reverse fault (1)			
		Max	1 if all three evaluations correct but no explanations			

Total 15

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