GCSE MARKING SCHEME

SUMMER 2012

GEOLOGY

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2012					
Section		Question	Answer	Mark	**Total**
1		1	the apparent dip direction is west	1	
			dip angle is less than 45°	1	
			downthrow side is on the east	1	
		2	thrust	1	
		3	compression	1	
		4	garnet	1	
		5	foliated	1	
			crystalline	1	
		6	schist	1	
		7	oldest rock on the upthrow side of the fault (1)		
			metamorphosed before the unmetamorphosed sediments deposited (2)		
			rocks on top folded before non-folded rocks formed (2)	3	**12**
2		8	raised beach	1	
		9	submerged forest	1	
		10	**Figure 4**		
			trees/peat formed on land		
			submerged forest/peat/soil now on beach		
			eustatic sea level rise		
			fall in sea level in the past		
			Figure 3		
			pebbles/shells/cliff formed at sea level		
			pebbles/shells/cliff now above sea level		
			sea level higher in the past		
			sea level gone down or isostatic rise of land	3	
		11	increasing	1	
		12	volcanic gases		
			burning of coal and oil	2	
		13	increase in CO_2		
			leading to increase in temperature of atmosphere		
			melting of ice sheets		
			sea level increases or expansion of sea water	4	**12**
3		1	movement of the San Andreas fault/grinding of plates	1	
		2	reference to size of earthquake measured on Richter scale - from article (2)		
			Mercalli scale with reference to building damage (2)		
			seismometer plus description of how it is measured (2)	2	
		3	B divergent		
			C convergent destructive ocean-continent		
			D conservative	3	
		4	correct direction of arrows	1	
		5	subduction of the ocean plate		
			under the continental plate		
			friction between plates/stick-release	3	
		6	vulcanicity and shallow focus earthquakes		
			high heat flow	2	
		7	andesite	1	
			basalt	1	
			granite	1	
			slate	1	**16**
4		8	the rate of drift was more rapid between 450Ma and 250Ma		
			the rate of drift slowed during the Mesozoic and Tertiary	2	
		9	Carboniferous	1	
		10	mass extinction	1	
		11	radial symmetry		
			many individuals in a colony	2	
		12	uniformitarianism	1	
		13	warm	1	
			normal	1	
			shallow	1	
			tropical and semitropical	1	
		14	plant fossils		
			high in carbon		
			equatorial/warm		
			anaerobic to prevent decay		
			subsidence		
			swamp/peat		
			terrestrial		
			river flood plain		
			deltaic any 4 points	4	**15**

5		1	syncline	1	
		2	access to the Marl on land		
			structure takes the tunnel deeper under the sea in the middle	2	
		3	soft rock		
			impermeable	2	
		4	seismic easier over the sea		
			seismic investigates structure		
			boreholes expensive over the sea/cheaper on land		
			boreholes needed to sample rock types any 3 points	3	
		5	constant thickness of the Marl	1	
		6	pollution of aquifers		
			methane production	2	
		7	impermeable (1) liner of the quarry floor (1)		
			to prevent leakage of leachate (1)		
			or impermeable (1) cover (1) to prevent water entry (1)	3	
		8	testing for potentially polluted water	1	**15**
6		9	random crystal orientation	1	
		10	coarse crystals formed by slow cooling at depth		
			fine crystals formed by rapid cooling near the surface		
			coarse and fine crystals formed from a melt	3	
		11	columnar jointing	1	
		12	cooling magma		
			shrinkage		
			forms joints/vertical/hexagonal		
			insulated in the centre any 2 points	2	
		13	parallel to the bedding		
			sill	2	
		14	**E** ripple marks		
			F cross bedding	2	
		15	north to south	1	
		16	faulting *youngest*		
			deposition of breccia and sandstone		
			uplift, tilting and erosion		
			intrusion of igneous body		
			deposition of limestone		
			deposition of shale *oldest*		
			all correct (3) 5 or 4 correct (2) 2 or 3 correct (1)	3	**15**
7		1	u shaped	1	
		2	ice	1	
		3	abrasion	1	
		4	physical	1	
		5	water penetrates joints		
			freezes		
			expands		
			forces joints apart		
			thaws and water penetrates further		
			repeated		
			block fall-off		
			freeze-thaw any 3 points	3	
		6	medium-grained		
			poorly sorted		
			fragmental	3	
		7	granite	1	
		8	quartz resistant to chemical weathering		
			resistant to erosion		
			hard		
			no cleavage		
			quartz present in G any 2 points	2	
		9	feldspar affected by chemical weathering		
			hydrolysis		
			altered to clay minerals		
			softer than quartz		
			two cleavages any 2 points	2	**15**