



GCSE MARKING SCHEME

GEOLOGY

SUMMER 2015

INTRODUCTION

The marking schemes which follow were those used by WJEC for the Summer 2015 examination in GCSE GEOLOGY. They were finalised after detailed discussion at examiners' conferences by all the examiners involved in the assessment. The conferences were held shortly after the papers were 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 conferences was to ensure that the marking schemes were 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' conferences, teachers may have different views on certain matters of detail or interpretation.

WJEC regrets that it cannot enter into any discussion or correspondence about these marking schemes.

GCSE Geology – On-screen Examination SUMMER 2015

Section	Question	Answer	Mark	Total
1	1	meandering river channel (1) flat flood plain (1)	2	
	2	wearing down of a river bed by the impact of sediment being carried in the water – abrasion (1) angular fragments at the foot of a steep slope – scree (1) wearing down of grains due to collision with other grains carried by the wind – attrition (1) grains bouncing along a river bed – saltation (1)	4	
	3	chemical weathering (1) percolating carbonic acid/CO ₂ dissolved in rain water (1) soil acid (1) enters joint (1) permeability (1) reaction with/dissolves calcite (1) removal of bicarbonate in solution (1) carbonation (1) formula (1)	3	9
2	1	angle of dip is the maximum angle of dip of a bedding plane from the vertical (1) if the direction of dip of a bed is NE then the strike is NE–SW (1)	2	
	2	the axial plane trace has a NW–SE trend (1) the fold is a syncline (1)	2	
	3	dyke	1	
	4	F2 rock A F1 award (1) for one in correct position	2	
	5	cross cutting relationships	1	
	6	faults B and C are both normal faults	1	
	7	the downthrow side is to the south (1) the amount of displacement along the fault is less than fault B (1)	2	
	8	← →	1	
	9	weathered upper surface (1) vesicles towards the top of the flow (1) no baked margin above (1)	2	
	10	the rock is basalt (1) the crystal size is fine (1)	2	
	11	related to rate of cooling/depth (1) – may be implied slow cooling coarse crystals (1) rapid cooling fine crystals (1)	3	19

Section	Question	Answer	Mark	Total
3	1	coarse grained fragments (1)	2	
		rounded to subrounded fragments (1)		
	2	conglomerate	1	
	3	ripple marks	1	
	4	high energy conglomerate – coarse grain size (1) and rounded pebbles (1) drop in energy in conglomerate leading to deposition (poorly sorted conglomerate) (1) storm beach/river channel (1) ripple marks lower energy (1) ripple marks suggest current (1) intertidal/river meander (1) has to mention change in energy for full marks	4	
	5	G trilobite H coral	2	
	6	limestone	1	
	7	marine coral (1) and trilobite (1) limestone shallow/warm (1) shallow tropical marine (coral) (2) high energy-broken fossils (1) coral high energy (1) coral well oxygenated (1)	3	
8	3	1	15	
4	1	opening of north Atlantic – Cenozoic (1)	2	
		Caledonian orogeny – Lower Palaeozoic (1)		
	2	extrusion of flood basalts	1	
	3	foliated (aligned) (1) plane of weakness (1) plane of weakness along mica/mica cleavage direction (2)	2	
	4	recrystallisation of minerals (1) regional metamorphism (1)	2	
5	agriculture (1) – backfilling (1) landscaping (1) top soil, re-seeding (1) landfill (1) – permeability (1) pollution of water table (1) lining (1) methane (1) cover (1) reservoir (1) – permeability e.g. cleavage (1) lining (1) credit other possible uses	3	10	

Section	Question	Answer	Mark	Total
5	1	divergent (constructive)	1	
	2	20 cm per year (2) award (1) for correct step in method shown	2	
	3	basalt pillow lavas (1) high heat flow (1)	2	
	4	rift valley	1	
	5	intrusion of magma (1) alignment of minerals on cooling (1) periodic polar reversals (1) normal magnetic polarity at present day (1) reversed magnetic polarity when poles have been reversed (1) stripes move away from the ridge crest due to sea floor spreading (1) symmetrical stripes show even spreading on each side (1) stripes of different widths show varying times of polar reversals (1) QWC	4	
	6		1	
	7	the maximum height of the waves at station T is almost 2 metres	1	
	8	waves smaller in ocean higher speed (1) wave height increases in shallow water (1) wave velocity decreases (1) wave can be restricted by narrow coastline and wave height increases (1)	3	
	9	suitable geological sites for disposing of radioactive waste are difficult to find (1) leakage of radioactive material (1)	2	
	10	warning/evacuation/education engineering along coastline e.g. high walls building design resistant to earthquakes/houses on stilts monitoring e.g. seismometers/buoys reconsider location two methods with some detail given × 2	4	21

Section	Question	Answer	Mark	Total
6	1	<i>Archaeopteryx</i> is evidence for the theory of evolution	1	
	2	low energy (1) fine sediment (1) lack of predators (1) anaerobic conditions (1) rapid burial (1) any two points	2	
	3	reptile, fish and amphibian families were reduced in numbers – Permo-Triassic boundary (1) bird and mammal families expanded rapidly but reptiles declined – K/T boundary (1) first amphibians appeared but declined at the end of the period – Devonian (1)	3	
	4	dinosaur tracks have been found in Tertiary sandstones (1) trace fossils are preserved in high energy conditions because low energy conditions would destroy them (1)	2	
	5	4 cm below the clay layer the abundance of iridium is virtually zero	1	
	6	there was a sudden addition of extra-terrestrial material (1) eruption of magma from a source deep in the mantle (1)	2	
	7	meteorite impact (1) sends material into atmosphere (1) water vapour and dust cut out sunlight cooling atmosphere (1) CO ₂ warms atmosphere long term (1) causes tsunamis (1) climate affected (1) vegetation affected (1) affects food chain (1) any three points	3	
	8	deltaic environment (1) swamp environment (1)	2	
	9	plant fossils tropical (1) Britain not tropical before or after (1) Britain moved north (1) any two points	2	18

Section	Question	Answer	Mark	Total
7	1	the area is volcanic so groundwater has a high temperature	1	
	2	it is a renewable source of energy	1	
	3	the rock beneath the dam is faulted	1	
	4	a steep angle of dip makes landslides more likely (1) landslides into the reservoir are more likely at X (1)	2	
	5	selection of valid feature(s) with no explanation (1) limestone is jointed – increases permeability (1) leakage along bedding planes (1) bedding dips under the dam (1) leakage along fault/fault plane (1) permeable sandstones interbedded with shale (1) any three points	3	8
		Paper Total		100



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