Natural Sciences · Grade 7

Memorandum · Term 3–4

TOTAL
63
MARKS

Marking guidelines

1. Award the full mark for a correct answer, even if the learner words it differently.
2. Accept any scientifically correct answer, including one not given in the memorandum.
3. Where a question asks for two or more items, award one mark per correct item.
4. For diagrams, award the mark if the label points at the correct part, even with a spelling error.
5. Do not deduct marks for spelling unless the word takes on a different scientific meaning.

Question	Answer	Marks	Marking note
QUESTION 1 · Multiple choice · 6 marks			
1.1	b. water falling over a waterfall	**1**	
1.2	a. sound	**1**	
1.3	c. an electric fan	**1**	
1.4	b. a larger area	**1**	
1.5	a. Kepler	**1**	
1.6	b. the Earth's rotation on its axis	**1**	
QUESTION 2 · Column A and B · 5 marks			
2.1	1 = D; 2 = E; 3 = B; 4 = C; 5 = A	**5**	*1 mark each. F is left over.*
QUESTION 3 · Terminology · 7 marks			
3.1	Hydro-electric power (also accept: hydropower); Dynamo; National grid (also accept: national electricity grid / power grid); Equator; Spring tides; Intensity (of solar energy); Newton	**7**	*1 mark each.*
QUESTION 4 · Case study · 18 marks			
4.1	Independent: the material of the container (1). Dependent: the temperature of the water after 30 minutes (also accept: how much the water cooled) (1).	**2**	*1 mark each.*

Question	Answer	Marks	Marking note
4.2	Any three: the size and kind of tin; the amount of water (200 ml); the starting temperature (80 °C); the time (30 minutes); the place where the tins stood.	**3**	*1 mark each.*
4.3	Polystyrene (styrofoam) → newspaper → plastic → glass	**2**	*2 marks = all four in order; 1 mark = one pair swapped; 0 = more errors.*
4.4	As a control, to compare with: it shows how much the water cools without any insulating material (1).	**1**	*1 mark.*
4.5	Conduction: through the metal of the tin, from the water to its outside surface (1). Convection: warm air around the tin (and above the water) rises and cooler air takes its place (1). Radiation: the warm tin gives off heat in all directions (1).	**3**	*1 mark per method with a sensible place.*
4.6	Polystyrene (styrofoam) (1); the water in it lost the least heat and stayed the hottest (71 °C), so it slows down heat transfer the most (1).	**2**	*1 mark for the material, 1 mark for the reason from the results.*
4.7	The food only needs to be heated on the stove for a short time (1); then the stove is switched off and the food keeps cooking with its own heat inside the box, so less electricity is used (1).	**2**	*1 mark per point.*
4.8	Thick mud walls and thatch are poor conductors of heat (good insulators) (1); in summer they slow down heat coming in from the hot sun (heat gain) (1); in winter they slow down heat escaping from inside the house (heat loss) (1).	**3**	*1 mark per point.*
QUESTION 5 · Diagrams and data · 14 marks			
5.1	a. Summer (1). b. In December the southern hemisphere is tilted towards the Sun (1), so the Sun stays above the horizon for longer each day (a bigger part of the southern hemisphere is in sunlight) (1).	**3**	*Give 1 mark only for 'because of the tilt of the Earth's axis' without the direction.*
5.2	1 mark: the Sun on one side, with rays drawn to the Earth. 1 mark: the axis drawn through the Earth and tilted (not vertical). 1 mark: the South Pole end of the axis (southern hemisphere) leans TOWARDS the Sun, and the South Pole or southern hemisphere is labelled.	**3**	*1 mark each.*

Question	Answer	Marks	Marking note
5.3	B = high tide (1); C = low tide (1). The Moon's gravity pulls the water towards it (1), so the water piles up on the side facing the Moon (1).	**4**	*1 mark for B, 1 mark for C, 2 marks for the explanation.*
5.4	Light energy (also accept: solar / radiant energy); Potential energy (also accept: chemical potential / chemical energy); Kinetic energy (also accept: movement energy); Heat energy (also accept: thermal energy; sound)	**4**	*1 mark each.*
QUESTION 6 · Longer questions · 13 marks			
6.1	a. Potential energy (1). b. Kinetic (movement) energy (1). c. No: energy cannot be created or destroyed (law of conservation of energy); it was changed into heat and sound and passed to the surroundings (1).	**3**	*The mark for c needs 'no' with the reason.*
6.2	Box 1: the Sun's energy (sunlight) (1) → Box 2: plants absorb sunlight and use it to make food, so the energy is stored in the plants (1) → Box 3: the plants die and are buried under layers of mud and soil; more layers press down on them (pressure) (1) → Box 4: over millions of years the pressure changes the remains into coal, which stores the Sun's energy (1).	**4**	*Accept equivalent wording. No mark for a box in the wrong order.*
6.3	a. The Moon has much less mass than the Earth (1), so its pull of gravity on the astronaut is weaker (1). b. The mass of the objects (1); the distance between them (1).	**4**	*1 mark per point.*
6.4	a. From one full moon to the next full moon (1). b. Any one: to know when to plant (or harvest) crops; to find direction; to fix special or holy days; in stories passed on to the next generation (1).	**2**	*1 mark each.*

Total **63 marks**



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