Natural Sciences and Technology · Grade 6

Memorandum · Term 3

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 · 3 marks			
1.1	c. Rubber	**1**	
1.2	a. Burning coal	**1**	
1.3	b. A kettle	**1**	
QUESTION 2 · Matching · 4 marks			
2.1	1 = B (conductor); 2 = D (insulator); 3 = E (switch); 4 = A (renewable)	**4**	*1 mark each.*
QUESTION 3 · Short questions · 6 marks			
3.1	Copper wire = conductor; Glass = insulator; Aluminium foil = conductor; Plastic = insulator	**4**	*1 mark each.*
3.2	Any two: plastic covering on electrical wires and cords; rubber gloves (and boots) of electricians; glass or ceramic insulators that hold power lines on pylons; plastic plugs and switches.	**2**	*1 mark each.*
QUESTION 4 · Electric circuits · 10 marks			
4.1	A = cell (battery); B = light bulb; C = switch	**3**	*1 mark each.*
4.2	Copper wire = Yes; Rubber band = No; Coin = Yes	**3**	*1 mark each.*

Question	Answer	Marks	Marking note
4.3	No (1). An open switch breaks the circuit, so there is no complete path and no electricity flows (1).	**2**	
4.4	Electricity needs a complete path from the cell, through the bulb and back to the cell (1). With one wire the circuit is not complete (it is broken), so no electricity flows (1).	**2**	
QUESTION 5 · Energy generation · 8 marks			
5.1	Coal = non-renewable; Wind = renewable; Oil (petrol and diesel) = non-renewable; Sunlight = renewable	**4**	*1 mark each.*
5.2	Advantages: wind never runs out; it does not pollute the air; lower running costs; no mining needed. Disadvantages: it only works when the wind blows; the turbines are expensive to put up; they make a noise; they can injure birds; they take up a lot of land.	**4**	*1 mark per advantage and per disadvantage.*
QUESTION 6 · Circuits that solve problems · 6 marks			
6.1	Street light = light; Burglar alarm = sound; Gate motor = movement	**3**	*1 mark each.*
6.2	a. The loop touching the bent wire: it closes the circuit (1). b. Metal is a conductor; plastic is an insulator, so the circuit would not close when they touch (1). c. A cell (battery) (1).	**3**	*1 mark each. Accept both 'insulator' and 'non-conductor'.*
QUESTION 7 · Technology: making a switch · 8 marks			
7.1	Drawing pins = conductor; Paper clip = conductor; Cardboard = insulator; Plastic covering = insulator	**4**	*1 mark each. Accept 'non-conductor' for insulator.*
7.2	When the paper clip touches both drawing pins, the circuit is closed (complete) and the bulb lights (1). When the clip is swung away, there is a gap, the circuit is open (broken) and the bulb goes off (1).	**2**	
7.3	Any two: the bulb lights when the switch is closed; the bulb goes off when the switch is open; the paper clip stays in place and makes good contact; it is easy to use; it is strong and does not break or bend.	**2**	*1 mark each.*

Question	Answer	Marks	Marking note
QUESTION 8 · Technology: design a circuit system · 10 marks			
8.1	Light, from the bulb (1); sound, from the buzzer (1).	**2**	
8.2	Any three: it must give light; it must make a sound; it must switch on and off; the light must be at the top; it must stand upright and steady; it may use only the listed materials; it must be safe.	**3**	*1 mark each.*
8.3	The one battery must power both the bulb and the buzzer (1), so the light may be dimmer, the sound softer, or the battery may go flat sooner; you may need a switch to use them only when needed (1).	**2**	*Accept any reasoned answer.*
8.4	1 mark for a clear sketch of a tall tower with the bulb at the top. 2 marks for labels: four parts correctly labelled = 2; two or three = 1.	**3**	*A circuit diagram is not required (do not penalise one).*
QUESTION 9 · Mains electricity and safety · 8 marks			
9.1	Any two: the wires are often bare or badly joined, so people (especially children) can get a shock or be killed; the wires often lie on the ground or in water; they can start fires; they overload the system and cause power failures.	**2**	*1 mark each.*
9.2	Any three: the family pays less; less coal is burnt in the power stations; coal is non-renewable and will run out; less air pollution; power stations can supply enough for everyone.	**3**	*1 mark each.*
9.3	Switch off lights in empty rooms; use energy-saving globes; boil only as much water as you need; wash clothes in cold water; use a geyser blanket; unplug chargers when they are done.	**3**	*1 mark each.*

Total **63 marks**



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