

Energy Sources and the trends in their Uses 3 MS

QUESTION 1

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)i)	an unreliable energy source		1
a)ii)	a renewable energy source		1
b)	plant / grow (at least) one new tree		1
c)	greater than 4%		1
Total marks			4

QUESTION 2

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)i)	replaced faster than it is used	accept replaced as quick as it is used accept it will never run out do not accept can be used again	1
a)ii)	any two from: <ul style="list-style-type: none"> • wind • waves • tides • fall of water • biofuel • geothermal 	two sources required for the mark do not accept water / oceans accept hydroelectric accept a named biofuel eg wood	1
b)i)	any two from: <ul style="list-style-type: none"> • increases from 20° to 30° • reaches maximum value at 30° • then decreases from 30° • same pattern for each month 	accept peaks at 30° for both marks accept goes up then down for 1 mark ignore it's always the lowest at 50°	2
b)ii)	648	an answer of 129.6 gains 2 marks allow 1 mark for using 720 value only from table allow 2 marks for answers 639, 612, 576, 618(.75)	3

		allow 1 mark for answers 127.8, 122.4, 115.2, 123.75	
Total marks			7

QUESTION 3

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)i)	77		1
a)ii)	Oil		1
b)	water	accept H ₂ O	1
c)	Carbon dioxide causes global warming		1
Total marks			4

QUESTION 4

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)i)	changing the distance may / will affect / change the voltmeter reading	accept so only one independent variable accept distance affects speed of wind (turbine) accept it is a control variable accept to give valid results fair test is insufficient to make the results accurate is insufficient	1
a)ii)	any sensible practical suggestions, eg <ul style="list-style-type: none"> so fan reaches a steady / full speed so wind (turbine) reaches a steady / full speed so voltmeter reaches / gives a steady reading 	accept power for speed accept accurate or valid reading a correct reading is insufficient do not accept precise reading	1
a)iii)	as the number of blades increases so does the (voltmeter) reading / output / voltage further relevant detail, eg <ul style="list-style-type: none"> voltmeter increase is greatest up to 3 blades voltmeter reading hardly changes with 4, 5 or 6 blades increase is directly proportional up to 3 blades it reaches a limit	number of blades affects the reading / output is insufficient accept does not change between 4 and 6 blades accept does not change after 4 / 5 blades	1 1

	<ul style="list-style-type: none"> a numerical example giving two pairs of numbers, eg 2 blades = 0.6V, 4 blades = 1V 		
Total marks			4

QUESTION 5

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
	hydroelectric 3 nuclear 2 wind 1 tidal 4		
Total marks			4

QUESTION 6

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	coal		1
b)	fossil fuels can be used to generate electricity at any time a few large power stations can generate the electricity for a million homes	if more than 2 boxes ticked, mark incorrect boxes first	1 1
c)i)	no fuel is burnt	accept a named fuel accept nothing is burnt accept does not use (fossil) fuel	1
c)ii)	kinetic		1
c)iii)	any two from: <ul style="list-style-type: none"> cause noise pollution cause visual pollution need concrete for bases new roads / infrastructure needed may interfere with TV / radio / mobile phone signals dangerous to birds •do not generate all of the time •need a lot of generators •high initial / capital costs •reduces house prices	accept generates only when the wind blows do not accept 'generate when the wind blows' do not accept 'take up a lot of space / land'	2
Total marks			7

QUESTION 7

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	gas oil		1 1
b)	(both) use steam to drive a turbine	accept (both) use turbines to drive generators do not accept both have a turbine /generator / use steam must describe a step in the process accept heat / thermal energy transformed to kinetic / electrical energy	
c)	140 (°C)	Correct answer only allow 1 mark for method clearly shown on graph accept a cross or other indication at correct position on the line accept correct description accept even if numerical answer is incorrect	2
d)	any one from: ☒ very large energy source / reserves ☒ no polluting / harmful gases produced ☒ reduces carbon emissions ☒ no fuel needed ☒ energy is free ☒ can generate energy for a long time ☒ renewable (energy source) ☒ fossil fuels are running out	do not accept answers purely in terms of disadvantages of other methods except for fossil fuels are running out accept named gas CO ₂ SO ₂ NO _x accept reduces harmful carbon emissions accept does not contribute to global warming accept energy available for a long time accept it saves fossil fuels / non-renewable accept reduces the amount of fossil fuels being burnt accept a named fossil fuel Better for the environment / environmentally friendly	1

		insufficient it is cheaper is insufficient	
Total marks			5