

SECONDARY SCHOOLS ANNUAL EXAMINATIONS 2009

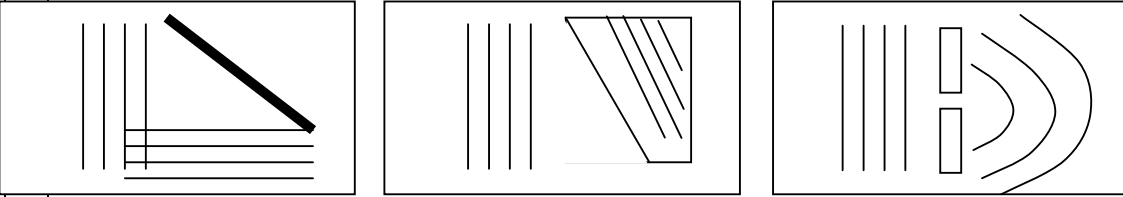
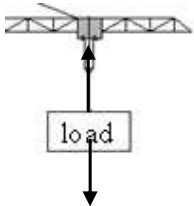
Directorate for Quality and Standards in Education
Educational Assessment Unit



FORM 3

PHYSICS

MARKING SCHEME

SECTION A - 40 marks					
			<i>Answer</i>	<i>Marks</i>	<i>Additional Guidelines</i>
1	a		Force - N; Energy - J; Pressure - Pa; Frequency - Hz; Mass - kg	1,1,1,1,1	
	b	i	Length	1	Breath or height
		ii	force meter / spring balance	1	
		iii	3500 J	1	
2		i	28cm ³	1	
		ii	52cm ³	1	
		iii	24cm ³	1	
		iv	D = M / V = 214 / 24 = 8.9 g/cm ³	1 1	Accept 8.9
		v	copper	1	
		vi	same rings of same material have the same density	1 1	
3	a	i	to create a vacuum	1	
		ii	outside air creates a force / pressure on the metal ball	1	
	b	i	P = ρ h g = 1000 x 1.3 x 10 = 13000 Pa or N/m ²	1 1	This mark is for correct units
		ii	atmospheric pressure	1	
		iii	13,000 + 101,000 = 114,000 Pa or N/m ²	1	
		iv	increases pressure is directly proportional to depth	1 1	as P increase with depth
4		i	universe, galaxy, solar system	1	
		ii	365 days	1	accept also 364 ¼ days
		iii	Jupiter is further away from the sun than the earth / larger orbit of Jupiter	1	
		iv	sun is the largest / has largest mass / has largest gravitational pull	1	
		v	moon	1	
		vi	any two suitable uses such as monitoring, communications, etc.	1,1	
		vii	gravitational force	1	

5	a	Ripple tank	1		
	b	i	lamp is to be drawn above water	1	
		ii	correct label	1	
		iii	X is under the ripple tank, close to the ground	1	
	c	the wooden rod moves up and down by means of motor	1		
	d				
			1,1,1		
SECTION B - 45 marks					
6	a	created destroyed	1 1		
	b	i	correct scale correct axes correct points marked straight line passing through all points correct size of graph (takes up most of the page)	1 1 1 1 1	
		ii	1250 ± 50 J 3.5 ± 0.1 m	1 1	
	c	i	P.E. = m g h = 50 x 10 x 3.2 = 1600 J	1	
		ii	PE = KE = 1600 J	1	
		iii	P.E. = K.E. 1600 = ½ mv ² 1600 = ½ x 50 x v ² v = 8 m/s	1 1	
		iv	PE and KE energies change into energy against friction and sound	1,1	
				accept 1600	
				accept heat energy	
7	a	i		1 1	upward force drawn from load downward force drawn from load
		ii	tension weight	1 1	
		iii	W = F x s = 30,000 x 15 = 450,000 J	1,1	1 mark for correct value & 1 mark for unit
		iv	P = work done / time taken = 450,000 / 60 = 7500 J/s or W	1,1	

	v	to balance moments on each side	1	
b	i	longitudinal wave	1	
	ii		1	
	iii	repeated readings of time	1	
	iv		1	
	v	speed = distance / time speed = 200 / 0.60 speed = 333 m/s	1 1	
8	a	i	renewable	1
		ii	True False True True	1 1 1 1
		iii	batteries store energy during the day. Batteries are used during the night	1
		iv	solar energy → stored energy → kinetic energy	1,1
	b	i	renewable	1
		ii	Adv - clean source of energy / source is free Disadv - power output is low / wind might not be always strong enough to turn turbines / high costs involved in setting up apparatus	1 1
	c	i	diagram to the left - energy saving bulb diagram to the right - filament bulb	1 1
		ii	an energy saving bulb converts electrical energy mainly into light energy and 'wastes' some heat energy. a filament bulb converts electrical energy mainly into heat energy and only small amount into light energy	1 1