



FORM 3

PHYSICS

MARKING SCHEME

SECTION A			40 MARKS
Question	Answer	Marks	Additional Guidelines
1 a. i.	2.9 cm	1	
1 a. ii.	0.029 m	1	
1 b. i.	55 s	1	
1 b. ii.	11 s	1	
1 c. i.	5 cm ³	1	
1 c. ii.	2.6 g/cm ³	2	1 mark for correct unit
1 c. iii.	Same	1	
2. i.	550 N	2	1 mark for correct unit
2. ii.	550 N	1	
2. iii.	11000 J	2	1 mark for correct unit
2. iv.	275 W	2	1 mark for correct unit
2. v.	To remove sweat, increase friction and grip	1	Accept any other suitable answer
3 a. i.	planet	1	
3 a. ii.	moon	1	
3 a. iii.	solar system	1	
3 a. iv.	the Sun	1	
3 a. v.	24	1	
3 a. vi.	Big Bang	1	
3 b. i.	distance travelled by light in 1 year	1	Accept 9.46×10^{15} m
3 b. ii.	learning more about the universe and its creation / mining minerals on the moon and planets / producing products in zero-gravity environments / expanding scientific research / expanding our environment and saving humanity in case of global destruction	1	Accept any other similar answer
4 a. i.	An arrow W from centre of gravity, pointing downwards	1	
4 a. ii.	48000 Pa	2	1 mark for correct total area of blocks
4 a. iii.	Increase area or number of spaced blocks	2	Accept also 'decrease weight by removing soil'
4 b. i.	X marked at the base of the dam	1	
4 b. ii.	50000 Pa	2	
5 a. i.	1125 Nm	1	
5 a. ii.	875 Nm	1	
5 a. iii.	Anticlockwise moment is not equal to clockwise moment	1	Accept other answers which state that the seesaw goes down on John's side
5 a. iv.	1 m from pivot on Carmen's side	3	Give 1 mark to 'on Carmen's side'

5 b. i.	288 Ncm	1	
5 b. ii.	Shorter distance of muscle force from elbow	1	Any other suitable answer
SECTION B		45 MARKS	
6 a. i.	Renewable	1	
6 a. ii.	<i>Solar energy:</i> Adv: No pollution; Disadv: Solar energy not always available / initial costs are high <i>Wind energy</i> Adv: No pollution Disadv: Wind energy not always available / initial costs are high / energy production rate is low	1,1 1,1	Do not accept 'it costs nothing' as an advantage
6 a. iii.	80 W	2	1 mark for correct unit
6 a. iv.	20 %	1	
6 b. i.	Straight line graph	5	1 mark for title 1 mark for correct scale 1 mark for correct labelled axes 1 mark for correct plotting 1 mark for right size of graph
6 b. ii.	28 ± 1	2	
7 a. i.	M	1	
7 a. ii.	Cotton wool	1	
7 a. iii.	convection, radiation	1,1	
7 a. iv.	Conduction	1	
7 a. v.	Graph 1 Temperature is higher during the same time interval	1 2	Accept similar answers
7 a. vi.	Yes The lid reduces heat loss by convection	1 1	
7 b. i.	5 °C	1	
7 b. ii.	5250 J	3	1 mark for unit
7 b. iii.	From the foot	1	
8. i.	created, destroyed, changed	1,1,1	Accept 'transformed'
8. ii.	KE, heat, sound	1,1,1	
8. iii.	48 000 J	3	1 mark for unit
8. iv.	48 000 J	1	
8. v.	3.2 m	2	1 mark for unit
8. vi.	Lubricate with oil	1	Accept any other correct answer
8. vii	Increase mass of hammer or increase height of fall or smaller contact area of base plate	1,1	Accept any two correct answers

Please Note: When marking questions that involve calculations, apply the 'follow through' rule. This means that when a student gives a wrong value for part (a) of a question and then uses the value of (a) in the subsequent calculations, marks should be deducted for part (a) only but allocated for the subsequent parts if these are correct.