Rugby School

Physics

Sixth Form Examination 2015

Mark Scheme

Sixth Form Specimen Examination Mark Scheme – Physics

Multiple Choice Section

Q1 A

Q2 B

Q3 B

Q4 B

Q5 B

Q6 C

Q7 B

Q8 B

Q9 C

Q10 D

Q11 D

Q12 A

Q13 B

Q14 E

Q15 C

Q16 E

Q17 A

Q18 C

Q19 E

Q20 B

Longer Written Answers

B1

(a) (i) a=128/1.4 (1 mark) = 320 (1 mark) m/s^2 (1 mark)

(ii) Area under graph used/identified as distance (1 mark) ½ 28X1.4 (1 mark) 19.6m (1 mark)

(iii) 0.06 s (1 mark)

(b) (i) F=ma (or any correctly rearranged version (1 mark)

(ii) m=F/a quoted or used (1 mark) 1250 kg (1 mark)

B2

(a) Energy required to fracture specimen = Initial gravitational potential energy of mass – final gravitational potential energy of mass (1 mark)

(b) (i) states or uses GPE=mgh (1 mark) 60X10X0.5 = 300 (J) (1 mark)

(ii) 300J (1 mark)

(iii) correctly rearranges ½ mv^2 to find v^2 (v^2=600/60) (1 mark) v= 3.3m/s (1 mark)

(iv) energy lost to surroundings/air resistance/friction (1 mark)

(v) 300-70 = 130 J (1 mark)

(vi) energy can not be gained or lost only transferred (1 mark)

B3

(a) Any eight points which must include the two marked *.

- Put water in kettle
- ***Heat water (priority mark)**
- Boil water
- Use measuring cylinder
- Water into cup
- Check no water left in measuring cylinder
- Put thermometer in cup of water
- Note(initial) temperature of water
- Start stopwatch
- Note temperature at a later time (or note temperature after a certain time)
- Stir (before taking readings)
- ***Repeat for other cups (priority mark)**
- A valid conclusion comment

8

(b) **Any two** (1 mark each)

- amount/volume of water (in cup) {accept mass/weight of water (in cup))
- initial/start temperature
- external/room temperature
- surface on which the cup stands (as it cools)
- position of cup

2

B4

Question Number	Correct Answer	Extra Information	Mark
3 (a)	any two (1) + (1) each examples difficult to ensure different samples of sand are equally damp (1) (whereas) sand can easily be made dry (1) to make a fair comparison (1) damp and dry sand have different (crater forming) characteristics (1) there is no water on the Moon (1) (so) the sand/surface there is dry (1) wet sand (might)stick to ball bearing (1) alters its mass (1)	credit any appropriat suggestion credit any appropriat explanation /amplification	(4)

Question Number	Correct Answer	Extra Information	Mark
3 (b)	any two (1) each (otherwise) you would not know (exactly) what had caused the crater same starting condition(s) to be able to compare different experiments		(2)

Question Number	Correct Answer	Extra Information	Mark
3 (c)	any two (1) each to check his results to identify/remove anomalous results to get average results to arrive at reliable results	do not accept 'to get accurate results'	(2)

Question Number	Correct Answer	Extra Information	Mark
3 (d)	14 (mm)		(1)

3 (e)	the greater the height (the ball dropped from) the greater the radius (of the crater) (1)