Mark scheme 5054/3 – Practical Test November 2001

1(a) and (1	b)Volume found by displacement method using measuring cylinder [may be seen in diagram or from working in part (b)]	1
	Most plasticene used in the displacement method and initial and finate shown and sensible, giving volume greater than 20 cm^3	al volumes
	with unit seen somewhere	1
	Sensible mass recorded to nearest a or better with unit	1
	Correct calculation of density with unit and 2 or 3 s f	1
	Value 1.6 to 2.0 a cm ⁻³ from a valume of greater than 20 cm ³	1
	value 1.0 to 2.0 g cm from a volume of greater than 20 cm	1
2(a)-(c)	(setting up apparatus – no answer required)	
(d) u and	h, recorded to the nearest mm	
(u) <i>a</i> and	(u = 100 mm or 10.0 cm k = 10 mm or 1.0 cm)	1
	$u = 100$ mm of 10.0 cm, $n_0 = 10$ mm of 1.0 cm) h between 1.20 cm and 1.70 cm with unit	1
	$n_{\rm I}$ between 1.50 cm and 1.70 cm with unit (As not regardless emission of whit if consistent with u and h)	2
	(do not penalise omission of unit if consistent with u and n_0)	
(a) and (f)	Compost whith four found no whith four w	1
(e) and (f)	Correct unit for <i>f</i> and no unit for <i>m</i>	1
	value ± 1.0 cm of Supervisor's value	1
2(a)	(sotting up opporatus _ no onewer required)	
5(a)	(setting up apparatus – no answer required)	
(b)	Scale readings recorded and a found with massurements to the	
(0)	nearest mm unit and value normally in the range 10.0 to 15.0 sm	1
	hearest min, unit and value normany in the range 10.0 to 15.0 cm	1
(c)	At least 10 oscillations timed	1
(0)	Papat manufacture and used	1
	Repeat measurement seen and used	1
(d)	Correct substitution into formula and calculation of a	1
(u)	concet substitution into formula and calculation of g	1
	Value 9.8 + 1.0 m s ⁻² (980 + 100 cm s ⁻²) with unit	1
	v and 0 > 0 = 1.0 m/s (000 = 100 cm/s) with and	1
4		
Diagram a	ind initial readings	
Diagram	ind initial readings	
4(a)	Evidence of d.c. nower supply and correct series connection of	
-(α)	now or supply reaster lamp and approver with correct sirouit	
	power suppry, meostar, ramp and animeter with correct circuit	1
	symbols for the fatter three components	1
	Voltmeter correctly connected in parallel with lamp	I
(1-)	Sensible $L(20, m, \Lambda)$ and V accorded with write for hoth	1
(0)	Sensible $I(30 \text{ mA})$ and V recorded with units for both	1
(a)	Connect coloulation of D	1
(a)	Correct calculation of R	1
Table		
rable		
(b)	Table of at least 6 readings with white for Land V	
(0)	f able of at least o readings with units for f and V	1
	(ignore trend in readings)	1

	One <i>I</i> value < 10 mA (allow 0, if 0 plotted on graph or in table) One <i>I</i> value > 40 mA 8 points plotted on a reasonable curve or straight line	1 1 1
Graph		
(e)	Graph of R/Ω against I/mA with axes labelled and units Suitable scale, which may include the origin, with data occupying more than half the page in both directions and no scales based	1
	on 3,7 etc	1
	Two points plotted correctly	1
	Good fit, fine lines and fine points	1
Calcula	tions and Conclusions	
(f)	Correct resistance value at $I = 10 \text{ mA}$	1
	Correct resistance at $I = 40 \text{ mA}$	1
	(from table or graph)	
(g)	Temperature of filament has increased	1
	(When checking plots or the reading of values from the graph, the values should be within half a square of the correct value)	