Sec 4NA Prelim 2021 Ans

Paper 1

1	D	6	В	11	А	16	D
2	С	7	В	12	D	17	В
3	А	8	D	13	С	18	В
4	С	9	С	14	D	19	В
5	А	10	D	15	D	20	Α

Paper 2

Qns	Working	Marks
1a	$\rho = m \div v = 55 \div 50$	1
	= 1.1 g cm ⁻³	1
1b	$\rho = 55 \div 60 = 0.92 \text{ g cm}^{-3}$	1
1c	The uncooked meat ball will be sinking in water as its density is more than 1.0 g/cm ³ while the cooked meat ball will be floating in water as its density is less than 1.0 g/cm ³	1
2a	B and C	1
2b	Can A. Can A has a shiny silver surface that is a poor emitter of infra-red radiation.	1 1
3a	Solid to liquid	1
3bi	State: Solid	
	Movement: vibrate at fixed position	1
3bii	State: liquid Arrangement: randomly arranged OR molecules are further apart from each other compared to solid particles.	1
4a	X – Earth – Yellow Green Y – Neutral – Blue Z – Live – Brown	2
	3 correct – 1 m All correct – 2m	
4b	Fuse. It will melt and disconnects/open the circuit when the current flowing is more than the fuse rating.	1

5a	Increasing speed	1	
5b	25 s	1	
5c	a = v-u/t = 3-0/15		
	$= 0.2 \text{ m/s}^2$	1	
5d	Total distance = Area under speed-time graph		
	$= \frac{1}{2}(15)(3) + (25)(3) + \frac{1}{2}(10)(3)$	1	
	= 113 m	1	
5e	W = F x d = 600 x 113	1	
	= 67 800 J	(e.c.f)	
		1	
6a	90	Doints	
		points	
	80	[1]	
		Line	
		drawn	
	60	[1]	
	30 *****		
	20		
	10		
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	0 1 2 3 4 5 6 7 8.9 10		
6bi	7 min	1	
6bii	Energy absorbed is used to raise the internal potential energy of the	1	
	Substance.		
	Energy absorbed is used to change the state of the substance.		
	hence there is no change in temperature during the change of state.		
6ci	1 V	1	
6cii	R = 5 + 10 = 15 Ω	1	
6ciii	i I = 3/15 = 0.2 A		
6civ	/ Same reading of 1.5 V each.		
7ai	0.6 m	1	

7aii	5 m	1
7bi	P : infra-red radiation	
	Q: ultra-violet radiation	1
7bii	All electromagnetic waves are transverse waves. (Accept any other reasonable	1
	answers)	
7ci	2d =vt = 1500 x 0.1 =150	1
	d = 75 m	1
7cii	$\lambda = v/f = 1500/(33\ 000)$	1
	= 0.0454 m	1