Practice Question Set For A-Level
Subject : Physics
Paper-2 Topic : 4_Materials

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Name of the Student:_____
Max. Marks : 20 Marks **Time : 20 Minutes**

Mark Schemes

Q1.

Question Number	Answers	Additional Guidance	Mark
	A		**(1)**

Q2.

Question Number	Answers	Additional Guidance	Mark
	B	$\frac{Fl_0}{(l-l_0)A}$	**(1)**

Q3.

Question Number	Acceptable answers	Additional guidance	Mark
	C The uncertainty is 0.1 s.		1

Q4.

Question Number	Acceptable answers	Additional guidance	Mark
	B The bubble has a constant velocity because upthrust is equal to viscous drag.		1

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Q5.

Question Number	Acceptable answers	Additional guidance	Mark
	C		1

Q6.

Question Number	Answer	Mark
	A	1

Q7.

Question Number	Answer	Mark
	B – 4 cm	1
	Incorrect Answers: Correct method: 1. force on one spring is 20 N ÷ 2 = 10 N, 2. spring constant k = 10 N ÷ 8 cm = 1.25 N cm^{-1}, 3. extension = 5 N ÷ 1.25 N cm^{-1} = 4 cm A – 2 cm, omits step 1 C – 8 cm, applies 10 N in step 3 D – 16 cm, applies 20 N in step 3	

Q8.

Question Number	Answer	Mark
	The only correct answer is A because the extension is doubled and the force for each spring is the same and $k = F/x$	1

Q9.

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Question Number	Answer	Mark
	A	1

Q10.

Question Number	Acceptable answer	Additional guidance	Mark
	B	The only correct answer is **B**: for each spring, ½ force, so ½ extension, so ½ Fx gives ¼ E, so total is ½ E A is not correct because it is the energy for one spring with this extension C is not correct because it only applies the factor of ½ once D is not correct because it is the energy for two springs, each with the original extension	1

Q11.

Question Number	Answer	Mark
	The only correct answer is D ***A** is not correct because elastic strain energy is equal to ½F^2/k* ***B** is not correct because elastic strain energy is equal to ½F^2/k* ***C** is not correct because elastic strain energy is equal to ½F^2/k*	1

Q12.

Question Number	Acceptable answers	Additional guidance	Mark
	The only correct answer is C A is not correct as when Z is twice as long then the extension is doubled. When Z has twice the area then it will have half the extension. So overall the extension will be the same. B is not correct as when Z is twice as long then the extension is doubled. When Z has twice the area then it will have half the extension. So overall the extension will be the same. D is not correct as when Z is twice as long then the extension is doubled. When Z has twice the area then it will have half the extension. So overall the extension will be the same. displaced		1

Q13.

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Question Number	Answer	Mark
	A X + Y	1
	B - multiplication incorrect C – division incorrect D – subtraction incorrect	

Q14.

Question Number	Acceptable answers	Additional guidance	Mark
	The only correct answer is D A is not correct as there must be a resultant force downwards B is not correct as there must be a resultant force downwards C is not correct as there must be a resultant force downwards		1

Q15.

Question Number	Answer	Mark
	The only correct answer is D ***A*** *is not correct because doubling the force and the length whilst halving the diameter leads to an increase by a factor of 16* ***B*** *is not correct because doubling the force and the length whilst halving the diameter leads to an increase by a factor of 16* ***C*** *is not correct because doubling the force and the length whilst halving the diameter leads to an increase by a factor of 16*	1

Q16.

Question Number	Answer	Mark
	The only correct answer is D **A** *is not correct because* this is not a base unit **B** *is not correct because* this is not a unit for breaking stress **C** *is not correct because* this is not a base unit	1

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Q17.

Question Number	Acceptable answers	Additional guidance	Mark
	The only correct answer is C A is not correct as upthrust is equal to weight of fluid displaced B is not correct as upthrust is equal to weight of fluid displaced D is not correct as upthrust is equal to weight of fluid displaced		**1**

Q18.

Question Number	Answer	Mark
	B metre rule and micrometer	**1**
	A - stopwatch incorrect C - stopwatch incorrect D- stopwatch incorrect	

Q19.

Question Number	Answer	Mark
	B stress v strain	**1**
	Incorrect Answers: **A** – gradient ≠ Young modulus **C** – gradient ≠ Young modulus **D** – gradient ≠ Young modulus	

Q20.

Question Number	Acceptable Answers	Additional Guidance	Mark
	B		**1**

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