

IMPORTANT: Carefully fill-in your name, student ID number, and section number.

الاسم (بالعربية)		ID #		Sec.	
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Simple calculators are allowed but are not crucial for this test. You may scribble your calculations on the sides and back of this test paper.

You may need some of the following information.

acc. (a) = speed/time	force (F) = m.a	weight (w) = m.g	work (W) = F.d	KE = $\frac{1}{2} m.v^2$	PE = m.g.h
Power = $\frac{\text{work}}{\text{time}}$	$\Delta x \propto F$ (Hooke's Law)	density = $\frac{m}{V}$	wt. density = $\frac{mg}{V}$	pressure = $\frac{\text{force}}{\text{area}}$	Liquid pressure = wt. density $\times$ depth
E = m.g.h + $\frac{1}{2} m.v^2$	$v_f = \sqrt{2 g \cdot h}$	$P \propto 1/V$ ( $P_1 V_1 = P_2 V_2$ )	1 liter = 1000 cm <sup>3</sup>	density of water = 1000 kg/m <sup>3</sup> density of mercury = 13600 kg/m <sup>3</sup>	
1 mega (M) = 10 <sup>6</sup>	1 micro ( $\mu$ ) = 10 <sup>-6</sup>	$g = 10 \text{ m/s}^2$	1 m/s = 3.6 km/h	Dimensions: length [L]; mass [M]; time [T]	
1 giga (G) = 10 <sup>9</sup>	1 nano (n) = 10 <sup>-9</sup>	1 hp = 0.75 kW	1 Pa = 1 N/m <sup>2</sup>	atmospheric pressure $\approx$ 100 kPa	

1. When we use a ruler of 1 millimeter smallest divisions, the uncertainty is approximately (تقريباً) equal to:

A	0.5 mm
B	2.5 mm
C	5 mm
D	1 mm ✓

2. The number of reliably (بشكل موثوق) known digits (أرقام) in a number is its:

A	uncertainty
B	accuracy
C	percent error
D	significant figures ✓

3. Considering significant figures, the quotient of A = 12.0 and B = 12 is written as:

A	1.0 ✓
B	1
C	1.00
D	1.000

4. If a person is 70 years old, with average heartbeat rate is 80 beats/min, his heartbeats in his lifetime can be estimated as (hint: 1 year = 60  $\times$  24  $\times$  365 min):

A	$3 \times 10^9$ ✓
B	$3 \times 10^7$
C	$3 \times 10^8$
D	$3 \times 10^6$

5. The maximum capacity in liters of a 3-m<sup>3</sup> water tank (خزان) is:

A	30 L
B	300 L
C	3000 L ✓
D	3 L

6. The number  $3.69 \times 10^2$  is equal to:

A	369 ✓
B	36.9
C	3.69
D	0.369

7. The SI unit of mass is the:

A	newton
B	kilogram ✓
C	pound
D	gram

8. 1 Mm (mega-meter) equals:

A	1000 m
B	1000 km ✓
C	1000000 km
D	100000 m

9. The order-of-magnitude of a 9300-m distance is:

A	$1 \times 10^4 \text{ m}$ ✓
B	$0.1 \times 10^4 \text{ m}$
C	$2 \times 10^4 \text{ m}$
D	$10 \times 10^4 \text{ m}$

10. The dimensions of force are:

A	L M T
B	L M T <sup>-2</sup> ✓
C	L <sup>3</sup> M <sup>2</sup> /T <sup>2</sup>
D	L <sup>2</sup> M T <sup>-1</sup>

11. A cart moves 10 m in the same direction as a 20-N force acting on it. The work done by this force is:

A	200 J ✓
B	2 J
C	0.5 J
D	20 J

