

غلاف ورقة الأسئلة

Question Paper Cover | Form A

العلوم الأساسية	القسم Department	عمادة السنة التحضيرية	الكلية College
التوقيع Signature	2017/1/15	التاريخ Date	اليوم Day
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...../د	Name الاسم	Editing Committee	التوقيع Signature

الاختبار النهائي من الفصل الدراسي الأول للعام الجامعي 1438/1437

Final Exam : First Semester 1437 / 1438

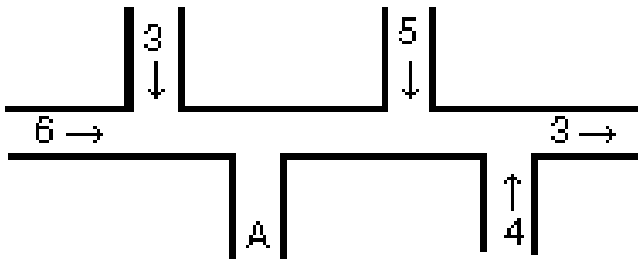
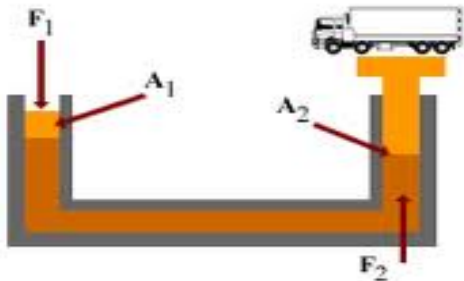
معلومات الطالب / Student Information			
اسم الطالب Student Name		الرقم الجامعي ID	
معلومات المقرر			
مسمى المقرر Course Title		الفيزياء العامة	
رقم المقرر ورمزه Course Code		1010	
معلومات الاختبار			
رقم الشعبة Section Number		10 - 8	
فترة الاختبار Exam Period		10 - 8	
الدرجة الكلية Exam Mark		40	
ورقة Paper		8	
يتكون الاختبار من عدد Pages		40	
توزيع الدرجات			
السؤال Question	الدرجة الكلية Fullmark	درجة الطالب Student Mark	بعض تعليمات الاختبار
1 الأول	27		<p>عزيزي الطالب /</p> <p>حرصاً على أدائك الاختبار بشكل نظامي يجدر بك العناية بالآتي :</p> <ul style="list-style-type: none"> الكتابة تكون بالقلم الأزرق فقط. الغش أو الشروع فيه أو الإخلال بنظام الاختبارات ، يعرضك للجزاء المنصوص عليه في لائحة تأديب الطلاب. يمنع نهائياً إحضار الهاتف الجوال في قاعة الاختبار ومن يضبط معه هاتف الجوال سوف تسحب ورقته ويحرر له محضر محاولة غش . على كل طالب إحضار أدواته الخاصة حيث أنه لا يسمح بتبادل الأدوات بين الطلبة. يمنع الخروج من الاختبار قبل مضي نصف ساعة من بداية الاختبار ولا يحق للطلاب المتأخر أكثر من نصف ساعة دخول الاختبار .
2 الثاني	1.5		
3 الثالث	2		
4 الرابع	3		
5 الخامس	2		
6 السادس	3		
7 السابع	1.5		
مجموع درجات الأسئلة Questions Total		40	
مجموع درجات الأعمال الفصلية Course Work		60	
المجموع الكلي/مائة درجة Course Total		100	
كتابة/ (Written)			

1	A	B	C	D	E
2	A	B	C	D	E
3	A	B	C	D	E
4	A	B	C	D	E
5	A	B	C	D	E
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26	A	B	C	D	E
27	A	B	C	D	E

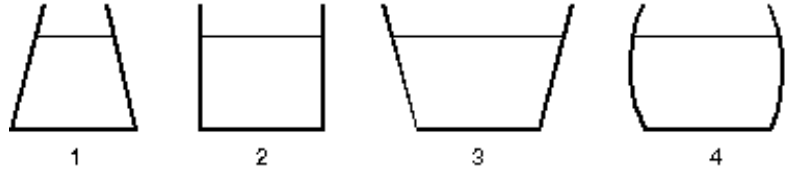
Q1: CHOOSE THE CORRECT ANSWER IN EACH OF THE FOLLOWINGS: (27 Marks)

1. The dimension of force is A) [M L T] B) [M L ⁻¹ T] C) [M L T ⁻²] D) [M L ⁻¹ T ⁻¹] E) None of them	6. The material ultimately breaks as the stress is increased more than the: A) elastic limit B) elastic behavior C) breaking point D) plastic behavior E) None of them
2. $(9.0 \times 10^6)/(1.5 \times 10^{-6}) =$ A) 6×10^{-12} B) 10.5×10^{-6} C) 6×10^{12} D) 13.5×10^6 E) None of them	7. The ratio of the stress to the resulting strain is A) elastic modulus B) strain C) Stress D) force E) None of them
3. If the velocity of a car is 108 km/ h then it is in SI equals to A) 30 m/s B) 20 m/s C) 108 m/s D) 0.03 m/s E) None of them	8. The measure of the resistance of a solid to the change in its length. A) Young's modulus B) Bulk modulus C) Stress D) Shear modulus E) None of them
4. The prefix micro equals A) 10 ⁻³ B) 10 ⁻⁶ C) 10 ⁻¹ D) 10 ⁻⁹ E) None of them	9. Measures the resistance of solids or liquids to changes in their volume A) Young's modulus B) Bulk modulus C) Stress D) Shear modulus E) None of them
5. A quantity has a dimension of [M L ² T ⁻²] then its unit (SI) is: A) m. Kg ² .sec ⁻² B) Kg. m ⁻² .sec ² C) Kg ² . m.sec ² D) Kg. m ² .sec ⁻² E) None of them	10. Complete the following statement: The shear modulus for a fluid is: A) Usually larger than the shear modulus for a solid. B) Larger than Young's modulus for a fluid. C) Zero. D) Dependent on the fluid pressure. E) Dependent on the fluid density

<p>11. A sphere has a radius of 21 cm and a mass of 1.9 kg. Its mass density is about:</p> <p>A) $4.9 \times 10^5 \text{ kg/m}^3$ B) $2.1 \times 10^{-4} \text{ kg/m}^3$ C) $2.0 \times 10^2 \text{ kg/m}^3$ D) 49 kg/m^3 E) None of them</p>	<p>16. The magnitude of the buoyant force on an object always equals the weight of the fluid displaced by the object.</p> <p>A) strain B) Archimedes' principle C) Pascal's law D) Pressure E) None of them</p>
<p>12. The surface expansion of a square ($l = 3 \text{ m}$) of lead ($\alpha = 29 \times 10^{-6} \text{ }^\circ\text{C}^{-1}$) is 0.0116 m^2, then the increase of temperature</p> <p>A) $25 \text{ }^\circ\text{C}$ B) $40 \text{ }^\circ\text{C}$ C) $50 \text{ }^\circ\text{C}$ D) $65 \text{ }^\circ\text{C}$ E) None of them</p>	<p>17. It does not require physical contact between the bodies and the heat energy is transferred by electromagnetic waves</p> <p>A) Conduction B) Radiation C) Convection D) all E) None of them</p>
<p>13. Bernoulli's equation can be derived from the conservation of :</p> <p>A) energy B) mass C) angular momentum D) volume E) None of them</p>	<p>18. A fluid of density 900 kg/m^3 is flowing through a tube at a speed of 7 m/s. What is the kinetic energy density of the fluid</p> <p>A) $4.8 \times 10^3 \text{ J/m}^3$ B) $5.3 \times 10^5 \text{ J/m}^3$ C) $1.3 \times 10^3 \text{ J/m}^3$ D) $1.9 \times 10^3 \text{ J/m}^3$ E) None of them</p>
<p>14. All fluids are:</p> <p>A) gases B) liquids C) gases or liquids D) non-metallic E) transparent</p>	<p>19. The property that determines whether an object is in thermal equilibrium with other objects.</p> <p>A) Thermal expansion B) pressure C) temperature D) thermal equilibrium E) internal energy</p>
<p>15. Celsius temperature scale Thermometer calibrated due to</p> <p>A) ice melting (ice point) B) water boiling (steam point) C) mercury boiling point D) (A and B) E) None of them</p>	<p>20. the increase of steel sphere volume is $16.71 \times 10^{-3} \text{ m}^3$ due to the increase of temperature from $-20 \text{ }^\circ\text{C}$ to $50 \text{ }^\circ\text{C}$, if its radius is 1.2 m then the average coefficient of volume expansion equals</p> <p>A) $5 \times 10^{-3} \text{ }^\circ\text{C}^{-1}$ B) $11 \times 10^{-6} \text{ }^\circ\text{C}^{-1}$ C) $22 \times 10^{-3} \text{ }^\circ\text{C}^{-1}$ D) $33 \times 10^{-6} \text{ }^\circ\text{C}^{-1}$ E) None of them</p>

<p>21. The heat capacity of an object is:</p> <p>A) the amount of heat energy to raise its temperature by 1°C</p> <p>B) the amount of heat energy to change its state without changing its temperature</p> <p>C) the amount of heat energy per kilogram to raise its temperature by 1°C</p> <p>D) the ratio of its specific heat to that of water</p> <p>E) None of them</p>	<p>24. The "triple point" of a substance is that point for which the temperature and pressure are such that:</p> <p>A) only solid and liquid are in equilibrium</p> <p>B) only liquid and vapor are in equilibrium</p> <p>C) only solid and vapor are in equilibrium</p> <p>D) solid, liquid and vapor are all in equilibrium</p> <p>E) None of them</p>
<p>22. Convert the temperature -40°C on the Fahrenheit scales.</p> <p>A) -40°F</p> <p>B) 40°F</p> <p>C) 301°F</p> <p>D) 233.15°F</p> <p>E) None of them</p>	<p>25. Convert the temperature -40°C on the Kelvin scales.</p> <p>A) 0 K</p> <p>B) 40 K</p> <p>C) 301 K</p> <p>D) 233.15 K</p> <p>E) None of them</p>
<p>23. The diagram shows a pipe of uniform cross section in which water is flowing. The directions of flow and the volume flow rates (in cm^3/s) are shown for various portions of the pipe. The direction of flow and the volume flow rate in the portion marked A are:</p>  <p>A) \downarrow and $3 \text{ cm}^3/\text{s}$</p> <p>B) \uparrow and $7 \text{ cm}^3/\text{s}$</p> <p>C) \downarrow and $15 \text{ cm}^3/\text{s}$</p> <p>D) \uparrow and $11 \text{ cm}^3/\text{s}$</p> <p>E) None of them</p>	<p>26. The small piston of a hydraulic lift has a cross-sectional area of 6 cm^2, and its large piston has a cross-sectional area of 180 cm^2. What downward force of magnitude F_1 must be applied to the small piston for the lift to raise a load whose weight is $F_2 = 15000 \text{ N}$?</p>  <p>A) 500 N</p> <p>B) 15000 N</p> <p>C) 7500 N</p> <p>D) 225 N</p> <p>E) None of them</p>

27. The vessels shown below all contain water to the same height. Rank them according to the pressure exerted by the water on the vessel bottoms, least to greatest.



- A) $P_1 = P_2 > P_3 = P_4$
- B) $P_1 > P_2 > P_3 > P_4$
- C) $P_1 = P_2 = P_3 = P_4$
- D) $P_1 = P_2 > P_3 > P_4$
- E) None of them

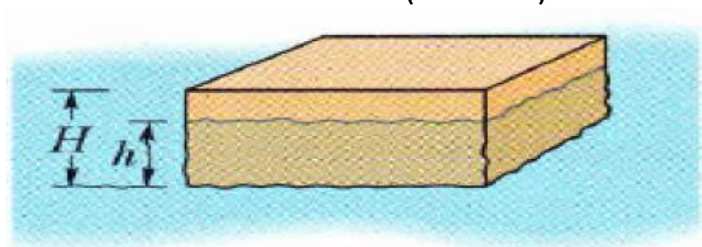
Q2: Find out the unit (in IS) and dimension of the constant G in the following equation: $F = G \frac{M_1 M_2}{r^2}$

Where F: force (in IS) Kg.m/s^2 , M: mass and r : the distance (1.5 Marks)

Q3: In Figure, a block of density 800 kg/m^3 floats face down in a fluid of density 1200 kg/m^3 . The block has height 6.0 cm .

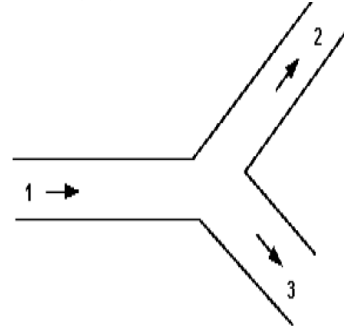
What depth is the block submerged?

(2 Marks)



Q4: If pipe (1) has a cross- sectional area of 25 cm^2 , mean velocity 3 m/s , pipe (2) has a cross- sectional area of 15 cm^2 takes 40% of total discharge and pipe (3) has a cross- sectional area of 30 cm^2 .

What are the values of discharge and mean velocity in each pipe? (3 Marks)



Q5: On a hot day in (Las Vegas), oil trucker loaded 40000L of diesel fuel. He encountered cold weather on the way to (Payson, Utah), where the temperature was 20K lower than in (Las Vegas), and where he delivered his entire load. How many liters did he deliver? ($\beta_{\text{diesel}} = 9.5 \times 10^{-4} \text{ } ^\circ\text{C}^{-1}$). (2 Marks)

And neglect the steel tank expansion.

Q6: How much heat must be absorbed by ice of mass ($m = 720\text{g}$) at (-10°C) to take it into the liquid state at (15°C) . (3 Marks)

If: the specific heat of ice is: $(2220\text{ J/Kg}\cdot^\circ\text{C})$

The specific heat of Water is $(4187\text{ J/Kg}\cdot^\circ\text{C})$

The latent heat of fusion for Water is: $(L_f=3.33\times 10^5\text{ J/Kg})$

Q7: A cube with 2 cm sides is made of material with a bulk modulus of $(4.7 \times 10^5\text{ N/m}^2)$. When it is subjected to a pressure of $(2 \times 10^5\text{ Pa})$ Calculate the length in cm of its sides

(1.5 Marks)