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ΦΗΓΟ
ACADEMY

O f f i c i a l T e l e g r a m C h a n n e l



WOLAITA SODO UNIVERSITY
COLLEGE OF NATURAL AND COMPUTATIONAL SCIENCE
DEPARTMENT OF PHYSICS
GENERAL PHYSICS FINAL EXAM FOR FRESH STUDENTS



Name _____

ID. NO. _____

Course Code: Phys1011;

Time Allowed: 2:00Hour

Max Marks: 50%

Date 02/06/2012 E.C.

Semester: 1

Program: Regular

Instructions:

- There are 10 true or false questions each 1 point and 14 multiple-choice questions each worth 1.5 points.
- There are Five short answer questions each worth 2marks
- There are three workout questions total of 10 marks
- Answer them all on the paper provide
- Cell phones MUST be turned off.
- Cheating makes you 'F'

Part I. Write True if the statement is correct and write False if the statement is not correct. (1 pts.)

- F 1. The stress is tensile if the material is stretch or change in its length.
- T 2. Elastic modulus depends on the material being deformed and on the nature of the deformation.
- F 3. Gauge Pressure is the pressure due to the weight of the atmosphere exerted on the surface of the Earth.
- T 4. According to Archimedes' principle, the magnitude of the buoyant force is equal to the weight of the fluid displaced by the object
- F 5. Two objects are said to be in thermal equilibrium if the exchange of energy (heat) is maximum.
- F 6. When air is cooled, it expands and becomes less dense than the surrounding air.
- F 7. Conduction is always takes place in liquids and gases.
- T 8. Electromagnetic waves can propagate through both material medium and vacuum.
- T 9. Mechanical oscillatory system is a type of system that a body itself changes its position.
- 10. The direction of any electric field vector is the same as the direction of the electric force vector.

Part II. Choose the best answer from the given alternatives (each 1.5pts)

- 1. The ratio of the tensile stress to the tensile strain is
A. Young's Modulus B. Shear Modulus C. Bulk Modulus D. Elastic modulus
- 2. Which one the following is NOT TRUE about fluid pressure?
A. All points at same level in a fluid have same pressure.
B. Fluid pressure decreases with increase in the depth of the fluid.
C. Fluid pressure does not depend on the shape of the container.
D. All are correct answer
- 3. Which one of the following is factors affecting laminar flow of fluid?
A. Density B. Temperature C. Viscosity D. All are answer



4. Metal A has a coefficient of linear expansion that is three times the coefficient of linear expansion of metal B. Then which of the following relation is true about their coefficient of areal expansion?
- A. $A=3\beta B$ B. $B=3\alpha A$ C. $A=6\beta B$ D. $B=6\alpha A$ E. $A=1/3\alpha B$
5. Which one of the following is **true** about the law of electrostatics?
- A. Total charge in an isolated system is conserved. D. Charge is quantized
 B. Like charges repel each other E. Only B&C are correct answer
 C. Unlike charges attract each other. F. All are correct answer
6. Which one of the following **not true** about electric field lines.
- A. Electric field lines Point in the direction of the electric field.
 B. The lines must begin on a positive charge and terminate on a negative charge.
 C. The two field lines can cross each other.
 D. Are denser where the field has greater magnitude.
7. The ratio of the potential difference across a conductor to the current in the conductor is
- A. Current density B. Resistance C. Charge density D. Conductivity
8. A charge of $+3\mu C$ at the midpoint on the line joining two charges of magnitude $+2\mu C$ and $-2\mu C$ separated by the distance of 6mm. Then what is the net electric force?
- A. 600N B. 500N C. 60N D. Zero
9. Which one of the following is the heat absorbed or released when matter melts, changing phase from solid to liquid form at constant temperature?
- A. Latent Heat of Vaporization B. Latent Heat of Fusion
 C. Specific heat capacity D. None
10. In which of the following processes of the first law of thermodynamic systems the change in internal energy (ΔU) is zero?
- A. Cyclic Process and Isochoric process B. Cyclic Process and Isothermal Process
 C. Isolated system Adiabatic Process. D. Isovolumetric process and Adiabatic Process.
11. The temperature of a body is $-40^\circ C$ then what is the temperature in $^\circ F$?
- A. 104 B. -40 C. 40 D. -104
12. _____ is the maximum displacement from the equilibrium position?
- A. Amplitude B. Wave length C. Period D. Frequency
13. Which one of the following is the net effect of the combination of two or more wave trains moving on intersecting or coincident paths?
- A. Interference of wave B. Diffraction of wave
 C. Reflection of wave D. Refraction of wave
14. Which one of the following is **Not True** about Characteristics of SHM?
- A. The amplitude A is constant.
 B. The frequency is independent of the amplitude.
 C. The period is dependent of the amplitude.
 D. None



$$T_F = \frac{3\mu C}{r} - \frac{3\mu C}{r_1} = -72 \mu C \sim -9.9 \mu F$$

III. Write short and last answer for the following in the space provided (2 Pts each)

15. _____ is a transparent refracting medium bounded by two curved surfaces which are generally spherical.
16. _____ states that pressure applied to a confined fluid in a container is transmitted equally to all regions of the fluid and to the walls of the container.
17. _____ is a wave where particles of the disturbed medium oscillate parallel to the direction of wave motion.
18. _____ are models for representing electric field distribution over space around charged bodies
19. State the Zeroth Law of Thermodynamics.

IV. Work Out! Show all necessary steps neatly and clearly!!

20. Water circulates throughout a house in a hot water heating system. If the water is pumped at a speed of 0.50 m/s through a 4.0-cm diameter pipe in the basement under a pressure of 3.03×10^5 Pa, what will be the velocity and pressure in a 2.6-cm diameter pipe on the second floor 5.0 m above? (3Pts.)
21. An object of mass $m = 3\text{kg}$ oscillates with simple harmonic motion along the x axis. Its position varies with time according to the equation (4Pts.)

$$x(t) = (6.00\text{m})\cos(4\pi t + \frac{\pi}{4})$$

- A. Determine the amplitude, frequency, and period of the motion.
- B. Determine the maximum speed and maximum acceleration of the object.
22. Consider three point charges located at the corners of a right triangle as shown where $q_1 = q_3 = 5\mu\text{C}$, $q_2 = -2\mu\text{C}$ and $a = 0.1\text{m}$. Find the resultant force exerted on q_3 (3Pts)

$q_1 = 5$
 $q_2 = -2$
 $q_3 = 5$

