

المملكة العربية السعودية

وزارة التعليم

MINISTRY OF EDUCATION



لكل المهتمين و المهتمات
بدروس و مراجع الجامعية

هام

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Code B

PHYS121 Final-Term Exam

Student ID:

29) An instrument which is used to measure the extreme pressures (systolic and diastolic) is called

- a. Viscometer.
- b. Ammeter.
- c. Calorimeter.
- d. Sphygmomanometer.

30) The interaction that takes place for outer electrons, where the electron absorb some energy from the original photon gives rise to another photon with low energy is called

- a. Pair production.
- b. Compton scattering.
- c. Fission.
- d. Photoelectric effect.

31) The critical angle for diamond ($n_1 = 2.42$) submerged in water ($n_2 = 1.33$) is (See fig - 8)

- a. 56.66°
- b. 90°
- c. 33.3°
- d. 0.549

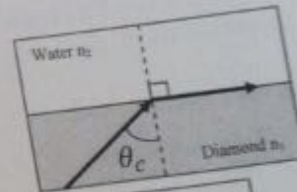


Fig-8

32) The average velocity of a viscous fluid flows inside a tube is 5m/s, assuming the flow is laminar, all of the following are true except

- a. The maximum velocity is 5m/s.
- b. The maximum velocity will be measured at the center of the tube.
- c. The maximum velocity is 10m/s.
- d. The velocity just beside the wall of the tube is zero.

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20) Consider fig - 5. This person suffers from the problem of

- a. Short-sightedness (Myopia).
- b. Long-sightedness (Hypermetropia).
- c. Senile vision (Presbyopia).
- d. Cylinder deviation (Astigmatism).

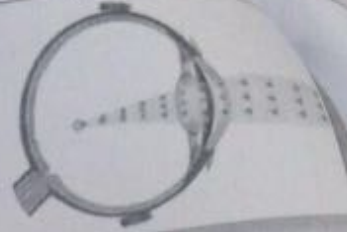


Fig - 5

21) One of the following is **NOT** a radiation measurement unit

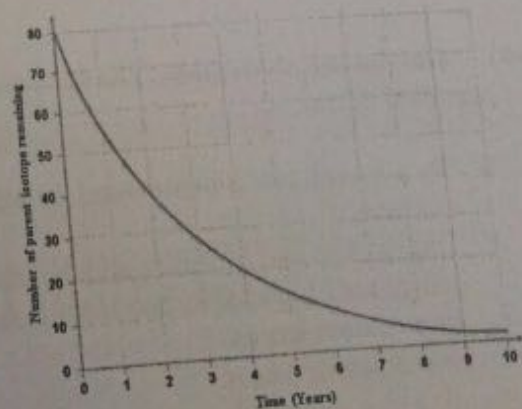
- a. Radiarion Equivalent Man (Rem).
- b. Rad (rad).
- c. Becquerel (Beq).
- d. Kelvin (K).

22) The pressure below a column of liquid does not depend on:

- a. The surface area of the column.
- b. The acceleration of gravity.
- c. The liquid density.
- d. The height of the column.

23) Fig - 6 shows the decay process of a radioactive element, where the x-axis represents the elapsed time in years and y-axis represents the number of remaining parent isotopes. Depending on this figure, the **number of halftimes** ($\frac{T_{1/2}}{2}$) required for remaining just 10 parent isotopes is

- a. One halftime.
- b. Six halftimes.
- c. Three halftimes.
- d. Four halftimes.



24) Regarding the experiment for understanding the theory of sound production (fig - 7), the role of the partition is

- a. Allowing certain frequencies to pass toward microphone.
- b. Preventing sound from reaching directly to the microphone.
- c. Sound magnification.
- d. Vibrating to produce sounds.



Fig - 7

25) Beta particles are

- a. High energy electrons resulting from a neutron changing to a proton.
- b. High energy electrons resulting from a proton changing to a neutron.
- c. Electromagnetic radiation.
- d. Positive heavy particles emitted from the nuclei.

26) For a given force and force arm values, the maximum torque can be obtained at angle (between force and force arm) equal to

- a. 0° .
- b. 45° .
- c. 90° .
- d. 180° .

27) By definition, the frequencies of **ultrasound waves** are

- a. Below 20000 Hz
- b. Below 10000 Hz
- c. Between 10000 and 15000 Hz
- d. Above 20000 Hz

28) An object is placed in front of a convex lens, its image will be

- a. Cannot be specified unless knowing the object's distance.
- b. Real, reduced and inverted.
- c. Real, enlarged and inverted.
- d. Virtual, enlarged and erected.

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33) Fig -9 shows a human leg which works as a **mechanical lever**. Which of the following is identical to its mechanism?

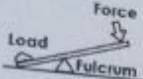

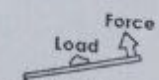
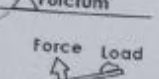
- a. 
- b. 
- c. 
- d. 



Fig -9

34) A large artery in a dog has an inner radius of $2 \times 10^{-3}m$, then the blood flows through the artery at the rate of $4 \times 10^{-6} m^3/s$. What is the **maximum velocity** of the blood?

- a. $3.185 \times 10^{-1}m/s$
- b. $8 \times 10^{-9}m/s$
- c. $2 \times 10^{-3}m/s$
- d. $6.369 \times 10^{-1}m/s$

35) **Snell's Law** describes

- a. Reflection.
- b. Refraction.
- c. Absorption.
- d. Diffraction.

36) One of the **advantages** of myelinated nerves over unmyelinated nerves is

- a. The velocity of pulse in myelinated axon is higher than that of the unmyelinated one by about 200 times.
- b. The resistance of myelinated nerves is smaller than unmyelinated one.
- c. The capacitance of myelinated nerves is larger than unmyelinated one.
- d. The space parameter of myelinated nerves is smaller than unmyelinated one.

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- 15) How many **neutrons** does iron (${}_{26}^{56}\text{Fe}$) have?
- 26
 - 56
 - 30
 - 82
- 16) In a longitudinal wave
- The particles move parallel to the direction of the wave motion.
 - Energy causes the particles to move forward with the wave.
 - The particles move perpendicular to the direction of the wave motion.
 - Energy is propagated by crests and troughs.
- 17) If the speed of light in a medium is 1.5×10^8 m/s the **refractive index** for this medium is
- 0.5
 - 1.0
 - 1.5
 - 2.0
- 18) **Isotopes** are atoms, of the same element, that are
- Equal in mass number but different in atomic number.
 - Equal in atomic and mass numbers.
 - Different in atomic and mass numbers.
 - Equal in atomic number but different in mass number.
- 19) **Chromatic aberration** (See fig - 4) can be canceled using
- Two lenses, one is convex and the other is concave.
 - Two lenses, one is convex and the other is concave with one of its two sides is flat.
 - Two convex lenses.
 - Two concave lenses.

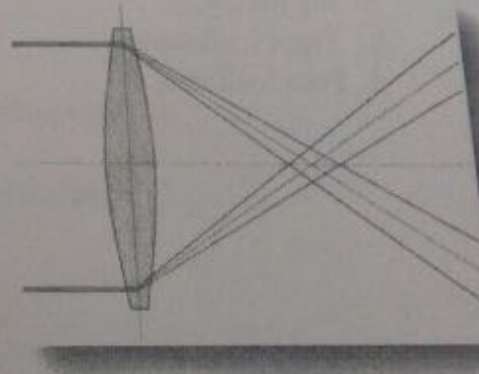


Fig - 4

image location is

- a. $1/8$ cm
- b. 16 cm
- c. $1/16$ cm
- d. 8 cm

11) An instrument which produces images of the body by detecting the radiation from a radioactive substance injected into the body is

- a. Sonar.
- b. Endoscope.
- c. Gamma camera.
- d. Radar.

12) The number of vibrations or waves per unit of time is called

- a. Frequency.
- b. Velocity.
- c. Wavelength.
- d. Period.

13) Considering far point at infinity, if the power of accommodation for a man is 2 diopters then his **nearest point** is

- a. 0.25m
- b. 0.5m
- c. 0.20m
- d. 1m

4) A 250N force is exerted on a mechanical lever to lift a 500N box. The **advantage** is

- a. 0.5

11) An instrument which produces images of the body from a radioactive substance injected into the body is

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- a. 0.25m
- b. 0.5m
- c. 0.20m
- d. 1m

14) A 250N force is exerted on a mechanical lever to lift a 500N box. The **mechanical advantage** is

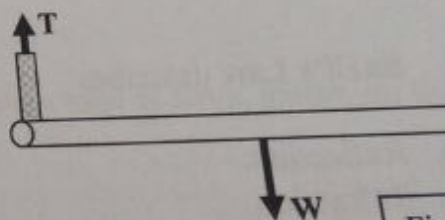
- a. 0.5
- b. 1
- c. 2
- d. 250

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- 37) The center of gravity of a fish during swimming is:
- Fixed to a certain point.
 - Located near its tail.
 - Located outside its body.
 - Changing continuously.
- 38) The phenomenon, which caused by the change in wave frequency resulting from motion of the source or observer, is called
- Doppler Flow Meter.
 - Doppler Effect.
 - Wave Shift.
 - Motion Effect.
- 39) In resting state, there are
- Equal concentrations of +ve and -ve ions inside the axon but different outside it.
 - Equal concentrations of +ve and -ve ions inside the axon and also outside it.
 - Equal concentrations of +ve and -ve ions outside the axon but different inside it.
 - Different concentrations of +ve and -ve ions inside the axon and also outside it.
- 40) A solid bar is hanged by two cords (see fig - 10). If this horizontal bar is in translational equilibrium (No motion) and its weight is $W=60\text{N}$. Then the tension force in one cord is
- 60 N
 - 30 N
 - 15 N
 - 120 N



Fig

11) An instrument which produces images of the body from a radioactive substance injected into the body is

- a. Sonar.
- b. Endoscope.
- c. Gamma camera.
- d. Radar.

12) The number of vibrations or waves per unit of time is called

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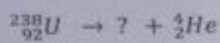
13) Considering far point at infinity, if the power of accommodation for a man is 2 diopters then his **nearest point** is

- a. 0.25m
- b. 0.5m
- c. 0.20m
- d. 1m

14) A 250N force is exerted on a mechanical lever to lift a 500N box. The **mechanical advantage** is

- a. 0.5
- b. 1
- c. 2
- d. 250

- 5) The missing element from the following equation is



- a. ${}_{88}^{226}\text{Ra}$
 b. ${}_{94}^{244}\text{Pu}$
 c. ${}_{91}^{231}\text{Pa}$
 d. ${}_{90}^{234}\text{Th}$

- 6) Which of the following media has the fastest sound transmission?

- a. Water in a pool.
 b. Wood in a desk.
 c. Steel in a bridge.
 d. Air in a classroom.

- 7) The name for part of the eye labeled "C" in the fig - 3 is

- a. Cornea.
 b. Natural Lens.
 c. Iris.
 d. Pupil.



Fig - 3

- 8) For a pipe of length 17.5cm which is open at one end and close at the other end, the first overtone is

- a. 1466 Hz.
 b. 489 Hz.
 c. 2443 Hz.
 d. 3420 Hz.

$$f = \frac{nc}{4L}$$

- 9) The Na-K pump is a process responsible for

- a. Balancing Na^+ and K^+ ions concentrations inside the axon.
 b. Compensating of any shortage of Na^+ and K^+ ions concentrations.
 c. Balancing Na^+ and K^+ ions concentrations outside the axon.
 d. The establishment of the ion concentration imbalance and resting potential difference.