

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

- 1) A floating leaf oscillates up and down two complete cycles in one second as a water wave passes by. The wave's wavelength is 10 meters. What is the wave's speed? 1) _____
A) 2 m/s
B) 40 m/s
C) 10 m/s
D) 20 m/s
E) more than 40 m/s
- 2) The Doppler effect is characteristic of 2) _____
A) light waves.
B) sound waves.
C) water waves.
D) all of the above choices
E) none of the above choices
- 3) During a single period, the distance traveled by a wave is 3) _____
A) one wavelength. B) two wavelengths. C) one-half wavelength.
- 4) A tuning fork of frequency 200 hertz will resonate if a sound wave incident on it has a frequency of 4) _____
A) 100 hertz. B) 400 hertz.
C) either of 100 hertz or 400 hertz. D) neither 100 hertz or 400 hertz.
- 5) A skipper on a boat notices wave crests passing the anchor chain every 5 seconds. The skipper estimates the distance between crests is 15 m. What is the speed of the water waves? 5) _____
A) 5 m/s B) 3 m/s
C) 15 m/s D) not enough information given
- 6) A dolphin perceives its environment by the sense of 6) _____
A) sound. B) sight.
C) both sight and sound. D) neither sight or sound.
- 7) Compressions and rarefactions normally travel in 7) _____
A) opposite directions in a wave.
B) the same direction in a wave.
C) directions that are at right angles to the wave direction.
- 8) Sound travels faster in 8) _____
A) a vacuum.
B) water.
C) steel.
D) air.
E) Sound travels at about the same speed in all of the above media.

- 9) Two charges separated by one meter exert 1-N forces on each other. If the magnitude of each charge is doubled, the force on each charge is 9) _____
- A) 1 N.
 - B) 4 N.
 - C) 2 N.
 - D) 8 N.
 - E) None of the above choices are correct.

- 10) Electric potential, measured in volts, is the ratio of electric energy to amount of electric 10) _____
- A) charge.
 - B) resistance.
 - C) voltage.
 - D) current.
 - E) None of the above choices are correct.

- 11) Rub electrons from your hair with a comb and the comb becomes 11) _____
- A) positively charge.
 - B) negatively charged.
 - C) discharged.

Figure 22-A



- 12) A balloon will stick to a wooden wall if the balloon is charged 12) _____
- A) positively.
 - B) negatively.
 - C) either positively or negatively.
 - D) None of the above choices are correct.

- 13) In an ac circuit, the electric field 13) _____
- A) changes magnitude and direction with time.
 - B) is everywhere the same.
 - C) increases via the inverse square law.
 - D) is non-existent.
 - E) none of these

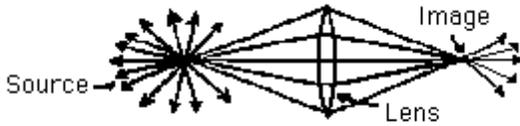
- 14) The electric power of a lamp that carries 2 A at 120 V is 14) _____
- A) 2 watts.
 - B) 20 watts.
 - C) 240 watts.
 - D) 1/6 watts.
 - E) 60 watts.

- 15) Which statement is correct? 15) _____
- A) Current is the primary cause of voltage.
 - B) Charge flows in a closed circuit.
 - C) Voltage flows through an open or a closed circuit.
 - D) Resistance flows though an open circuit.

- 16) the field surrounding every moving electron is 16) _____
 A) always both electric and magnetic.
 B) always electric but never magnetic.
 C) always magnetic but never electric
 D) sometimes magnetic and sometimes electric.
 E) none of the above
- 17) Magnetism is due to the motion of electrons as they 17) _____
 A) move around the nucleus. B) spin on their axes.
 C) Choices A and B are both correct. D) None of the above choices are correct.
- 18) If a steady magnetic field exerts a force on a moving charge, that force is directed 18) _____
 A) in the direction of the field.
 B) opposite the direction of the field.
 C) at right angles to the direction of the field.
- 19) Magnetic domains normally occur in 19) _____
 A) silver.
 B) iron.
 C) copper.
 D) all of these
 E) none of these
- 20) The output power of an ideal transformer is 20) _____
 A) smaller than the input power. B) greater than the input power.
 C) equal to the input power. D) may be any of these
- 21) Thrust a magnet into a coil of wire and the coil 21) _____
 A) has a current in it. B) becomes an electromagnet.
 C) both of these D) neither of these
- 22) Glass is transparent to wave frequencies that 22) _____
 A) match its natural frequencies. B) are below its natural frequencies.
 C) both of these D) none of these
- 23) Compared to its average speed in air, the average speed of a beam of light in glass is 23) _____
 A) more. B) less. C) the same.
- 24) A person standing waist-deep in a swimming pool appears to have short legs because of light 24) _____
 A) interference.
 B) absorption.
 C) refraction.
 D) diffraction.
 E) reflection.

A lens can be used to take light emanating from a point source and bring it back to another point. This second point is called the first point's image.

Figure 28-G



- 25) From what you know about the refraction of various wavelengths of visible light, would red light and blue light from the same source produce images at the same place? 25) _____
 A) Yes.
 B) No. Blue light would make an image closer to the lens.
 C) No. Red light would make an image closer to the lens.
- 26) Different colors are dispersed by a prism because different colors in the prism have different 26) _____
 A) speeds.
 B) frequencies.
 C) directions.
 D) energies.
 E) none of these
- 27) The vibrational direction of the electron and the plane of polarization of the light it emits 27) _____
 A) may or may not be at right angles to each other.
 B) are the same.
 C) are independent of each other.
 D) are at right angles to each other.
- 28) Diffraction is more pronounced through relatively 28) _____
 A) large openings. B) small openings. C) same for each
- 29) As a source of continuous sound approaches a constant speed, you will be aware of an 29) _____
 apparent increasing of its
 A) loudness and wavelength.
 B) loudness and frequency.
 C) frequency and wavelength.
 D) loudness, frequency, and wavelength.
 E) None of the above choices are correct.
- 30) A 340-hertz sound wave travels at 340 m/s in air with a wavelength of 30) _____
 A) 1 m.
 B) 100 m.
 C) 1000 m.
 D) 10 m.
 E) None of the above choices are correct.

- 31) When a single charge q is placed at one corner of a square, the electric field at the center of the square is F/q . If two other equal charges are placed at the adjacent corners of the square, the electric field at the center of the square due to these three equal charges is 31) _____
A) $F/(2q)$.
B) $F/(4q)$.
C) $4F/q$.
D) F/q .
E) None of the above choices are correct.
- 32) Two charges separated by one meter exert 1-N forces on each other. If the charges are pulled to 3-m separation distance, the force on each charge will be 32) _____
A) 0.33 N. B) 3 N. C) 0.11 N. D) 9 N. E) 0 N.
- 33) A wire carrying a current is normally charged 33) _____
A) positively. B) negatively. C) not at all.
- 34) Like kinds of magnetic poles repel while unlike kinds of magnetic poles 34) _____
A) may attract or repel. B) attract. C) repel also.
- 35) Consider light energy that is momentarily absorbed in glass and then re-emitted. Compared to the absorbed light, the frequency of the re-emitted light is 35) _____
A) the same.
B) slightly more.
C) considerably less.
D) considerably more.
E) slightly less.
- 36) If you wish to hit a blue fish with a red laser beam, you should compensate for refraction between the air and water by aiming your laser 36) _____
A) below the sighted fish.
B) above the sighted fish.
C) directly at the sighted fish.
- 37) Suppose at the surface of the Earth a person can do 20 pushups. In a spaceship far away from any gravitational influence, accelerating at g , the same person could do 37) _____
A) more than 20 pushups. B) less than 20 pushups. C) 20 pushups.
- 38) A bow wave is produced when a wave source moves 38) _____
A) faster than the waves it produces.
B) as fast as the waves it produces.
C) nearly as fast as the waves it produces.
- 39) An explosion occurs 34 km away. Since sound travels at 340 m/s, the time it takes for the sound to reach you is 39) _____
A) 10 seconds.
B) 1 second.
C) 20 seconds.
D) 0.1 second.
E) more than 20 seconds.

- 40) Normally a small party balloon charged to several thousand volts will have a relatively small amount of _____ 40) _____
A) charge and energy. B) charge
C) energy. D) neither charge or energy.
- 41) Which force field can increase a moving electron's speed? _____ 41) _____
A) only a magnetic field B) either an electric or magnetic field
C) only an electric field D) none of these
- 42) Four amperes of current exist in the primary coil of a transformer. The voltage across the primary coil is 110 V. What is the power output of the secondary coil? _____ 42) _____
A) 110 W
B) 27.5 W
C) 880 W
D) 440 W
E) not enough information to say
- 43) In the periphery of our vision, we are _____ 43) _____
A) insensitive to color and movement.
B) sensitive to movement, but cannot see color.
C) more sensitive to low frequencies than high ones.
D) sensitive to both movement and color.
E) none of these
- 44) A mirage occurs for road surfaces that are _____ 44) _____
A) hard. B) warm. C) snowy. D) cold. E) wet.
- 45) Consider the interference colors seen in a film of gasoline on a wet street. The function of the water is to provide a _____ 45) _____
A) means of slowing the rapid evaporation of gasoline.
B) chemical bond with the gasoline.
C) means of spreading the gasoline into a thin film.
D) second reflecting surface.
E) all of these
- 46) Compared to special relativity, general relativity is more concerned with _____ 46) _____
A) gravitation.
B) acceleration.
C) space-time geometry.
D) all of these
E) none of these
- 47) An object that completes 100 vibrations in 5 seconds has a period of _____ 47) _____
A) 0.5 second. B) 2 seconds.
C) 1 second. D) None of the above choices are correct.

Answer Key

Testname: PRACTICE_TEST3

- 1) D
- 2) D
- 3) A
- 4) A
- 5) B
- 6) C
- 7) B
- 8) C
- 9) B
- 10) A
- 11) B
- 12) C
- 13) A
- 14) C
- 15) B
- 16) A
- 17) C
- 18) C
- 19) B
- 20) C
- 21) C
- 22) B
- 23) B
- 24) C
- 25) B
- 26) A
- 27) B
- 28) B
- 29) E
- 30) A
- 31) D
- 32) C
- 33) C
- 34) B
- 35) A
- 36) A
- 37) C
- 38) A
- 39) E
- 40) A
- 41) C
- 42) D
- 43) B
- 44) B
- 45) D
- 46) D
- 47) D