ADDIS ABABA CITY ADMINISTRATION EDUCATION BUREAU
GRADE EIGHT MODEL EXAM
PHYSICS EXAMINATION
2012/ 2020

1

Number of Items: 45 **Time Allowed: 1 Hour**

1. The following table contains different field of studies that are grouped into 1, 2, 3 and 4.

Group	1	2	3	4
Field of studies	Zoology	Mechanics	Mechanics	Mechanics
	Botany	Botany	Heat	Optics
	Optics	Optics	Botany	Heat

Which one of the following group number contains only the branch of physics?

A. 2
B. 1
C. 4
D. 3

2. An object in a state of continuous change of position with respect to some point, the object is said to be _____.

A. in motion
B. accelerated
C. in a reference frame
D. at rest

3. Kinetic energy is the energy possessed by an object due to_____.

A. its position
B. its motion
C. its shape
D. its elasticity

4. The Moon's gravity is one-sixth of the gravity of the Earth ($g_{Moon} = \frac{1}{6} g_{Earth}$), then the weight of an object on the surface of the Earth is

A. equal to its weight on the Moon surface.
B. six times to its weight on the Moon surface.
C. one-sixth of its weight on the Moon surface.
D. six times to its mass on the Moon surface.

5. Torque is the measure of a force's tendency around a given axis to produce a

A. rectilinear motion.
B. turning effect.
C. free fall motion.
D. balanced system.

6. The reflection of sound that comes from hard surface object is known as

A. echo.
B. mirage.
C. whistle.
D. spectrum.

7. A branch of electricity which deals about an important property of charges at rest is called_____.

A. electrostatic
B. electric current
C. voltage
D. electromotive force

8. What will be the equivalent distance of 1 km covered by an athlete?

A. 0.001 m
B. 1 m
C. 100 m
D. 1000 m

9. Which one of the following substance is a conductor?

A. Iron
B. Wood
C. Plastic
D. Cloth

10. Which one of the following statement is correct about inertia?

A. A resistance force against the relative motion of an object.
B. The tendency of an object to resist a change of its state.
C. The amount of matter contained by an object.
D. The pull of gravity acting on an object towards the earth.

11. Which one of the following statement is correct about heat?

A. Heat is the measure of the average kinetic energy of the particles in the substance.
B. Heat is a form of energy that can be transferred from a hotter to a cooler body.
C. Heat is the measure of hotness and coldness of a body.
D. Heat content of a body is independent of the amount of particles it contains.

12. A lever has an ideal mechanical advantage of 2. The distance from the fulcrum to the load is 50 cm, what is the distance from the fulcrum to the effort?

A. 100 cm
B. 52 cm
C. 48 cm
D. 25 cm

13. Which one of the following units is **NOT** used to express work?

A. W.s
B. N.m
C. $\frac{kg\ m^2}{s^2}$
D. $\frac{kg\ m^2}{s^3}$

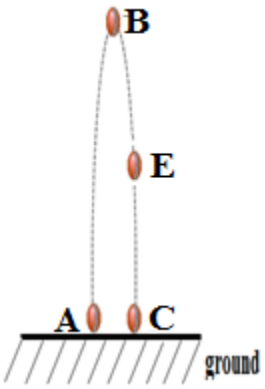
14. Containers A, B and C contains the same amount of water vapors in a sealed. The average kinetic energy of the particles of water in the containers is K.E, 2K.E and 3K.E, respectively. Which one of the following statement is correct about the temperature of the water in each container?

A. The water in the three containers has the same temperature.
B. The water in container A and B has the same temperature.
C. The temperature of water in container A is greater than container C.
D. The temperature of water in container C is greater than container B.

15. Sound is produced when there is _____of objects.

A. vibrations
B. rotations
C. expansions
D. contractions

16. The Figure bellow shows a vertically thrown ball from point "**A**'' reaches a maximum height at point "**B**", and then falls back to point "**C**".



Energy of the ball is transformed from pure potential energy to pure kinetic energy when the ball moves from

A. point **A** to **B**
B. point **E** to **C**
C. point **B** to **C**
D. point **B** to **E**

17. Tie a string at the mid- point of a cylindrical magnet, suspend the magnet away from other magnets and magnetic objects. When the magnet comes to rest, it line up in a north-south direction as a result of

A. magnetic nature of the Earth.
B. spherical shape of the Earth.
C. atmospheric pressure of the surrounding.
D. acceleration due to gravity of the Earth.

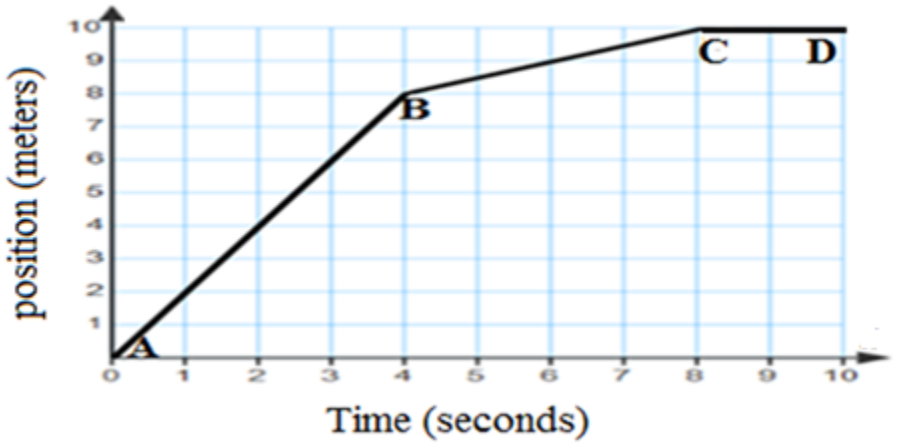
18. Which one of the following statement is correct about primary and secondary cells of potential source?

A. Both cells are rechargeable.
B. Both cells are non-rechargeable.
C. Primary cells are rechargeable whereas secondary cells are non-rechargeable.
D. Secondary cells are rechargeable whereas primary cells are non-rechargeable.

19. Heating of an object may increase in its size, the main reason for its increment is the

A. expansions of particles inside an object.
B. contraction of particles inside an object.
C. kinetic energy of particles in an object becomes less.
D. movement of particles in an object become slower and closer.

20. The graph below shows the position of a moving car and the corresponding time taken.



Which one of the following statement is **NOT** correct about the motion of the car? The velocity of the car between positions_____.

A. A and B is 2 m/s.
B. B and C is 1m/s.
C. B and C is 0.5m/s.
D. C and D is 0m/s.

21. The frictional force between the contact surfaces of two objects is due to the

A. applied force to displace objects.
B. roughens of objects surface in contact.
C. mass of an object in contact.
D. the oil between the object contact surfaces.

22. Which one of the following statement is correct about acceleration and velocity?

A Velocity is scalar whereas acceleration is vector.
B. Velocity is vector whereas acceleration scalar.
C. Both velocity and acceleration are scalars.
D. Both velocity and acceleration are vectors

23. A boy stands 85 meters away from a canyon wall. He shouts and hears the echo of his voice 0.5 seconds later. What is the speed of the sound?

A. 85.0 m/s
B. 42.5 m/s
C. 340 m/s
D. 170 m/s

24. If an object "X" exerts a force on an object "Z", then object "Z" must exert a force of equal in magnitude and opposite in direction on object "X". The statement referred to as

A. Newton's first law of motion.
B. Newton's second law of motion.
C. the law of action and reaction.
D. the law inertia.

25. Pressure is the amount of force acting

A. per unit area.
B. per unit volume.
C. multiplied by unit area.
D. multiplied by unit volume.

26. The bouncing of light rays when it encounters a different medium is defined as_____.

A. diffraction
B. dispersion
C. refraction
D. reflection

27. The area of a rectangular plate is 80 cm^2, whose length was measured to be 16 cm. What is the width of the plate?

A. 96 cm
B. 64 cm
C. 5.0 cm
D. 0.2 cm

28. Symbols that represent powers of ten are called_____.

A. prefixes
B. scientific notation
C. exponential notation
D. suffixes

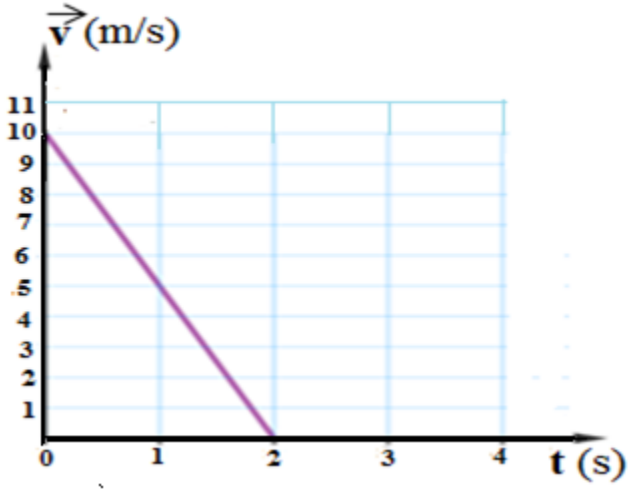
29. Which one of the following is **NOT** the application of atmospheric pressure?

A. Syringe
B. Rubber sucker
C. Stethoscope
D. Siphon

30. The current flowing between end points of a metallic conductor is proportional to the applied potential difference between these endpoints is known as

A. Ohm's law.
B. Faraday's law.
C. law of magnetism.
D. law of electrostatics.

31. The following graph represents the velocity as a function of time for a moving ball.



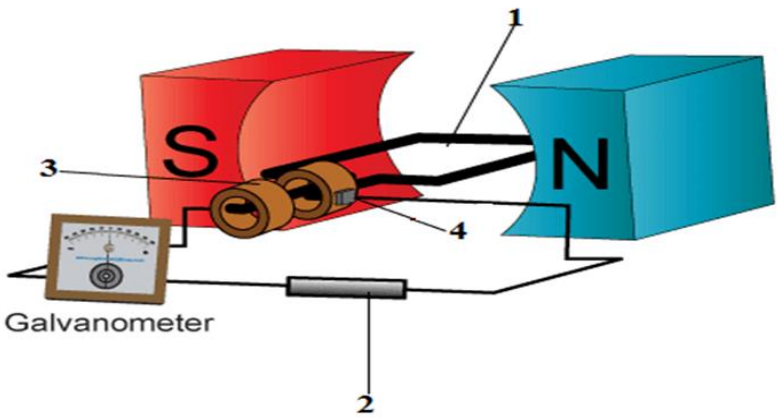
What is the slope of the graph?

A. 5.0 m/s^2
B. -10 m/s^2
C. 2.0 m/s^2
D. -5.0 m/s^2

32. The acceleration of a moving object is uniform when it moves with

A. constant velocity throughout its motion.
B. increasing velocity throughout its motion.
C. decreasing velocity throughout its motion.
D. constant rates of change of velocity.

33. The figure below shows different parts of an a.c generator.



The numbers 1 and 4 in the above generator indicate parts of _____and _____, respectively.

A. slip rings, coil
B. carbon brush, slip rings
C. coil, carbon brush
D. armature, coil

34. In optics, Fermat's principle of light states that,

A. the path taken by a ray of light between any two points in a medium is always the path that takes the shortest time.
B. the path taken by a ray of light between any two points in a medium is always the path that takes the largest time.
C. the incident ray, the reflected ray and the normal to the reflecting surface all lie in the same plane.
D. the incident ray, the reflected ray and the normal to the reflecting surface all lie in different plane.

35. The amount of heat loses from an object covered by insulator materials reduces because the insulated materials

A. absorb heat from the surrounding and emitted to the insulated object.
B. absorb heat from the insulated object and emitted to the surrounding.
C. crate heat energy and emitted to the insulated object.
D. are bad conductors of heat energy transfer from the insulated object to the surrounding.

36. If there is an interruption in the path of the current in a given circuit, then the

A. circuit is open along that path.
B. circuit is closed along that path.
C. circuit contains an ammeter along that path.
D. circuit contains a light bulb along that path.

37. Which one of the following statement is correct about the mechanism of heat transfer from hot body to cold body?

A. Conduction takes place by means of successive collision between neighboring particles.
B. Convection takes place by means of successive collision between neighboring particles.
C. Conduction takes place by the actual movement of particles of the medium.
D. Convection takes place without a material medium.

38. Which one of the following statements is correct about the characteristics of convex lenses? They are

A. thinner at the middle and thicker at the edges.
B. thicker at the middle and thinner at the edge.
C. diverging parallel light rays after passing through it.
D. producing an image of virtual nature for all positions of an object.

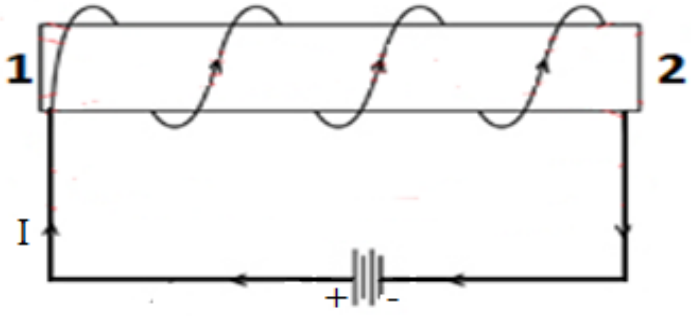
39. An irregular shaped solid object of density 8.9 g/cm^{3}is inserted into a measuring cylinder containing 25 cm^3 of water, and then the level of the water rises into 60 cm^3. What is the mass of the object?

A. 222.6 g
B. 311.5 g
C. 756.5 g
D. 534.0 g

40. Which of the following light bulbs has the largest current through it when operated at the given rated power and voltage?

A. 0.8 W, 1.5 V
B. 6 W, 3 V
C. 4 W, 4.5 V
D. 8 W, 6V

41. The Figure below shows an electromagnet of solenoid.



The numbers 1 and 2 represents _____ and _____of electromagnet regions respectively.

A. North, South poles
B. South, North poles
C. Negative, Positive terminals
D. Positive, Negative terminals

42. The ratio of areas of the two movable pistons of a hydraulic press is $\frac{1}{16}$. If the applied force on the smaller side piston is 32 N. what will be the force exerted by the larger side piston?

A. 0.5 N
B. 2 N
C. 480 N
D. 512 N

43. The table below gives the value of 1st band, 2nd band, multiplier and tolerance of different colors for color coding resistors.

color	1st Band	2nd Band	Multiplier	Tolerance
Black	0	0	1 Ω	
Brown	1	1	10 Ω	± 1 %
Red	2	2	100 Ω	± 2 %
Green	5	5	100 kΩ	± 0.5 %
Silver			0.01	± 5 %

Let the resistance of color coded material is 2000 kΩ, what will be the colors that represent the resistor read from left to right?

A. Red, Black, Green and Silver
B. Brown, Red, Green and Silver
C. Green, Silver, Brown, Black and Red
D. Green, Black, Silver, Brown and Red

44. Which one of the following dimensional expression is correct for heat?
(Where dimension of mass = M, ***length*** = L, ***time*** = T)

A. $M L^{2} T^{-2}$
B. $M L^{-2} T^{-2}$
C. M L T
D. $M L^{2} T^{2}$

45. The nature of an object's image is real, inverted and diminished, and then the location of the object position is _____.
(Where F is the focal point of lenses)

A. beyond 2F of a concave lens.
B. beyond 2F of a convex lens.
C. at 2F of a concave lens.
D. at 2F of a convex lens.

THE END