

**EOT ONE 2019**

**PHYSICS S.3**

**PAPER ONE**

**TIME: 2:15MINS**

**INSTRUCTIONS**

**Attempt all questions**

**SECTION A**

1. The most suitable instrument for measuring the diameter of a test tube is
  - A. A ruler
  - B. A tape measure
  - C. Vernier caliper
  - D. A micrometer screw gauge
2. Which of the following works with direct current only
  - A. Electroplate
  - B. Copper plate
  - C. Transformer
  - D. Electric bell
3. A ray of light travelling from a dense medium to a denser medium is
  - A. Refracted towards the normal
  - B. Refracted away from the normal
  - C. Always reflected back to the same medium
  - D. Always transmitted without being reflected
4. A car accelerates from  $4.0\text{ms}^{-1}$  to  $20\text{ms}^{-1}$  in 8s. How far does it travel in this time?
  - A. 32m
  - B. 96m
  - C. 128m
  - D. 160m
5. Radiation in a thermos flask is minimized by
  - A. Cork
  - B. Vacuum
  - C. Felt pad
  - D. Silvered glass walls
6. Which of the following is a best conductor of heat?
  - A. Silver
  - B. Iron
  - C. Copper
  - D. Aluminum

7. Calculate the power wasted as heat in a cable of resistance  $0.5\Omega$ , when it transmits 2KW at 100V.
- 800W
  - 200W
  - 100W
  - 50W
8. The image formed in a plane mirror is
- The same distance behind as the object is in front
  - Totally inverted
  - Magnified and virtual
- (i) and (ii) only
  - (i) and (iii) only
  - (ii) and (iii) only
  - (i), (ii) and (iii)
9. Hot water pipes are designed with bends in them in order to
- Reduce the speed of water
  - Give the pipe more rigidity
  - Allow for pressure changes
  - Allow for expansion of the pipe
10. The possible energy transfer in an electric bulb is
- Light energy to heat energy
  - Heat energy to electrical energy
  - Electrical energy to light energy
  - Light energy to electrical energy
11. The principle of conservation of energy states that
- Energy is the ability to do work
  - Energy is composed of kinetic and potential energy
  - Energy will always be converted from one form to another
  - Energy cannot be created or destroyed but it can be changed from one form to another.
12. When oil of volume  $6 \times 10^{-3} \text{cm}^3$  is dropped on a clean water surface, it forms a circular patch of one molecule thick of diameter 2cm. find the thickness of the oil.
- $4.77 \times 10^{-4} \text{cm}$
  - $14.32 \times 10^{-4} \text{cm}$
  - $1.91 \times 10^{-3} \text{cm}$
  - $5.24 \times 10^2 \text{cm}$
13. Two cells of each emf 4.5V and internal resistance  $0.5\Omega$  arranged in parallel are connected to a  $2\Omega$  resistor. What is the current flowing?
- 1.5A
  - 2.0A
  - 4.0A
  - 9.0A
14. Gas leaking from a cylinder at one corner of a room reaches another corner by a way

- A. Diffusion
  - B. Evaporation
  - C. Brownian motion
  - D. Osmosis
- 15.** A man takes one minute to lift 4bags of sugar each of weight 50N through a height of 1.5m. Calculate the power expended.
- A. 1.25W
  - B. 5.00W
  - C. 75.00W
  - D. 300.00W
- 16.** A current of 6A flows for 2hours in a circuit. Calculate the quantity of electricity that flows in this time.
- A. 3C
  - B. 12C
  - C. 720C
  - D. 43200C
- 17.** The rate at which electric charge flows past a point in a circuit is measured in
- A. Watts
  - B. Volts
  - C. Amperes
  - D. Coulombs
- 18.** It is easier to use a claw hammer to remove a nail from a piece of wood if the handle is longer because the
- A. Effort applied becomes bigger
  - B. Turning effect becomes bigger
  - C. Anticlockwise moment will balance clockwise moments
  - D. Fulcrum is between the effort and the load
- 19.** A car of mass 500kg accelerates steadily from rest to  $40\text{ms}^{-1}$  in 10s. Calculate the force that produces this acceleration.
- A. 20000N
  - B. 5000N
  - C. 2000N
  - D. 125N
- 20.** Which of the following devices converts electrical energy to mechanical energy?
- A. Thermopile
  - B. Battery
  - C. Dynamo
  - D. Motor
- 21.** A razor blade floating on water sinks when a few drops of paraffin are added to the water because
- A. Paraffin is denser than water
  - B. Surface tension of water increases

- C. Surface tension of water reduces
  - D. Cohesion of water molecules increases
22. Which the following is true about a periscope? It
- A. Gives laterally inverted image
  - B. Is used to observe an obscured objects
  - C. Is used for viewing distant objects
  - D. Gives magnified image of the object.
23. Find the force that would give a mass of 400g an acceleration of  $8\text{ms}^{-1}$
- A. 0.05N
  - B. 3.20N
  - C. 20.00N
  - D. 50.00N
24. When a body is raised above the ground, its gravitational potential energy
- A. Is raised
  - B. Is lowered
  - C. Remains constant
  - D. Changes to kinetic energy
25. A body which is accelerating
- A. Experiences zero force
  - B. **Decreases its velocity to zero**
  - C. Travels with increasing velocity
  - D. Travels only in a straight line
26. Oil of volume  $1.0 \times 10^2 \text{cm}^3$  is dropped on the surface of clean water. If it spreads to form a circle of radius 4cm. find the diameter of a molecule of oil.
- A.  $1.99 \times 10^{-4}$
  - B.  $7.96 \times 10^{-4}$
  - C.  $1.26 \times 10^1$
  - D.  $5.03 \times 10^1$
27. A needle floats on the water surface because of
- A. Adhesion
  - B. Viscosity
  - C. Surface tension
  - D. Capillary attraction
28. Which of the following does not affect the rate at which a gas diffuses through a porous partition?
- A. Temperature of the gas
  - B. Size of the gas molecules
  - C. Volume of the gas
  - D. Size of the pore
29. The work done in transferring one coulomb of charge from one point to another in a circuit is the
- A. Power

- B. Current
- C. Potential difference
- D. Electromotive force

30. Solids are easily compressed because their molecules,

- A. Are far apart
- B. Are closely packed
- C. Vibrate about their mean positions
- D. Have strong adhesive forces between them.

#### SECTION B

31. (a) Define density

(b) A balloon is filled with hydrogen and sealed. Explain what happens when the balloon is released in air.

32. (a) what is meant by efficiency of a machine

(b) Draw a single pulley system of velocity ratio 3

(c) State one reason why the efficiency of a machine is always less than 100%

33. (a) State the principle of floatation

(b) A cube of edge 0.1m floats in a liquid of density  $1200\text{kgm}^{-3}$  with a third of it submerged; find the density of the material of the cube

34. (a) What is meant by the term refractive index

(b) (i) define focal length of a converging lens

(ii) With the aid of a ray diagram show how a converging lens can be used as a magnifying glass.

35. (a) Define (i) Force

(ii) Moment of a force

(b) State the principle of moments

36. (a) Define a joule

(b) The work done to move a body through a distance 5m is 30J. Find the force that acts on the body.

37. (a) What is meant by pressure?

(b) (i) Explain why one feels more pain when pricked with a needle than when pricked with a nail.

(ii) State the assumptions made

38. (a) Define coulomb as a unit of charge

(b) A charge of 180C flows through a lamp for 2minutes. Find the electric current through the lamp.

(c) What is the use of a voltmeter in an electric circuit?

39. (a) Define the following

(i) Equilibrium

(ii) Stability

(iii) Unstable equilibrium

(b) State two ways of increasing the stability of a body

40. (a) state Ohm's law  
(b) Describe an experiment to verify ohm's law.

**END**