

END OF TERM III EXAMINATION 2018

S.2 PHYSICS

TIME: 1 HOUR:

INSTRUCTION:

-Answer all questions.

1. When a car suddenly brought to rest, a passenger jerks forward because of,
A Inertia
B Momentum
C Gravity
D Friction
2. The width of a meter is accurately measured by,
A Meter rule
B Vernier caliper
C Tape measure
D Micrometer screw gauge.
3. A body moves with uniform acceleration if,
A The net force on the body is zero
B Its momentum remains constant.
C It covers equal distances in equal time.
D The velocity changes by equal amount in equal time.
4. A crane raises a mass of 500kg vertically upwards at a speed of 10m/s. Find the power developed.
A 5.0×10^0
B 5×10^1 .
C 5.0×10^2 .
D 5.0×10^4 .
5. Momentum is given by the product of,
A acceleration and mass
B mass and velocity.
C displacement and velocity.
D mass and displacement.
6. Light energy is reflected when,
A Angle of incidence is greater than angle of reflection.
B Angle of incident is equal to angle of reflection.
C Angle of incident is equal to angle of refraction.
D The normal at the point of incident makes the same angle as the incident ray.
7. A hydraulic brake works on the principle of ,
A High density of a liquid.
B Transmission of pressure in a liquid.
C Distribution of force in a liquid.
D Existence of viscosity in a liquid.

8. A force of 20N extends a spring by 10mm. find the extension, in mm caused by a mass of 0.5kg.

- | | | | |
|---|-----|---|------|
| A | 10 | C | 0.25 |
| B | 2.5 | D | 1.0 |

9. Surface tension in a liquid may be weakened by,

- A Increasing the density of the liquid.
- B Adding soap solution.
- C Lowering the temperature.
- D Increasing the amount of liquids.

10. When does the eclipse of the moon occur?

- A When a bright ring of a sun light shows round the edge of the moon.
- B When the moon is between the sun and the earth.
- C When the earth is between the sun and the moon.
- D When the sun is totally eclipsed by the moon.

11. The principle of conservation of energy states that,

- A Energy is ability to do work.
- B Energy cannot be created or destroyed but it can be changed from one form to Another.
- C Energy is composed of kinetic and potential energy.
- D Energy will always be converted from one form to another.

12. Gas leaking from a cylinder, at one corner of a room reaches another corner by way of,

- | | | | |
|---|-----------------|---|-------------|
| A | Osmosis | C | Evaporation |
| B | Brownian motion | D | Diffusion |

13. 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 of diameter 2cm. Find the thinness of oil.

- | | | | |
|---|---------------------------------|---|----------------------------------|
| A | $5.24 \times 10^2 \text{cm}$ | C | $4.77 \times 10^{-4} \text{cm}$ |
| B | $1.91 \times 10^{-3} \text{cm}$ | D | $14.32 \times 10^{-4} \text{cm}$ |

14. The three basic quantities of measurements are,

- | | | | |
|---|----------------------------|---|---------------------------|
| A | Length, Mass and Time | C | Mass, Frequency and Power |
| B | Time, Density and Pressure | D | Area, Current and volume. |

15. Two forces of 8N and 6N act a point at right angle to each other. Find the magnitude of the resultant force.

- A 14N
B 2N

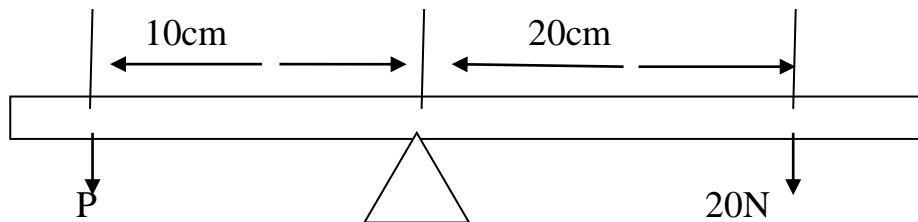
- C 10N
D 48N

16. Find the force required to give a mass of 500g an acceleration of $2 \times 10^{-2} \text{ms}^{-2}$.

- A $1 \times 10^{-2} \text{N}$
B $1 \times 10^1 \text{N}$

- C $1 \times 10^2 \text{N}$
D $1 \times 10^4 \text{N}$

17. A uniform meter rule is pivoted at its center as shown bellow.



If the rule is in equilibrium, find the value of P.

- A 100N
B 4N

- C 50N
D 33.3N.

18. The lengths of the mercury column of a thermometer at ice point and steam point are 2cm and 22cm respectively. The reading of the thermometer when the mercury column is 9cm long is,

- A 31.8°C
B 40.9°C

- C 45.0°C
D 35.0°C

19. What is 100cm Hg in NM^{-2} ?

A $\frac{13600 \times 100 \times 10}{100}$

B $\frac{13600 \times 100 \times 10}{100 \times 10}$

C $\frac{13600 \times 100}{100 \times 10}$

D $\frac{13600 \times 10}{100 \times 100}$

20. Aluminum expands more than copper for the same temperature change. Which of the following is true when a copper aluminum biometric strip is heated?
- i) it curves with copper on top.
 - ii) it curves with aluminum on top,
 - iii) it increases in length.
- | | |
|-----------------------|-----------------------|
| A (i) only | C (iii) only |
| B (ii) and (iii) only | D (ii) and (iii) only |
21. A car acceleration from 4m/s to 20m/s in 8 seconds. How far does it travel in this time?
- | | |
|--------|--------|
| A 160m | C 32m |
| B 96m | D 128m |
22. Brownian motion experiment shows that molecules of gases are,
- A Stationary
 - B More closely packed than molecules in liquid.
 - C In motion in one direction
 - D In constant random motion.
23. A ductile material is that which,
- | | |
|------------------------------------|---------------------------------|
| A easily breaks under compression. | C Is not elastic. |
| B Is fragile | D Can be moulded into any shape |
24. A needle floats on the surface of water because of,
- | | |
|------------------------|--------------------|
| A Capillary attraction | C Adhesion |
| B Viscosity | D Surface tension. |

SECTION B

31. a) State the laws of reflection of light.

(02 marks)

b) State the difference between regular reflection of light and diffusion reflection of light.
(02 marks)

32.a) State two reasons why mercury is referred to alcohol as a thermometric liquid.
(02 marks)

b) The figure below shows a thermo flask. (02 marks)

Name the parts labeled,

(02 marks)

A _____

B _____

33.a) i) State the principle of moments.

(01 mark)

ii) State the conditions for a body to be in equilibrium.

(02 marks)

b) What is meant by center of gravity?

(01 marks)

34.a) Distinguish between a strut and a tie.

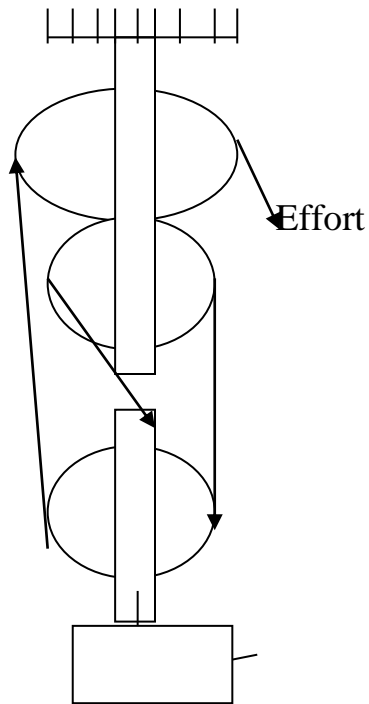
(02 marks)

b) Figure above shows a frame work of finders which is in

i) Compression.

(01 mark)

Diagram



35.a) Define pressure and its SI units.

b) A rectangular block of a metal 20cm by 10cm by 10cm weighs 5kg. Calculate the maximum and minimum pressure.

c) State Archimedes' principle.