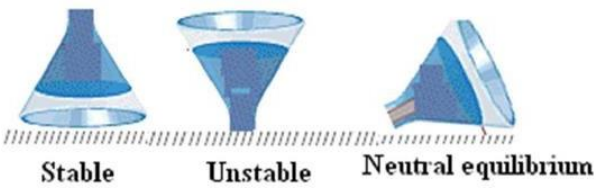
PYSICS MARKING GUIDE (S1)
SECTION A
Q1.
(i)False (1mark for each) /5marks
(ii)False
(iii)False
(iv)True
(v)True

Q2. (1mark for each correct answer) /5marks
(i)b)
(ii) d)
(iii) c)
(iv) b)
(v) d)

Q3.
a) Micrometer screw gauge (1mark)
b) Measuring the volume of liquid (2marks)
Q4.
a) speed: is a ratio between distance which is a scalar quantity and time which is a scalar quantity while velocity is a ratio between displacement which is a vector quantity and time taken. (2marks)
b) force, weight, acceleration, velocity, ... (1mark)
Q5.
a) it takes the shape of containing vessel
b)
Q6.
a) F=100N
d=300m
W=F×d=100N×300m=30000J
b) P=$\frac{F\times d}{t}=\frac{80\times 2.5}{4}=50w$
Q7.
a)
b) (i) Newton's third law of motion
(ii)Newton's first law of motion
Q8.
a) A force is a pull or push acting on an object as a result of its interaction with other objects
b) Types of forces:
Contact and non-contact forces
Q9.



Q10. a) Chemical energy → electrical energy → light energy + heat energy
b) solar cell
battery
electric motor (generator)

Q11
a) uniform rectilinear motion
b) u=20m/s
v=30m/s
t=5s

$$a = \frac{v-u}{t} = \frac{30-20}{5} = 2m/s^2$$

Q12. (1mark for each) /5marks

1→ c
2→ a
3→ d
4→ e
5→ b

Q13.

a)Reading=L.S. reading+(coinciding circular scale x least count)

=3.5 mm+(32x0.01)=3.5+0.32=3.82mm (2marks)

b.4.3+(8x0.01)=4.3+0.08=4.38cm (2marks)

Q14

Physical property	**Solid**	**Liquid**	**Gas**	
Can flow	**NO**	**YES**	**YES**	
Definite volume	**YES**	**YES**	**NO**	
Definite shape	**YES**	**NO**	**NO**	
Can be compressed easily	**NO**	**NO**	**YES**	

Q15

a) A transducer: is a device which converts a form of energy into another form of energy.

b) (i)Loudspeakers

(ii) Electric iron, electric kettle, electric cooker, …..

(iii) solar cell/solar panel

SECTION B (30marks)

Q16. a) **A physical quantity:** it is any measurable feature in nature.

b) (4marks)

Physical quantity	***SI unit***	***Instrument used***	
Density	Kg/m3	Densimeter	
Volume	**m^3**	**Measuring cylinder**	
Time	**s**	Stop watch	
Temperature	Kelvin	**Thermometer**	
Length	**m**	**Measuring tape**	

c) (i) mass, time, temperature and intensity of current
(ii) Area, volume, force and acceleration

Q17

a) Characteristics of force as vector quantity
-magnitude size
-point of application
-direction

b)

Forces	Types of forces
Friction force	Contact
Magnetic force	Non-contact
Tension force	Contact
Gravitational force	Non-contact

c)(i) $F=F_1-F_2=200N-150N=50N$

(ii)East ward direction

Q18.

a) **<u>Simple machine</u>**: it is a tool where the effort is applied to overcome the load

b)

$W_1 \times d_1 = W_2 \times d_2$

$W_2 = \frac{w2 \times d2}{d1} = \frac{100 \times 10 \times 1}{4} = \mathbf{250}\boldsymbol{N}$

c)(i)efficiency$= \frac{wo}{wi} \times \mathbf{100}\% = \frac{90 \times 4}{60 \times 8} \times \mathbf{100} = \mathbf{75}\%$

(ii) because the is energy wasted to lift the parts of machine and there is energy lost against the friction force

Q19. a) **Experiment to find the centre of mass of an irregularly shaped lamina (3 marks)**

Plumb line method is used to determine the centre of gravity of objects of irregular shape. Flatness is particularly necessary when drawing lines on the surface. Although two lines may be used to locate the centre of gravity, a third line is required to check the accuracy of the first two. I fall the three lines meet at the same point, then they have been accurately drawn.

The centre of gravity of an object irregular shape is where all lines drawn on the cardboard, by using the plumb line method, intersect. The centre of gravity of a body also coincides with its centre of mass. The **center of mass** of an object may be defined as the point at which an applied force produces acceleration but no rotation

Apparatus

A plumb line, a thread, a stand and a cardboard

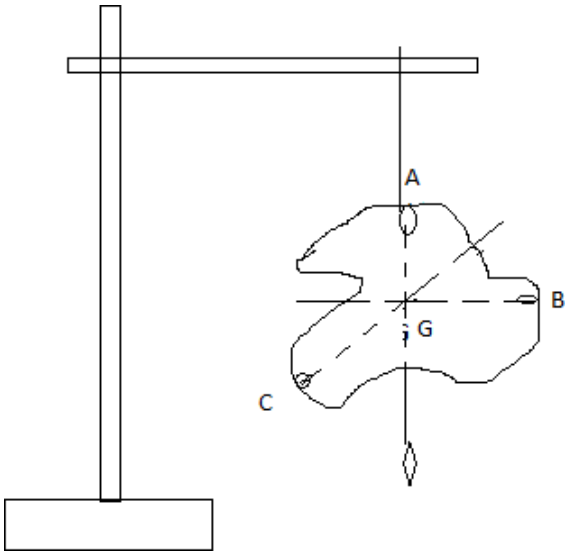


Fig.10

Procedure

- Make3 holes, A, Band C on the edges the cardboard.
- Suspend it by a rod through the hole A as shown in Figure above
- Tie a plumb line on the rod beside the cardboard.
- After the cardboard and plumb line have stopped swinging, draw a vertical line on the card board as set by plumb line.
- Repeat the experiment using other holes B and C. The lines intersect at a point noted G
- Balance the card board with the tip of a pencil at the point of intersection of the three lines. What do you observe?

Observation

The suspended object will always rest with its centre of gravity vertically below the point of support. The object balances on the tip of the pencil if placed at its centre of gravity

b. If the mass is uniformly distributed, the problem is greatly simplified. If the object has a line(or plane) of symmetry, the center of gravity lies on the line of symmetry.

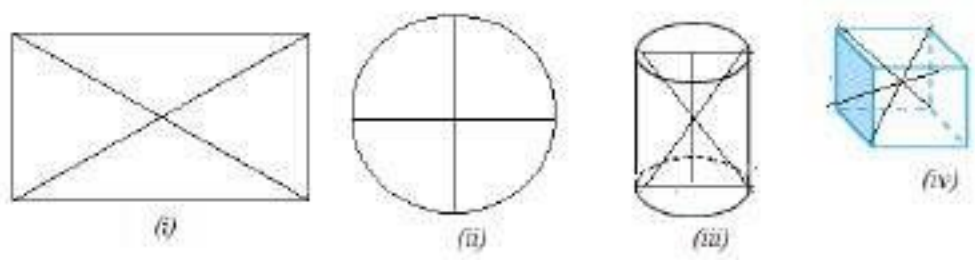


Fig. 11

(i) Rectangular lamina (1 mark)**, (ii) Circular object (**1 mark)**, (iii) circular object (**1 mark)**, (iv) Rectangular parallepiped object (**1 mark)

c. i) Stable **(**1mark), ii) neutral **(**1 mark), iii) Unstable **(**1mark)

Q20.

a) E: Air resistance force
F: Weight

b) Air of the atmosphere

c) It will stay in air without moving up or down.

d) As the altitude increases the weight of an object decreases and as the altitude decreases the weight of an object increases.

e) (i) mass
(ii) Weight