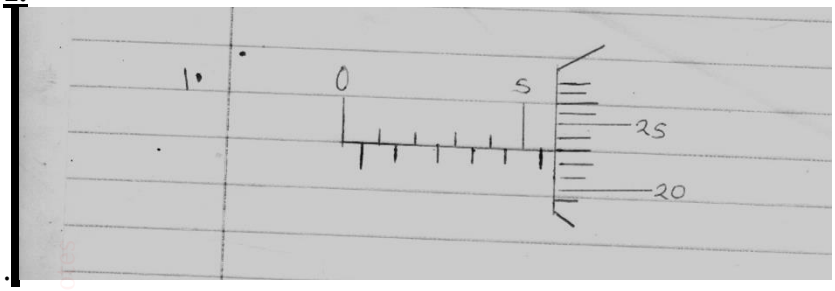
STAREHE GIRLS' CENTRE MOCK EXAMINATION 2025

PHYSICS

PAPER 1

MARKING SCHEME

1.



2. diffusion

3. stability increases,position of cog lowers

4. incsrease in the speed of the plane increase the speed of air in the opposite direction,lowering the pressure above the plane.

5. $1/2mv^2=mgh$

   $1/2x15x0.2=0.5x10xh$

   $h=0.3m$

6 . $F_1d_1+F_2d_2=F_3d_3$

   $6d=3(35-d)+4(55-d)$

   $d=25cm$

7. death of aquatic life.

8. because of unequal expansion of glass,the outside expands before the inside.

9. Y records higher reading than X,

10. Dull surfaces are better emitters of heat than shinny.

11. $140-96=44$

    $\rho=m/v$

    $=268/44$

    $=6.091$

    $=6091kg/m^3$

12. Heating increases the length, increasing the turning effect, tilt anticlockwise

13. $F=ke$

90/300=0.3

0.3/2+0.3/3

0.25m

14. a) when a body is partially or totally immersed in a fluid, it experiences an up thrust equal to the weight of the fluid displaced.

b) i) W=mg+vρg

=1.3x10+2x0.1x10

=15N

ii) U=weight of the fluid displaced/vvρg

=2x1.3x10=26N

iii) T=U-W

=26-15=9N

c) i) R.D=weight of solid/up thrust

=50/6

=8.3333

ii) Density =R.Dx density of water

=8.3333x1000

=8333.3kg/m^3

15. a) i) OA-Body moving at constant velocity

ii) AB-Body at rest

iii) BC-body moving at velocity increasing non uniformly

b) A body remains in a state of rest or in *uniform motion in a straight line*/**uniform velocity** unless acted upon by an external force.

c) i)

ii) inertia

iii) $h=ut+1/2gt^2$ $u=0$

$3.2=1/2x10xt^2$,$t=0.8sec$

iv) $S=ut$

$20x0.8=16m$

16. a) temperature at which the volume of a body is assumed to be zero.

b) Record the initial temperature and pressure.
Record the temperature and the corresponding pressure at regular intervals of time
Tabulate the results for pressure and absolute temperature in a table,
draw a graph of pressure versus absolute temperature

c) $P_1V_1=P_2V_2$
$(10^5+h\rho g)\ 4.5=10^5x18$
$h=40m$

17. a) radius of the bend
Angular velocity

b) i) $T=mv^2/r - mg$
$9.2=0.4v^2-4$
$v = 3.6056$ m/s

ii) $T=F_c + mg$,$F_c = (0.4X3.6056^2) + 4 = 9.2014N$

iii) merry go round
speed governors
centrifuge

18. a) $W=FxD$
$=300X10=3000J$

b) $W=FxD$
$=100X10/\sin 15=3864J$

c) η = work output/work inputx100%
$=3000/3864x100\%=77.64\%$

d) M.A . =L/E
=300/100
=3

19. a) build-up of pressure in the cooker, rising the boiling point. use less energy to cook.

b) (i) $Q = C\theta$

$= 40 \times (34 - 25) = 360J$

(ii) $Q = MC\theta$

$= 100 \times 10^{-3} \times 4.2 \times 10^{3} \times (34 - 25)$

$= 3780J$

(iii) Heat lost $= 360 + 3780$

$= 4140J$

$MC\theta = 4140$

$$C = \frac{4140}{150 \times 10^{-3} \times (100 - 34)}$$

$C = 418.18Jkg^{-1}k^{-1}$