TANZANIA HEADS OF ISLAMIC SCHOOLS COUNCIL

FORM TWO INTER ISLAMIC MOCK ASSESSMENT

PHYSICS

MARKING SCHEME JULY/AUGUST, 2026

1. **01 mark @**

(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)	(x)
C	A	A	B	A	D	NO ANSWER	C	C	A

2. **01 mark @**

(i)	(ii)	(iii)	(iv)	(v)
C	D	A	B	E

3. (a) (i) Convex mirror (Diverging mirror) **01mark**

(ii) The mirrors are preferred because they form upright images which are smaller/ diminished with wide field of view. **03 marks**

(b) Given data

μ = 25cm

Size: If ho = ho, them h_1 = 2ho. (Image is larger twice as the object)

Magnification m = $\frac{hi}{ho} = \frac{2ho}{ho} = 2$

$\therefore$ m = 2 **01mark**

In turn; m = $\frac{v}{u}$

2 = $\frac{v}{25cm}$

V = 50cm **01mark**

We can now find focal length, f

From $\frac{1}{f} = \frac{1}{u} + \frac{1}{v}$ **01mark**

$$\frac{1}{f} = \frac{1}{25} + \frac{1}{50} = \frac{2+1}{50}$$

f = $\frac{50}{3} cm = 16.67cm$ **0 1mark**

But: We need new μ, if image is 4 times the size of the object i.e. v = 4μ

m = $\frac{v}{u} = \frac{4u}{u}$=4

And; from $\frac{1}{f} = \frac{1}{u} + \frac{1}{v}$, use v = 4u

$\frac{1}{16.67} = \frac{1}{u} + \frac{1}{4u} = \frac{4+1}{4u} = \frac{5}{4u}$

$\frac{4u}{5} = 16.67, \ u = \frac{16.67 \times 5}{4}$

∴ Object distance will be 20.84cm **02 marks**

4. (a) Data given

Area of larger piston, A = 0.0003m^2

Area of smaller piston, a = 2cm^2 = 2cm^2 $\left(\frac{1m}{100cm}\right)\left(\frac{1m}{100cm}\right)$ = 0.0002m^2. **01mark**

Force (f) applied in smaller piston = 120N

Required: Pushing upo force (f) in larger piston

Pressure (Ps) exerted in smaller piston $\frac{f}{a}$ **(00 ½ mark)**

Pressure (P_L) exerted in larger piston $\frac{F}{A}$ **(00 ½ mark)**

From Pascal's principle : $P_S = P_L$ **01 mark**

From $\frac{f}{a} = \frac{F}{A}$

$f = \frac{Af}{a}$ **01mark**

$= \frac{0.0003m^2}{0.0002m^2} \times 120N$ **01mark**

$F = 180N$

(b) Given data

Initial length of spring L_0 = 16.0cm

i.e. extension , e = 20cm – 16cm = 4cm = 0.04m **(00 ½ mark)**

Weight (force) = 5.0N

Required: Length when weight = 6N

From Hooker's Law

F = KE, E = F/K **(00 ½ mark)**

K = F/e = 5.0n/0.04m = 125N/n **01mark**

Again when force changes:

e = F/K = $\frac{6.0N}{125\ N/m} = 0.048m = 4.8cm$ **01mark**

Then, the length of the spring will be:

L_0 + new "e" = 16cm + 4.8cm **01mark**

= 20.8cm **01 mark**

5. (a) The reason behind is all orbit the concept of the surface tension. The surface tension in hotter soup is low due to the forest that surface tension of liquid decreases with an increase in temperature the low surface tension allows hotter soup spread quickly over larger area of the tongue and faster better. **04 marks**

(b) It is well known that work done = fore x distance. **01mark**

When the box is lifted vertically,

Workdone = Gain in gravitational potential energy **01mark**

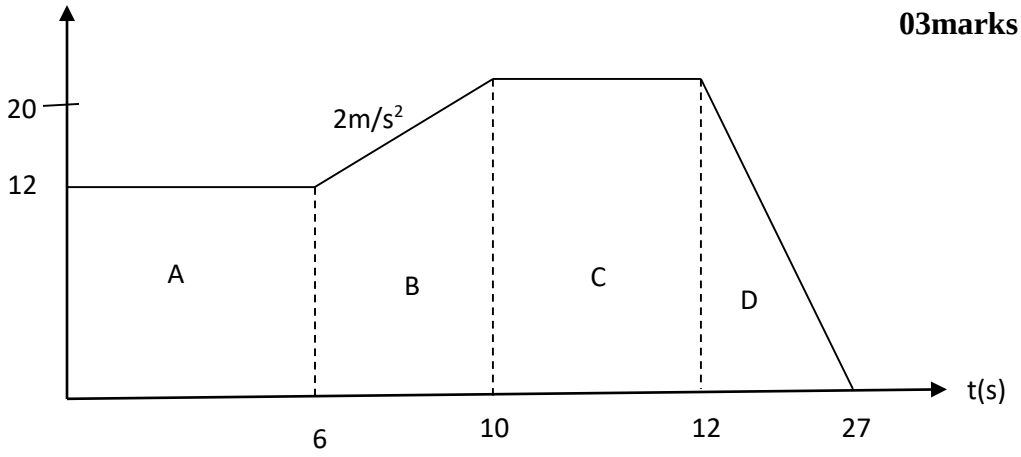
When pushed on a rough floor, work done against friction. Energy is lost as heat due to friction. **01mark**

Therefore, more work is done when pushing the box on a rough surface. **01mark**

(c) Is the process of directing the magnetic field lines **02 marks**

6. From forming information into a graph

(a) Vm/s



03marks

Required the graph (√)

(b) Distance = Area under the graph

= Length x width

= 12m/s x 5 seconds

S = 60m **03marks**

(c) Average velocity = $\frac{\text{Total distance}}{\text{Total time}}$

Total distance = Total Area under the graph

= Area A + area B + area)+ area D)

But, $\frac{u-v}{t} = a$, we can calculate highest velocity reached.

$\frac{v-u}{t} = a$

$\frac{v-12m/s}{4s} = 2m/s^2$

$V = 12m + 4s(2m/s^2)$

= 12m/s + 8m/s

= 20m/s **01mark**

Area A = 12x6 = 72m **(00 ½ mark)**

Area B = $\frac{1}{2}(a+b)h$

= $\frac{1}{2}(12+20)4$

= 2 x 32 = 64m **(00 ½ mark)**

Area C = (20 x 20)m = 40m **(00 ½ mark)**

Area D = $\frac{1}{2}bh = \frac{1}{2} \times 15 \times 20 = 150m$ **(00 ½ mark)**

Total Area = Total distance = 72m+64m+40m+150n = 326m.

$\therefore$ V = $\frac{362m}{275} = 12.1m/s$ **01mark**

7. (a) (i) Refraction of light **01 mark**

(ii) Change [decrease] in speed of light as it passes from air to water since water is denser than air **03marks**

(b) (i) Given data

Density (ρ) of mercury (ρ = 13,600kg/m^3)

Change in height (Δh) = 0.25m

Atmospheric pressure = 1.0 x 10Pa

Required: Change in pressure (ΔP)

From p = ρgh

Thus $\Delta P = \int g\Delta h$ **01mark**

= 13600kg/m^3 x 10N/kg x 0.25m

ΔP = 34000Pa = 3.4x10^{4}Pa **02marks**

(ii) Absolute Pressure

Recall: $\Delta P = P_1 - P_2$, Thus $P_1 = \Delta P + P_2$ **01mark**

$\therefore$ Absolute Pressure (P_1) = Atmospheric Pressure + Change in Pressure

= 1.0 x 10^{5}Pa + 3.4 x 10^{4}Pa

= (1.0 x 10^5 + 0.34 x 10^5)Pa

= 1.34 x 10^{5}Pa **02marks**

8. (a) (i) Optical Instruments used by astronomers and Jeweler. **02marks**

- Telescope – used by astronomer
- Microscope or magnifying glass-used by Jeweler

(ii) Reasons **(02 marks)**

- Telescope: observe distant celestial objects
- Microscope; magnifies small objects
- Projector

(iii) Uses **(02 marks)**

- Photography
- Medical examination (eye, laboratory)

(b) Data given

Focal length of objective (fo) = ?

Focal length if eye piece (fe) =?

Length (L) = 78cm

Angular magnification = 15

From

L = fe + fo

fe + fo = 78 …….. (i) **01mark**

$M = \frac{fo}{fe}$

fo = Mfe

fo = 15fe ……... (ii) **01mark**

Substitute eqn (ii) into (i)

fe + 15fe = 78.

16fe = 78

fe = 4.9cm ……. **01mark**

then

fo = Mfe

fo = 15 x 4.9

fo = 73.1cm …… **01mark**

9. (a) When a body is partially or totally immersed in a fluid it experience an upthrust equal to the weight of the fluid displaced. **04marks**

(b) Solution

W = T + u **01mark**

T = w – u

T = mg - ∫vg

T = mg - ∫oil.Vi.g

Vi = $\frac{360g}{7.89/cm^3} = 45.62cm^3$

Volume of Iron piece (Vi) = 45.62cm^3 **01mark**

(c) For halfway submerged $\frac{Vi}{2} = \frac{46.2}{2} = 22.81cm^3$ **01mark**

From the equation above

T = mg - $\int_{(oil)}$.Vi.g **01mark**

T = (360g x 0.01N/g) – (0.9g/cm^3 x 23.1cm^3 x 0.01N/g) **01mark**

T = 3.6N – 0.2N **01mark**

T = 3.39N

Tension in the string Is 3.39N **01 mark**

10. Data given

Current (I) = 10A

Voltage (V) = 120V **01mark**

(i) Power (P) = ?
From
Power (P) = IV **00 ½ mark**
= 10A x 120V **01 mark**
P = 1200W **01mark**

(ii) Energy in Joules
From
H = Itv **00 ½ mark**
time (t) = 5 hours
H = 10A x 5 hrs x 120V x 3600 **01 mark**
H = 21,600,000J **01mark**

(b) Resistance of a wire is directly proportional to the length of a wire (Rαι) **01mark**

Resistance of a wire Is inversely proportional to cross sectional area R α 1/A. **01mark**

Since X Is very long and thin while wire Y Is short and thick, then wire X have higher resistance than wire Y. **02marks**

(c) Data

Emf(E) = 12V

(r) = 1.5Ω

R = 4Ω

Required: Total resistance of the circuit R_T.

(i) $R_T = R + r$
$R_T = 4\Omega + 1.5\Omega$
$R_T = 5.5\Omega$

01mark

(ii) Current through the battery
$E = IR_T$
$I = E/R_T$
$I = \frac{12V}{5.5}$
$I = 2.2A$ **02 marks**

(iii) P.d across the cell terminals
$V = IR$
$= 2.2 \times 4$
8V

02 marks