KENYA NATIONAL EXAMINATION COUNCIL
REVISION MOCK EXAMS 2016
TOP NATIONAL SCHOOLS

ALLIANCE BOYS HIGH SCHOOL
232/1
PHYSICS
PAPER 1
MARKING SCHEME

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ALLIANCE BOYS HIGH SCHOOL KCSE TRIAL AND PRACTICE EXAM 2016

PAPER 1

MARKING SCHEME

SECTION A (25 MARKS)

1. a) (4.5 + 0.21) – 0.11 mm

= 4.6 mm ✓

b)

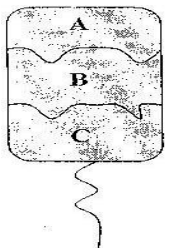
$D = \frac{m}{v}$

$= \frac{0.0024}{\frac{4}{3}x\frac{22}{7}x\ 2.3\ x10^{-3}\ 3}$ ✓

= 47, 091.13 kgm^3

= 47100 kg/m^3 (3 s.f) ✓

2.



Correct thread curving ✓1

Surface tension is broken in region B and surface tension on side Aand C Pulls the thread. ✓1

3. Water rises up the glass tube. ✓

Hydrogen diffuses out the porous pot faster than air diffusing into the potcreating✓ partial vacuum (low pressure) hence atmospheric pressure pushes water upwards.

4.

A shows higher temp reading.✓

Black is a good absorber ✓ of heat while silver reflects the heat away.

5.

The COG is raised.✓

This makes bus unstable✓ (likely to topple).

6. a)

Σ ACM = Σcm

30 x 20 = 30 x F✓

F = $\frac{600}{30} = 20N$

Magnetic force = 20-5

= 15N✓

b) South✓

7. (a) It has low density✓ hence along column of water is supported by atmospheric pressure.

(b) The maximum height the can be raised is 10m since the pump✓ operates due to atmospheric pressure.

8. $E_A = E_B = E_C = \frac{12}{3}x\frac{12}{12} = 1.67\ cm$

$e_D = e -= \frac{12}{2}x\frac{5}{12}$ = 2.5 cm ✓ } Accept combined spring

e = 5 cm 5 cm constant method

Total 9.17 cm✓

9. Mass flux = 3.142 x 10^{-4} x 5 x 1040 ✓
= 1.634 kg/s✓

10. OA – increasing velocity ✓
AB – constant velocity✓

11.

$$\frac{P_1V_1}{T_1} = \frac{P_2V_2}{T_2}$$

$T_2 = \frac{85\ x\ 460\ x\ 288}{76\ x\ 500}$

= 296.3K

SECTION B (55 MARKS)

12. a) (i) Ratio of effort distance to effort distance ✓1

(ii) Correct diagram with 3 pulleys blocked up and two down ✓1
Correct threading.✓1

(iiiSome energy are used to lift weight of machine parts ✓1
- Energy used to overcome friction ✓1

(b)

(i) V/R = $\frac{R^2}{V^r}$ = $\frac{14^2}{2.8^2}$✓
= 25✓

(ii) $n = \frac{MA}{V.R} x\ 100\%$
M.A = 25 x $\frac{80}{100}$✓
= 20 ✓

(iii) Effort = $\frac{load}{M.A}$
= $\frac{1200}{20}$✓
= 60N✓

13. (a)

(i) Up motion $h_1 = 40t – 5t^2$ ✓1
Down motion $h_2 = 5t^2$
But $h_1 + h_2 = 100m$
$100 = 5t^2 + -5t^2 + 40t$✓1
t = $\frac{100}{40}$ = 2.5 seconds ✓1

(ii) $hi = 40t – 5t^2$
= (40 x 2.2) – 5 $(2.5)^2$✓1
= 100 – 31.25
= 68.75m✓1 from the ground

(b)
(i) w = 2πf
= 2 x$\frac{22}{7} x\ 6$✓
= 37.7 radis✓
(ii) $a = rw^2$

= 0.6 x (37.7^2) ✓

= 853.42 radis✓

(iii) F = ma

= 0.045 x 853.42✓

= 38.4N ✓

(iv) v = rw

= 0.6 x 37.7

= 22.62 m/s ✓

14. a) A body partially or totally immersed in fluid experiences an upthrust equal ✓ to the weight of the fluid displaced.

(b)

(i) Volume displaced = 4 x 1.5 x 1.2

= 7.2 m^3✓

Weight displaced = 7.2 x 1100 x 10 ✓1

= 79, 200N ✓

(ii) Upthurst = 79,200 ✓1

(iii) T = U – W

= 79,200 – (4000 x 10)✓1

= *39 200 N*✓

(c)

(i) Upthrust = weight of solid

(4 x 10^{-4}x 5x 10^{-2}) x 1000 x 10 = $\frac{m}{1000}x\ 10\ +\ \frac{10}{1000}x\ 10$ ✓

$m = 10g$✓

(ii) 0.2 = (4 x 10^{-4} x x) x 750 x 10 ✓1

x = 0.0667m

= 6.67cm ✓1

15. (a)

	Evapouration	Boiling
1.	*Takes place at all temp.*	*Takes place at fixed temp.*
2.	*At the surface of the liquid*	*Through the liquid*
3.	*Increases with decrease in pressure*	*Decreased with decreases in pressure*

Any two correct pair✓✓

(b)

(i) 80^0c ✓1

(ii) p x t = 1000 x 5 x 60 ✓1

= 300,000J ✓

(iii) Pt = mcθ

300,000 = $\frac{1200}{1000}xc$x (80 – 10)✓

c = 3571.43 J/kg/k✓1

(iv) Pt = mLv

1000 x 3 x 60 = $\frac{50}{1000}xLv$✓

Lv = 3.6 x 10^6 J/kg/k✓1

16. (a) (i)A body continues in its state of ret or uniform motion in a straight line unless acted upon by an external force.✓1

ii) Ft = m (v-u)

75 x 0.1 = $\frac{25}{1000}\ v - 0$ ✓1

V = 30 m/s ✓1

(b) (i) $M_1V_1 + M_2V_2 = (M_1V_2)v$

V = $\frac{20}{1000}x\frac{400}{\frac{20}{1000}+3.5}$✓

= 2.27 m/s✓

(ii) a = $\frac{F}{m} = \frac{4}{0.02+3.5}$

= -1.136 m/s^2✓

$v^2 = v^2 + 2as$

$0 = (2.27)^2 – (2 \times 1.136s)$ ✓1

s = 2.268 m ✓1

(c) P total = $s_1gh_1 + s_2gh_2 + Pa$

= $(1000 \times 10 \times \frac{2}{100}) + (800 \times 10 \times \frac{4}{100}) + (\frac{760}{1000} x\ 10\ x\ 13600)$✓

= 200 + 320 + 103 360✓1

= 103 880 pa✓1