ANSWERS

KENYA CERTIFICATE OF BASIC EDUCATION

SENIOR SCHOOL ASSESSMENT

TERM 2: ENDTERM ASSESSMENT 2026

GRADE 10 – PHYSICS

SECTION A (30 MARKS)

1.

(a)

i. Abdi: **Astrophysics / Astronomy**

ii. Bakari: **Thermodynamics**

iii. Chantal: **Electronics**

(b)

i. Physics is used in X-ray imaging and scanning.

ii. Physics is used in cancer treatment through radiotherapy.

2.

Pressure on solid C:

$P = h\rho g = (0.02 \times 1000 \times 10) + (0.04 \times 800 \times 10) = 200 + 320 = 520\, N/m^2$

(b)

i. Depth of the liquid

ii. Density of the liquid

3.

Using pressure balance:

$P_1 = P_2$
$h_x e_x g = h_y t_y g$ ✓½
$0.06 \times 1200 \times 10 = h_y \times 900 \times 10$ ✓½
$h_y = \frac{120 \times 6}{9000}$
$= 0.08m$
$h = h_y + 3cm$

4.

(a)

Brittleness

(b)

Hooke's Law states that within the elastic limit, force applied to a material is directly proportional to its extension.

(c)

Ductility	Malleability
Ability to be drawn into wires	Ability to be hammered into sheets
Example: Copper	Example: Aluminium

5.

(a)

i.

Coulomb's law states that the force between two charges is directly proportional to the product of the charges and inversely proportional to the square of the distance between them.

ii.

Capacitance is the ability of a capacitor to store electric charge per unit potential difference.

(b)

Bring the charged rod near a charged electroscope and observe whether divergence increases or decreases.

(c)

Nothing happens to the leaf because charges remain on the outer surface of the hollow conductor.

(d)

i. Earthing

ii. Bringing another charged body near it

(e)

i.

$$Q = CV$$

$$Q = CV$$

$= 2 \times 10 = 20\mu C$

ii.

Series combination:

$\frac{1}{C} = \frac{1}{3} + \frac{1}{3}\frac{1}{C} = \frac{2}{3}C = 1.5\mu F$

Parallel:

$C_T = 1.5 + 2 = 3.5\mu F$

iii.

Earthing is the process of connecting a charged body to the earth to remove excess charge safely.

6.

(a)

When cooled strongly, the strip bends upward because brass contracts more than iron.

(b)

Brass

(c)

i. Electric irons

ii. Thermostats

(d)

Kelvin (K)

(e)

False

7.

(a)

Insulator

(b)

Doping

(c)

N-type Semiconductor	P-type Semiconductor
Has excess electrons	Has excess holes
Formed using pentavalent impurities	Formed using trivalent impurities
Electrons are majority carriers	Holes are majority carriers

SECTION B (50 MARKS)

8.

(a)

Centre of gravity is the point through which the whole weight of a body acts.

(b)

i. The luggage raises the centre of gravity.

ii. A high centre of gravity reduces stability.

iii. The bus can topple easily on corners.

(c)

i. Sum of clockwise moments equals sum of anticlockwise moments.

ii. Resultant force acting on the body is zero.

(d)

Moment by 2N weight:

$$2 \times (50 - 10) = 80\,Nm$$

Let distance of 5N weight from pivot be x:

$$5x = 80$$

$$5x = 80$$

$$x = 16cm$$

Position = $50 + 16 = 66cm$

Answer: 66 cm mark

9.

(a)

Mechanical advantage is the ratio of load to effort.

(b)

i.

Velocity Ratio = **4**

ii.

$MA = Efficiency \times VR = \frac{75}{100} \times 4 = 3$

iii.

$Effort = \frac{Load}{MA} = \frac{2400}{3} = 800N$

iv.

$Work = Force \times Distance = 1200 \times 2.5 = 3000J$

(c)

i. Friction between moving parts

ii. Energy loss as heat and sound

(d)

Efficiency is the ratio of useful work output to work input expressed as a percentage.

(e)

i. Some energy is lost through friction.

ii. Some energy is converted into heat and sound.

(f)

i.

$Work = mgh = 50 \times 10 \times 10 = 5000J$

ii.

$$Power = \frac{Work}{Time} = \frac{5000}{20} = 250W$$

(g)

i. Lever

ii. Inclined plane

iii. Wheel and axle

10.

(a)

Doppler Effect

(b)

As the ambulance approaches, the observer hears a higher pitch because sound waves are compressed.

(c)

Diffraction

(d)

Refraction	Reflection
Bending of waves when entering another medium	Bouncing back of waves from a surface
Speed changes	Speed remains the same
Direction changes due to medium change	Direction changes due to reflection

11.

(a)

Ray X: **Alpha radiation**

Ray Y: **Beta radiation**

Ray Z: **Gamma radiation**

(b)

i. Use protective shielding such as lead.

ii. Handle radioactive materials using tongs or remotely.

(c)

i. Greenhouse gases trap heat in the atmosphere.

ii. Infrared radiation is absorbed and reflected back to Earth.

iii. This increases Earth's temperature.

iv. Continuous heating leads to global warming.

(d)

i. Use of aerosols containing CFCs

ii. Industrial emissions and refrigerants

(e)

Half-life is the time taken for half the radioactive atoms in a substance to decay.