Student's Assessment Number: _____

# TANZANIA HEADS OF ISLAMIC SCHOOLS COUNCIL

# FORM TWO INTER ISLAMIC MOCK ASSESSMENT

# PHYSICS

## 031

**TIME: 2:30 Hours** **Tuesday, 04th August 2026 a.m.**

**Instructions**

1. This paper consists of sections A, B and C with a total of ten (10) questions.
2. Answer **all** questions in each section in the spaces provided.
3. All writings must be in blue or black ink, except drawings, which must be in pencil.
4. Communication devices and any unauthorised materials are not allowed in the assessment room.
5. Write your Assessment Number at the top right corner of every page of this paper.
6. Where necessary, the following constants may be used:
   - $\pi = 3.14$
   - Acceleration due to gravity $g = 10m/s^2$.

| FOR ASSESSOR'S USE ONLY | | |
|---|---|---|
| **QUESTION NUMBER** | **SCORE** | **ASSESSOR'S INITIALS** |
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |
| 6 | | |
| 7 | | |
| 8 | | |
| 9 | | |
| 10 | | |
| **TOTAL** | | |
| **CHECKER'S INITIALS** | | |

Student's Assessment Number: _____

## SECTION A (15 Marks)

Answer **all** questions in this section

1. For each of the items (i) – (x), choose the correct answer from among the given alternatives and write its letter beside the item number in the space provided.

   (i) In a Science demonstration, a Form One boy placed a wooden block in a container with water. The block was observed to float on the water's surface. What can the student conclude about the relative density of a wooden block?
   - A. It is greater than one.
   - B. It is equal to one
   - C. It is less than one
   - D. It can not be determined by one

   (ii) A cube of sides 2cm is completely submerged in water, with the bottom of the cube at a depth of 100m. The difference between the pressure on its top and bottom is_____
   - A. 200N/$m^2$
   - B. 800N/$m^2$
   - C. 1000N/$m^2$
   - D. 1800N/$m^2$

   (iii) During the construction of a Tall NSSF building in the Morogoro region, an engineer accidentally dropped his hammer from a height of 20m above the base floor. If air resistance is ignored, which statement best describes the motion of the hammer?
   - A. It accelerates at a constant rate.
   - B. It moves with constant velocity.
   - C. Its acceleration decreases as it falls.
   - D. It first accelerates, then moves at constant speed.

   (iv) Farhati had a dry sponge, which she used to wipe water drops off the table top. After passing it off the table, the sponge absorbs all liquid drops from the tabletop and is applied a very small force to squeeze it. Which property of the sponge is demonstrated?
   - A. Rigidity
   - B. Compressibility
   - C. Elasticity
   - D. Plasticity

   (v) A housemaid uses an electric Kettle that draws 2A at 240V to boil water in 5 minutes, so she can quickly prepare the kids to rush for the school bus at 6:00 am. Suppose she is doing so for all five working days. How much electric energy is used per day?
   - A. 144,000J
   - B. 172,000J
   - C. 2400J
   - D. 2880J

(vi) Ahmed uses magnets to make women's hand bats-locks in his work. He accidentally dropped a magnet on the floor. The magnet broke into two pieces, each measuring 3cm and 7cm. Which statement is true about the pieces of magnet?

A. There will be two poles in the 7cm magnet and one pole in the 3cm magnet
B. A 3cm magnet will not attract any magnetic material
C. A 3cm magnet will have only a North pole
D. Better pieces will have two magnetic poles each

(vii) Suhaila uses a plane mirror on her dressing table every day before leaving the room. Her image behind the plane mirror is formed by which of the following properties of light?

A. Refraction
B. Roflection
C. Dispersion
D. Fast propagation

(viii) Three capacitors of values 2μF, 3μF and 6μF are connected in series, then in parallel. What is the equivalent capacitance in each case?

A. 11μF and 1μF
B. 11μF and 11μF
C. 1μF and 11μF
D. 0.1μF and 1/11μF

(ix) Sabri is riding his bicycle along a straight road to school. As he approaches the junction, he gradually applies the brakes. The graph of his velocity against time is a straight line sloping downward. What does this indicate about the cyclist's motion?

A. Sabri is speeding up.
B. Sabri is moving at a constant speed
C. Sabri is slowing down uniformly
D. Sabri is at rest

(x) It is fact that any object always has mass but does not always have weight. What must be present and acting on the mass for it to have weight?

A. Acceleration due to gravity
B. A set of scales for measurement
C. Friction due to air resistance
D. Normal reaction force

**ANSWERS:**

| (i) | (ii) | (iii) | (iv) | (v) | (vi) | (vii) | (viii) | (ix) | (x) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |

2. Match the descriptions of items used in reflection of light by curved mirrors in **List A** with their corresponding items used in reflection of light by curved mirrors in **List B** by writing the letter of the correct response beside the item number in the table provided.

| **LIST A** | | **LIST B** |
|---|---|---|
| (i) | Central line passing through the pole | A. The principal focus of a concave mirror |
| (ii) | Point on the principal axis where reflected rays appear to diverge | B. Focal length |
| (iii) | Point on the principal axis where reflected rays converge | C. Principle axis |
| (iv) | Distance from the pole to the principal focus | D. The principal focus of a convex mirror |
| (v) | Distance from the pole to the centre of the sphere, from which the mirror is a part | E. Radius of curvature |
| | | F. Aperture |
| | | G. Paraxial rays |

**ANSWERS:**

| **LIST A** | (i) | (ii) | (iii) | (iv) | (v) |
|---|---|---|---|---|---|
| **LIST B** | | | | | |

**SECTION B (70 Marks)**

Answer **all** questions in this section

3. (a) While driving, a man noticed that the side mirrors of his car show images which are quite different from those formed by shaving mirrors. The man wondered and decided to search for clear information on the type of mirror installed in this car. Being the right person to help a man;

(i) Name the type of mirrors fixed in the car **[01 mark]**

_____

(ii) Why are the mirrors you named a (i) preferred? **[03 marks]**

_____

_____

_____

_____

(b) When an object is placed 25cm from a convex lens, an inverted image which is twice as large as the object is formed. How far from the lens must the object be placed to obtain an image four times the size of the object? **[06 marks]**

4. (a) In his Garage, Musa used a hydraulic press whose pistons have their areas given as $0.0003m^2$ and $2cm^2$, respectively. An operator exerted a force of 120N to push down the smaller piston. Find the pushing up force in the larger piston. **[06 marks]**

   (b) The length of a spring is 16.0cm. Its length becomes 20cm when supporting a weight of 5N. Calculate the length of the spring when supporting a weight of 6.0N. **[05 marks]**

5. (a) Mama Amina has a restaurant where she serves the staff of a nearby institution. In the late hours, Sadick asked her to serve him a hot soup, saying it was tastier. Briefly explain why it is testier than cold soup? **[04 marks]**

(b) A box is lifted vertically to a height "h" and also pushed the same distance across a rough floor. Which case involves more work? Briefly explain **[04 marks]**

(c) What is meant by the term magnetic screening (magnetic shielding)? **[02 marks]**

6. A car moves with a uniform velocity of 12 m/s for 6 seconds, then accelerates at 2.0m/s2 for 4 seconds, and then travels for 2 more seconds with uniform velocity. The car finally decelerates to stop in 15 seconds.

(a) Plot the graph of the motion. **[03 marks]**

(b) Calculate the distance travelled in 5 seconds. **[03 marks]**

(c) Calculate the average velocity for the journey, assuming it is a straight line.**[04 marks]**

7. (a) While standing at the edge of a swimming pool, Shaaban notices that the bottom of the pool appears closer to the surface than it actually is. When he steps into the pool, he realises it is deeper than it looked from the outside.

(i) Which property of light makes the pool of water look shallow? **[01 mark]**

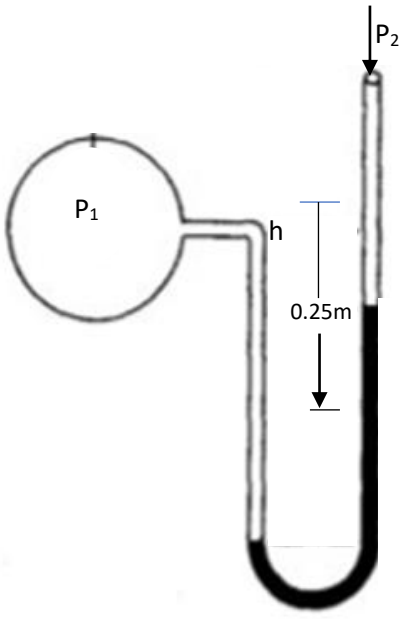
_____

(ii) What is the main cause of the property you tested in (i) above? **[03 marks]**

_____

_____

(b) A U-tube manometer contains mercury ($\rho$ =13,600kg/m$^2$), one side is connected to a gas at pressure $P_1$ and the other side is open to atmosphere at pressure $P_2$=1x10$^5$Pa. The difference in mercury level between the two arms is h = 0.25m, as shown in the diagram



(i) Calculate the pressure difference **[03 marks]**

(ii) Determine the absolute pressure $P_1$ **[03 marks]**

8. (a) Different professionals use different optical instruments in their work.

(i) Name the optical instruments used by an astronomer and a jeweller.**[02 marks]**

_____

_____

_____

(ii) State one reason for choosing each instrument in daily life. **[02 marks]**

_____

_____

_____

(iii) Give two other uses of optical instruments in daily life. **[02 marks]**

_____

_____

_____

(b) An astronomical telescope in normal adjustment has a total length of 78cm and produces an angular magnification of 15. What is the focal length of the objective and the eyepiece lens? **[04 marks]**

9. (a) State Archimedes' principle. **[04 marks]**

_____

_____

_____

(b) An iron piece of mass 360g and density of 7.89g/cm$^3$ is suspended by a rope so that it is partially submerged (halfway) in an oil of density 0.9g/cm$^3$. Find the tension in the string (use g = 0.01N/g). **[06 marks]**

**SECTION C (15 Marks)**

Answer question **ten (10)**

10. (a) An electric meter draws a current of 10A when connected to a 120V supply. Calculate the:

(i) Motor's power consumption **[03 marks]**

(ii) Energy in Joules that a motor uses during 5 hours of operation **[03 marks]**

(b) A student is setting up an electrical circuit for a science experiment. She has two wires of the same material. Wire X is very long and thin, while wire Y is short and thick. Compare the resistance of wire X to that of wire Y. **[04 marks]**

(c) A battery of Emf 12V and internal resistance 1.5Ω is connected to a 4Ω resistor. Calculate the;

(i) Total resistance of the circuit **[01 mark)**

(ii) Current through the battery **[02 marks]**

(iii) P.d across the cell terminals **[02marks]**

*Wabillah Tawfiiq*