



**THE PRESIDENT'S OFFICE**  
**REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT**  
**MOSHI MUNICIPAL COUNCIL**  
**SECONDARY EDUCATION EXAMINATIONS SYNDICATE**  
**031 PHYSICS**  
**FORM TWO MOCK EXAMINATION**



**Friday 01<sup>st</sup> July 2022**

**Time: 2:30Hours**

**INSTRUCTIONS:**

- 1) This paper consists of sections A, B and C.
- 2) Answer all questions.
- 3) All drawings should be in pencil and writing in blue or black pen.
- 4) Write your names or number on the top right-hand corner of every page.
- 5) Cell phones and calculators are not allowed in the examination room.
- 6) Whenever necessary, use the following constants:
  - Density of water =  $1000\text{kg/m}^3$  or  $1\text{g/cm}^3$  • Acceleration due to gravity,  $g = 10\text{m/s}^2$  or  $10\text{N/Kg}$ .

**SECTION A (30 MARKS)**

***Answer all questions from this section.***

1. For each of the following items (i) – (xx) choose the correct answer among the given alternatives and write its letter beside the item number.
  - i. An engineer wanted to measure the diameter of a wire to the nearest  $0.001\text{cm}$ . which of the following instruments will be used?
    - A. Metre rule
    - B. Measuring cylinder
    - C. Micrometer screw gauge
    - D. Vernier caliper E. Engineer caliper
  - ii. Which phenomenon explain ability of some small insects to walk over a water surface?
    - A. Capillarity
    - B. Adhesion
    - C. Surface Tension
    - D. Osmosis
  - iii. The branch of science in which the relationship between matter and energy is studied is referred to:
    - A. Biology
    - B. Chemistry
    - C. Physics
    - D. Agricultural science
    - E. Geography
  - iv. Which of the following instruments work under the Pascal's principle of pressure transmission
    - A. Spring balance
    - B. Single fixed pulley
    - C. Inclined plane
    - D. Hydraulic press

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- v. The process whereby materials recover the original length after removing the load or force is described as.
- A. Plasticity
  - B. Deformation
  - C. Elasticity
  - D. Elastic limit
- vi. The term used to describes the ability of an object to float on a surface of liquid is classify as:
- A. Flootation
  - B. Buoyancy
  - C. Density
  - D. Pressure
- vii) The quantity obtained by taking the ratio of mass per unit volume of a substance is described as:
- A. Relative density
  - B. Density
  - C. Matter
  - D. Volume
- vii. Which of the following is the process used to described the action of movement of solvent molecules from high to low concentration through a semi-permeable membrane?
- A. Fusion
  - B. Osmosis
  - C. Pressure
  - D. Diffusion
- viii. Materials can be twisted into different shapes. Which among the following forces causes twisting of elastic materials?
- A. Restoring force
  - B. Compressional force
  - C. Stretching force
  - D. Torsional force
- ix. What is name given to a material which has ability of attracting some other materials?
- A. North pole
  - B. Electromagnet
  - C. Magnet
  - D. Marble stone
- x. How does depth affect the pressure in liquids
- A. Pressure is inversely proportional to depth
  - B. Pressure is equal to depth
  - C. Pressure is not equal to depth
  - D. Pressure is directly proportional to depth
- xi. What among of the following term is used to explain the tendency of a liquid to rise or fall in a narrow tube?
- A. Diffusion
  - B. Capillarity
  - C. Adhesion
  - D. Cohesion
- xii. A machine with effort between load and fulcrum belong to which class of lever?

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- A. First class lever
  - B. Third class lever
  - C. Second class lever
  - D. Fourth class lever
- xiii. Which of the following are correct information about the particles on solid state of matter .
- A. Are far apart, vibrating and randomly in motion
  - B. Are closely together, weak force of attraction and stationary
  - C. Are closely together, vibrating and strong force of attraction.
  - D. Are slightly far apart, moving randomly and weak force of attraction
- xiv. The materials which do not completely allow the light to pass through
- A. Transparent
  - B. Translucent
  - C. Luminous
  - D. Opaque
- xv. What happened behind an opaque object when a beam of light falls on it?
- A. Umbra
  - B. Shadow
  - C. Penumbra
  - D. Beam
- xvi. Form two students asked to identify the presence of charge on an Object which among of the instrument should they use ?
- A. Capacitor
  - B. Resistor
  - C. Electroscope
  - D. Gold leaf electroscope
- xvii. A resistor of  $6\Omega$  connected with 24mv battery. What will be the current in Ampere?
- A. 0.004A
  - B. 40A
  - C. 12A
  - D. 4A
- xviii. Why it is possible for a bus loaded on top carrier to skid when changing direction at high speed?
- A. Because its centre of gravity is at lower position
  - B. Because its centre of gravity is at centre
  - C. Because its centre of gravity is at higher position
  - D. Because it is very stable
- xix. What criterion supports that single fixed pulley is a machine
- A. Used to lift heavy loads short distance
  - B. Used to lift light loads to inaccessible point
  - C. Effort used is less than load
  - D. Effort used is greater than load
- xx. Which among of the following machine work under the atmospheric pressure principle?
- A. Hydraulic brake system
  - B. Screw Jack
  - C. A siphon
  - D. Pressing machine

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2. Match the description of electric terms in list A with the correct electric terms in list B by writing a letter of the correct response below the corresponding item number in the table provided

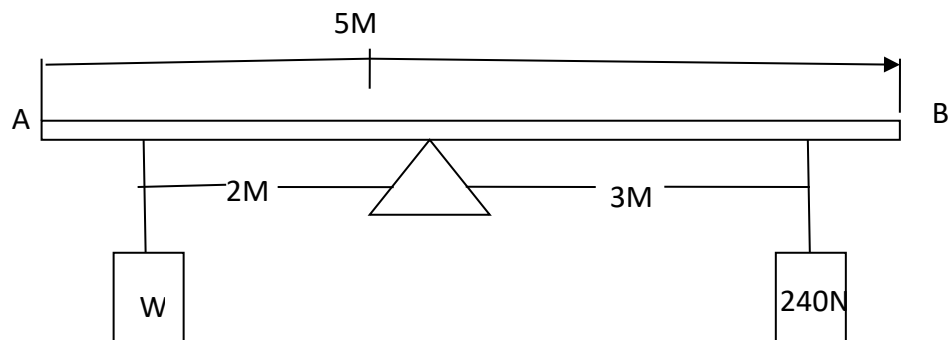
List A	List B
i. The flowing of charge per unit time	A. Electric component
ii. The instrument which used to measure current in Ampere	B. Electric circuit
iii. A potential difference across the cell terminal as when no power delivered	C. Electric current
iv. Is the instrument which used supply electric energy	D. Electric force
v. Is a continuous path through which electric charge flows	E. Ammeter
	F. Mill ampere
	G. Electromotive force
	H. Voltage
	I. Battery
	J. Galvanometer
	K. Bulb

3. Complete each of the following statements by writing the correct answer on the space provided

- A tendency of an object to fall to the lower level in fluid is called .....
- An upward force exerted on object when it is totally or partially immersed in fluid is known as .....
- A product of force and perpendicular distance is known as .....
- A percentage ration of work out put to work input is known as .....
- An effort of 50N used to operate a machine to lift up a load of 150N the mechanical advantage (M.A) of the machine is .....

### SECTION B (40 Marks)

- state laws of reflection
  - Explain the behavior of light when it encounters translucent, transparent and opaque materials
  - Calculate number of images when the angle between two plane mirrors is:
    - $60^\circ$
    - $0^\circ$
  - How the number of images formed by plane mirrors related to the angle between two plane mirrors?
- State conditions for a body to be in equilibrium.
  - By using the principle of Moment determine unknown Weight (W) on the fig below.



(c) A machine having velocity ratio (V.R) of 5 need an effort of 240N to raise a load of 720N. How much

- mechanical advantage

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- ii. Efficiency (e)
- 6. a)i. Differentiate Distance from displacement.  
ii. Write down three equations of linear motion  
(b) A paratrooper falling under gravity after 6 seconds,  
i. what will be the maximum height covered?  
ii. What will be its velocity when hitting the ground?
- 7. a) Kinetic energy potential energy are forms of mechanical energy. Give comparison and differences between them  
b) A car of mass 4 tones travels at velocity of 4m/s .How much kinetic energy developed?
- c) How much power developed when a crane lifts a container of mass 500kg through a height of 5m in 10sec ?

**SECTION C (30 Marks)**

- 8. a) By using a concept of pressure explain why a tractor is designed with wide tires?  
b) A rectangular block weighting 320N has dimensions of 4m x 2mx 10m. What is the greater pressure and least pressure it can be exerted on the ground?  
(c). Explain why the wall of the dam is made much thicker at the bottom than at the top?
- d) What is usefulness of atmospheric pressure in real life situation? (Any three)
- 9. a) state Newton's laws of motion  
b) i. Give reason why a person doing high jump bend a little his legs on landing  
ii. Why it's necessary to use seat belt in a car?  
c) A tennis ball whose mass is 150 g is moving at a speed of 20 m/s. it is then brought to rest by one player in 0.05 s. find average force applied
- 10. a) Explain why efficiency of machines is always less than 100%?  
b) An object weight in air is 6.0N and 4.0N when immersed in water. What will be its:  
i. Up thrust in water  
ii. Relative density  
iii. Density  
  
c) Give reason why a ship can move on surface of water without sinking?