

**THE UNITED REPUBLIC OF TANZANIA  
NATIONAL EXAMINATIONS COUNCIL  
FORM TWO SECONDARY EDUCATION EXAMINATION**

**0031**

**PHYSICS**

**Time: 2:30 Hours**

**Friday, 28<sup>th</sup> November 2014 a.m.**

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**Instructions**

1. This paper consists of sections A, B, and C.
2. Answer **all** questions in the spaces provided.
3. **All** writing must be in blue or black ink **except** drawings which must be in pencil.
4. **All** communication devices and calculators are **not** allowed in the examination room.
5. Write your **Examination Number** at the top right corner of every page.
6. Where necessary the following constants may be used:
  - (i) Acceleration due to gravity,  $g = 10 \text{ m/s}^2$
  - (ii) Density of water =  $1 \text{ g/cm}^3$  or  $1,000 \text{ kg/m}^3$







(ii) Derived quantities \_\_\_\_\_

(b) Figure 2 shows a graduated cylinder containing water before and after a stone is immersed.

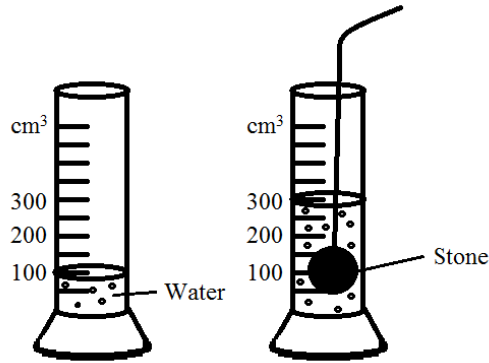


Figure 2

If the mass of the stone is 50 g, calculate the

(i) Volume of the stone.

(ii) Density of the stone.

5. (a) (i) List two characteristics of images formed by plane mirrors.

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\_\_\_\_\_

(ii) Give a reason why the sky appears blue during a clear sunny day?

\_\_\_\_\_

\_\_\_\_\_

(b) Draw the diagram of each of the following:

(i) Parallel rays of light.

(ii) Divergent rays of light.

(iii) Convergent rays of light.

6. (a) Define the following terms as used in Physics and give their SI units:

(i) Work \_\_\_\_\_  
\_\_\_\_\_

(ii) Energy \_\_\_\_\_  
\_\_\_\_\_

(b) A man lifts a load of 20 kg through a height of 4 m in 10 seconds. Calculate the:

(i) Work done.

(ii) Power developed by the man

**SECTION C (40 Marks)**

7. (a) (i) State the principle of moments \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(ii) A uniform half metre rule is freely pivoted at the 20 cm mark and it balances horizontally when a body of mass 30 g is hung at 5 cm mark from one end. Calculate the mass of the rule.

(b) (i) What is meant by equilibrium? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(ii) List three applications of equilibrium in daily life.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

8. (a) Define the following terms:

(i) Inertia \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(ii) Impulse \_\_\_\_\_  
\_\_\_\_\_

(b) (i) Give two practical examples where impulse and momentum play an important role.  
\_\_\_\_\_  
\_\_\_\_\_

(ii) A tennis ball of mass 120 g moving at a speed of 10 m/s was brought to rest by one player in 0.02 seconds. Calculate the average force applied by the player.

9. (a) (i) What is the function of a rheostat in an electric circuit?  
\_\_\_\_\_  
\_\_\_\_\_

(ii) List four factors that affect the resistance of a conductor.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(b) Study the circuit diagram in Figure 3, then answer the questions that follow:

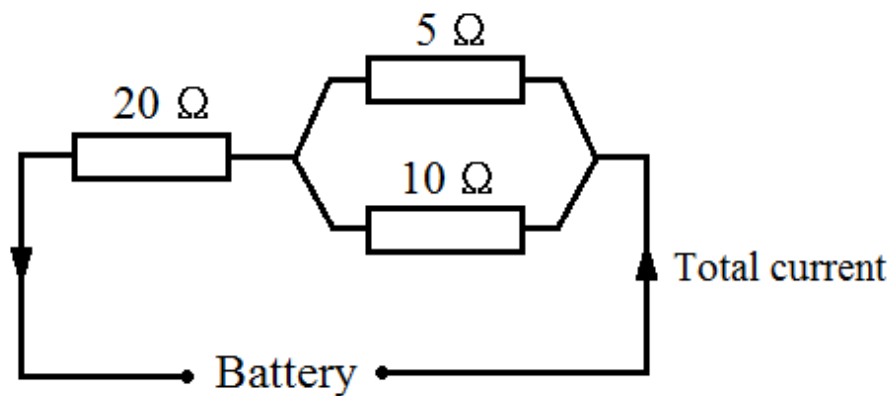


Figure 3

If the current flowing in  $5\ \Omega$  resistor is  $2\ \text{A}$ , calculate the

- (i) Current flowing in the  $10\ \Omega$  resistor.
  
  
  
  
  
- (ii) Potential difference (p.d.) across the  $20\ \Omega$  resistor.

10. (a)(i) Define the term pressure and give its SI unit.

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(ii) Why are dams constructed thicker at the bottom than at the top?

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(b) (i) List three applications of hydraulic presses.

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(ii) A hydraulic brake has a force of  $1000\ \text{N}$  applied to a piston whose area is  $50\ \text{cm}^2$ . Calculate the pressure transmitted throughout the liquid.