basic education
Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

SASTRI COLLEGE

DEPARTMENT OF TECHNOLOGY
SEPTEMBER CONTROL TEST 2018

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DATE: 18/09/18

MARKS: 100

Instructions

- Answer all the questions using the given number sequence
- Use a sharp pencil for all drawings
- This paper consists of 4 pages with 3 questions.

QUESTION 1

- Answer the following questions by selecting the correct the answer from the given responses
- Write down only the letter of your chosen response.

1.1 Density refers to....

A. How much a material resists movement
B. How solid a material is?
C. How easily a material can resist scratching
D. How resistant a material is to change in shape?

1.2 What term is given to a measure of how easy it is to dent a material?

A. Rebound hardness
B. [illegible]uring force
C. Scratch hardness
D. Indentation hardness

1.3 A compressor is a good example of a ...

A. Hydraulic System
B. Pulley system
C. Gear System
D. Pneumatic System

1.4 The first rule of hydraulics states that ...

A. A gas can quickly transfer force
B. Pressure exerted on an enclosed fluid is transferred without loss throughout the liquid
C. Spur Gears have mechanical advantage
D. A hydraulic system uses gas to transfer a large force

1.5 Torque is defined as..

A. The force that acts to lift up a load
B. Gear ratio of a gear train
C. The turning force of the Driver gear
D. The turning direction of the output gear.

1.6 In which direction does conventional flow

A. Left to right
B. Negative terminal to Positive Terminal
C. Positive terminal to Negative terminal
D. Battery to light bulb

1.7 A lamp and LED are examples of what type of devices in a circuit?

A. Output device
B. Control device
C. Input device
D. Processing Device

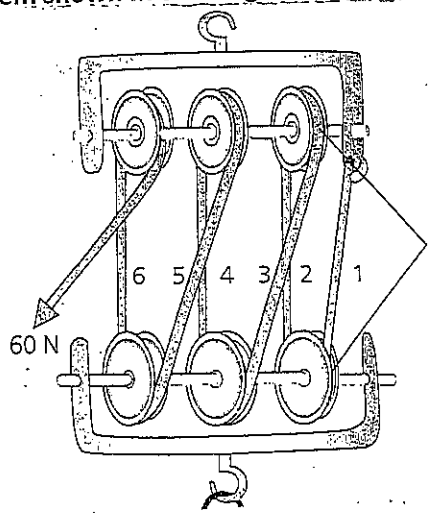
1.8 The abbreviation L E D can be written as follows in full

A. Lightning Environment Defence
B. Leading Energy Diode
C. Light Entry Diode
D. Light Emitting Diode

1.9 A POLAR device is a device that...

A. Can be inserted into a circuit in any manner
B. Is a sensor in an electrical circuit?
C. Can only be inserted with the positive connecting to the positive terminal of a battery
D. Gives out light energy

1.10 Name the type of pulley system shown in the diagram below



A. Fixed pulley
B. Ratchet and Pawl
C. Compound Pulley
D. Wheel pulleys

[10 marks]

QUESTION TWO

2.1 Explain how you would connect switches to form an AND logic gate. (4)

2.2 Explain how you would connect switches to form an OR logic gate. (4)

2.4 Write a sentence in which you explain Ohm's Law. (4)

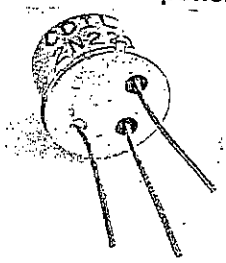
2.5 Give the formula for Ohm's Law. (4)

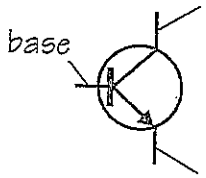
2.6 Draw the symbol and name the unit in which the following electrical quantities are measured:

a. potential difference (2)
b. current (2)
c. resistance (2)

2.7a) A length of resistance wire has a resistance of 8 Ω. Calculate the current through it when a voltage of 56 V is applied across it. (4)

b) What electronic component is shown in the diagram below





c) Copy the symbol and write in the two missing labels. (2)

d) State two functions of the device shown in question [2.7b] (4)

2.8 Name a component that:

a. Conducts electrical current in one direction only and lights up when it does so

b. Changes resistance when the light intensity on it changes

c. Amplifies electrical current (6)

2.9 a) What is a diode? (3)

b) Explain how to connect a diode correctly in a circuit. (3)

c) What is an LED? (3)

d) Explain how to connect an LED correctly in a circuit. (3)

[50 marks]

QUESTION 3

3.1 Draw the symbols for the following electrical devices:

a. Light emitting Diode

b. A Diode

c. A Transistor

d. Light Dependent Resistor (10)

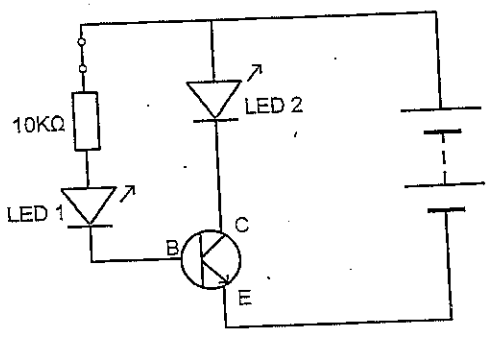
3.2 Draw a circuit diagram with the following devices in the circuit:

a. A 12V battery
b. 2 bulbs/ lamps in series
c. An ammeter measuring current in the circuit
d. A voltmeter measuring voltage across the battery (10)
e. 2 switches

3.3 Draw a circuit diagram with the following components:

a. 2 cells
b. 2 LEDs
c. an SPDT switch (8)
d. wire to connect the circuit

3.4 Study the circuit diagram below and answer the questions that follow



3.4a) Which LED will be brighter? (2)

3.4b) Explain the difference in brightness between the two LEDS. (4)

3.4c) Explain the two functions of the transistor in a circuit. (4)

3.4d) What is a light dependent resistor (LDR) ? (2)

[40marks]