

**CST – Domestic Electricity
and Plumbing**

T035

Monday, 03/11/2014

08:30 - 11:30 AM

WORKFORCE DEVELOPMENT AUTHORITY



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**ADVANCED LEVEL NATIONAL EXAMINATIONS, 2014
TECHNICAL AND PROFESSIONAL TRADES**

EXAM TITLE : Domestic Electricity and Plumbing

OPTION : Construction (CST)

DURATION : 3hours

INSTRUCTIONS :

The paper consists of **three (3) Sections** :

Section **I**: Sixteen **(16)** questions, all **Compulsory**. **55marks**

Section **II**: Five **(5)** questions, **Choose any Three (3)**. **30marks**

Section **III**: Three **(3)** questions, **Choose any One (1)**. **15marks**

Use two separate answer booklets: **Domestic Electricity** and **Plumbing** respectively.

SECTION I. SIXTEEN (16) COMPULSORY QUESTIONS.

01. What do you understand by "Direct Electricity"? How is it produced? **4marks**
02. Give at least 3 examples of use of the "Direct Electricity". **3marks**
03. If an electric heater is rated at 4.5kilowatts, then calculate how much current it uses if the supply voltage is 240Volts. **2marks**
04. a) What does earthing do?
- b) Give four (4) criteria of good earth;
- c) Name four (4) types of recognized earth electrodes. **5marks**
05. Name Six (6) items of household equipment that might use the wall sockets outlets. **3marks**
06. Calculate the resistance (R) of 120m length, of 2.5mm^2 cross-sectional area (A) copper conductor for which the specific resistance (ρ) is $17.5 \times 10^{-9} \Omega\text{m}$. **4marks**
07. Define briefly how to remove a victim of electrical shock from the fault. **2marks**
08. Name the three (3) types of wire conductor and cables classified by the type of their covering. **3marks**
09. State the three (3) drawbacks of wrong cable end termination. **3marks**
10. a) What is an electrical fuse?
- b) Give three (3) types of commonly used fuses. **4marks**
11. State any three (3) tools that are mostly used in plumbing activities. **3marks**
12. What are the basic skills for pipe fitters? **4marks**
13. Name the four (4) methods used for fixing in plumbing. **4marks**
14. The hacksaw is the most important cutting tool for sawing metal to the required size. Which procedures are recommended during sawing metals? **5marks**
15. Give at least three (3) materials commonly used to make sanitary appliances. **3marks**
16. Convert the following measurement values : **3marks**
- a) 10m = ... ? Inches
- b) 32cm = ... ? Inches
- c) 0.0625inch = ... mm

SECTION II. ATTEMPT ANY THREE (3) QUESTIONS.

7. Explain five (5) basic electricity rules or Principles used in electricity. **10marks**

8. It is required to install a long corridor with several doors and the electrician decide to do it by installing two (2) incandescent lamps controlled from four (4) different positions with two earthed socket outlet .

Produce : a) The circuit diagram of this installation.

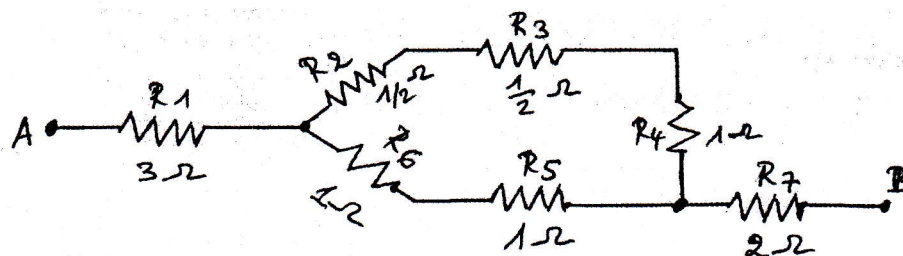
5marks

b) The wiring diagram of this installation.

5marks

9. a) Find the equivalent resistance R_{AB} for the following circuit :

6marks



b) State and explain any four (4) effects of electric shock.

4marks

10. With a neat sketch, describe a pipe cutter and the step followed to cut a steel pipe

10marks

11. a) Describe step by step the process of working out the heat length for 90 bend on a piece of 25mm radius of steel pipe.

6marks

b) State any Four (4) properties of plastic pipes and fittings.

4marks

SECTION III. ATTEMPT ANY ONE (1) QUESTION.

12. Describe briefly the process of electrical power generation up to the user. **15marks**

13. Two resistors of values $1k\Omega$ and $4k\Omega$ are connected in series across a constant voltage supply of 100 Volts. A voltmeter having an internal resistance of $12k\Omega$ is connected across the $4k\Omega$ resistor. Draw the circuit and calculate:

a) True voltage across $4k\Omega$ resistor before the voltmeter was connected. **4marks**

b) Actual voltage across $4k\Omega$ resistor after the voltmeter is connected and the voltage recorded by the voltmeter. **4marks**

c) Change in supply current when voltmeter is connected. **4marks**

d) Percentage error in voltage across $4k\Omega$ resistor. **3marks**

24. When water is discharged from a sanitary fitting by flushing a toilet or draining a basin, then some of the water should stay in the trap to maintain the seal. However it is difficult to prevent air gaps for gases and smells to pass through.

Discuss possible ways that air gaps can be created and remedied.

15marks

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