

**CST&PWO – Domestic Electricity
and Plumbing**

T093

Friday, 11/11/2016

02:00 – 05:00 PM

WORKFORCE DEVELOPMENT AUTHORITY



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**ADVANCED LEVEL NATIONAL EXAMINATIONS, 2016,
TECHNICAL AND PROFESSIONAL STUDIES**

EXAM TITLE: Domestic Electricity and Plumbing

OPTIONS: Construction (CST); Public Works (PWO)

DURATION: 3hours

INSTRUCTIONS:

The paper is composed of **three (3) main Sections** as follows:

Section I: Sixteen (16) compulsory questions. 55 marks

Section II: Attempt any three (3) out of five questions. 30 marks

Section III: Attempt any one (1) out of three questions. 15 marks

Note:

Every candidate is required to carefully comply with the above instructions. Penalty measures will be applied on their strict consideration.

Section I. Sixteen (16) Compulsory questions

55marks

01. Define the following terms:

- Plumbing
- Pipe thread
- Water seal
- Floor drain

6marks

02. Give the three main facts or purposes of bending a pipe.

3marks

03. Mention the usage of Vernier caliper.

3marks

04. Identify the difference between the use of Union and Socket fittings. **4marks**

05. What is the difference between “Light pipe” and “heavy pipe”? **4marks**

06. Briefly explain the reason why copper is said not to be suitable for drinking water. **3marks**

07. Explain the functions of plug and cap fitting. **4marks**

08. What are the main holding tools would be used while doing a pipe work?

4marks

09. Using examples, distinguish the “Metric” and “Imperial” systems of measurements?

3marks

10. Give the name of tools or instrument used to measure:

- a) Intensity of electricity (current)
- b) Electrical resistance

3marks

11. What pipe fittings have external threads?

3marks

12. State the OHM’S Law.

3marks

13. List at least five preventive methods of electric shock.

5marks

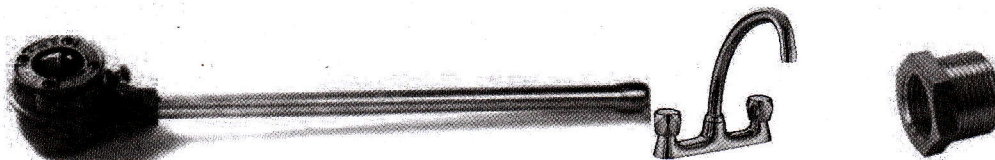
14. Differentiate the “Direct current” and “Alternative circuit”.

2marks

15. Explain at least two ways of how Direct current (DC) can be generated.

2marks

16. Give the technical names of the following tools or fittings and provide the function of each:



3marks

Section II. Choose and answer any three (3) questions.

30marks

17. With help of sketch, describe the distribution of electricity from the electrical power supply up to the user. **10marks**

18. Find the equivalent resistance between points "a" and "b" for the combination shown in the figure 1, below. **10marks**

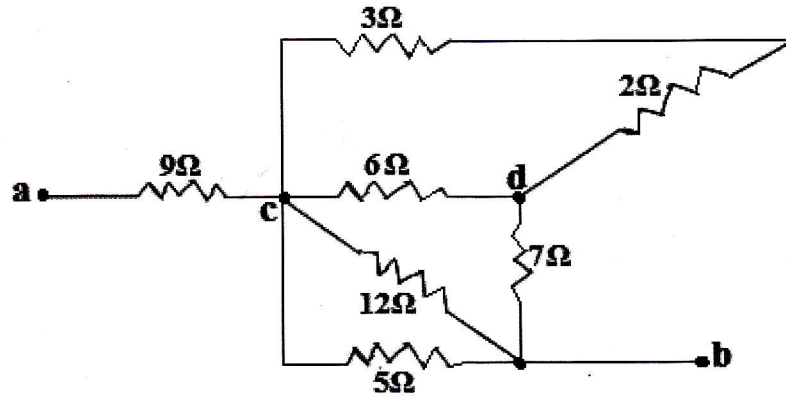


Figure 1

19. Determine the value of R and current through it in figure 2 below; if the current through branch AO is zero. **10marks**

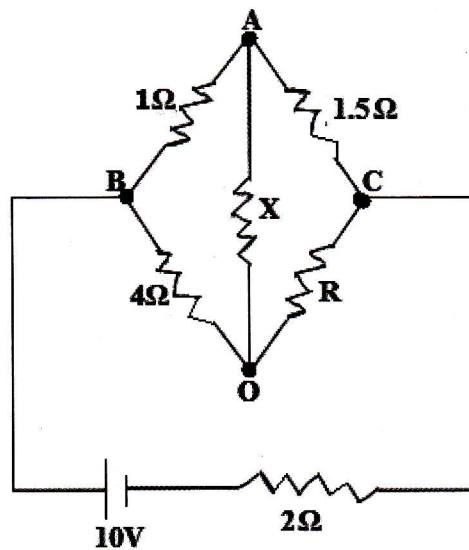


Figure 2

20. Describe these types of plumbing pipes used for residual applications;
i) PEX Tubing / piping, (ii) Copper pipes, (iii) PVC (Polyvinylchloride),
iv) ABS pipes.

10marks

21. Observe the illustration of the figure 3 given below; give the name of operation performed and the procedure to be followed.

10marks

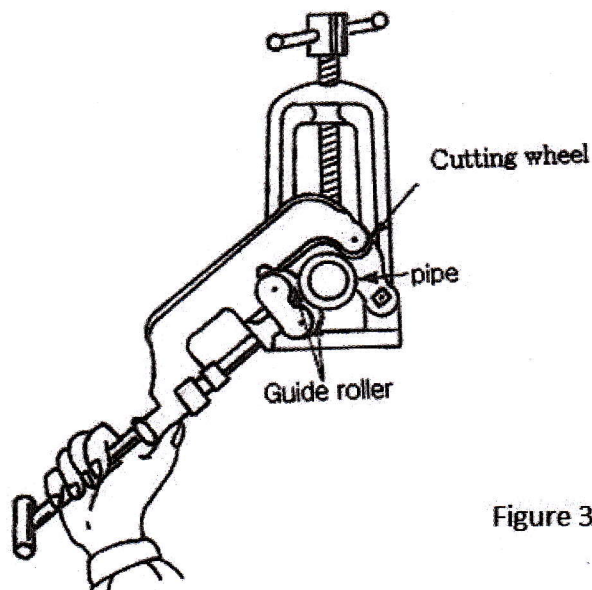


Figure 3

Section III. Choose and answer any one (1) question.

15marks each

22. **A)** With help of necessary sketches, describe: **(i)** Single phase ac supply, **(ii)** Three phase ac supply.

B) Three resistances $R_1=1\Omega$, $R_2=2\Omega$ and $R_3=3\Omega$ are connected in series across a 12Vdc. Calculate the total voltage drop across each resistance.

15marks

23. Draw a circuit diagram and a wiring diagram for two lamps connected in parallel and other two lamps connected in series, all lamps are to be controlled from six different positions, two lamps controlled independently by one switch and one socket outlet.

15marks

24. **A)** Explain step by step how to cut external thread with a die?

B) Give the meaning of the following indications stamped on two different die: **(i)** $\frac{1}{4}$ -20 UNC **(ii)** M8*1.25

15marks