



Province of the
EASTERN CAPE
EDUCATION

DIRECTORATE SENIOR CURRICULUM MANAGEMENT (SEN-FET)

HOME SCHOOLING SELF-STUDY WORKSHEET

SUBJECT	POWER SYSTEMS	GRADE	11	DATE	AUGUST 2020
TOPIC	Control Devices	TERM 1 REVISION	()	TERM 2 CONTENT	(√)
TIME ALLOCATION	2 hrs.	<u>TIPS TO KEEP HEALTHY</u>			
INSTRUCTIONS	This topic focused study material is intended to assist learners in the various approaches used by examiners.	1. WASH YOUR HANDS thoroughly with soap and water for at least 20 seconds. Alternatively, use hand sanitizer with an alcohol content of at least 60%. 2. PRACTICE SOCIAL DISTANCING – keep a distance of 1m away from other people. 3. PRACTISE GOOD RESPIRATORY HYGIENE: cough or sneeze into your elbow or tissue and dispose of the tissue immediately after use. 4. TRY NOT TO TOUCH YOUR FACE. The virus can be transferred from your hands to your nose, mouth and eyes. It can then enter your body and make you sick. 5. STAY AT HOME.			

QUESTIONS

1. Mention TWO operating factors that large motors need protection against. (2)
2. Explain what a motor controller is. (1)
3. State TWO actions a motor controller would perform. (2)
4. Explain the operation and working principle of an over current sensor. (5)
5. State the purpose of the following Direct-on-Line (DOL) starter components:
 - 5.1 The contactor (2)
 - 5.2 The overload relay (2)
6. Draw the symbol used for a start button in a DOL starter. (1)
7. Explain why under voltage relays are installed in starters. (3)
8. Name the THREE steps of a PLC's scan cycle. (3)
9. Refer to FIGURE 9.1 and answer the questions that follow.

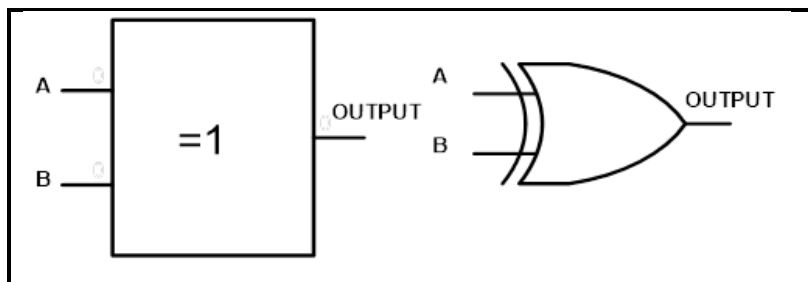


Figure 9.1

9.1 Draw and complete output column of the truth table below for the logic function for FIGURE 9.1

A	A	OUTPUT
0	0	
0	1	
1	0	
1	1	

9.2 Draw the ladder logic diagram for this function.

10. Explain the purpose of a latch in a circuit.

11. Name the parts of a circuit breaker that determines its capacity.

12. Differentiate between hardware and software as components of PLC.

13. Draw the complete zero-volt coil/ no-volt coil wiring diagram, connected to a transformer, used for bigger motors.

14. Briefly describe the condition under which the zero volt /no-volt coil circuit will operate.

15. Name THREE causes of over-current situations.

16. Briefly describe the conditions under which a PTC operates.

17. The circuit in FIGURE 17.1 below represents a logic function.

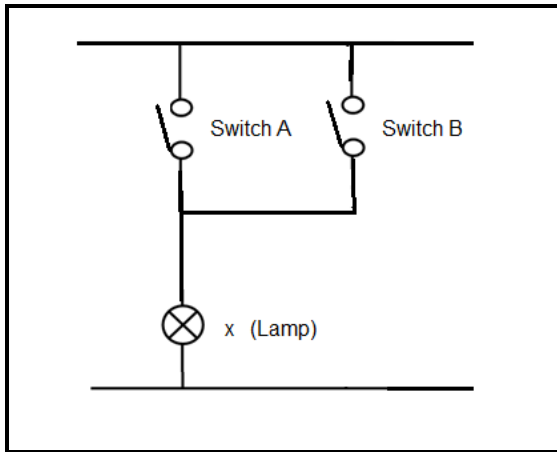


FIGURE 17.1

17.1 Name the logic function this circuit represents.

17.2 Draw the equivalent logic symbol for this circuit.

17.3 Draw the truth table of the logic function.

17.4 Draw the ladder logic diagram of this circuit.

18. Name TWO input terms of latching.