Question Paper

Module 6:	**Power and Automation**	
Date:	Time:	Duration:
11 May 2022	**09:30 – 12:00**	**2½ hours**

You should have the following for this examination: **answer book, pencil, pen and ruler.**

All questions carry equal marks. The maximum marks for each section within a question are shown. Answer **ALL SEVEN** questions, starting each new question (1-7) on a **new** page of the answer book.

1. a) With the aid of diagrams, describe:

i) Ohm's Law; (2 marks)

ii) Watt's Law. (2 marks)

b) List FOUR tests that water suppliers should perform on the water they supply to flour mills. (4 marks)

c) List FOUR organisms, for which there are legal limits, that may be found in a mill's water supply. (4 marks)

2. a) i) Sketch and label a pulse jet filter. (4 marks)

ii) Describe the operation of a pulse jet filter. (4 marks)

b) Explain the need for, and operation of, compressed air service units. (4 marks)

3. a) i) Describe Variable Frequency Drives (VFDs). (4 marks)

ii) Describe the TWO advantages of VFDs. (4 marks)

b) i) List THREE types of belt drive. (3 marks)

ii) State an alternative to a belt drive. (1 mark)

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4. **a)** **With the aid of a sketch, describe the operation of a rotary blower.** (6 marks)

b) **Explain the principles of a positive pressure blowline pipe layout.** (4 marks)

c) **Explain the reason for, and operation of, a pressure switch in a blowline.** (2 marks)

5. **a)** **List SIX areas in a flour mill where the measurement of temperature is important.** (3 marks)

b) **Describe ONE device used to measure temperature.** (3 marks)

c) **Describe briefly the THREE basic ways to monitor bin stocks.** (6 marks)

6. **a)** **With the aid of a diagram, describe the structure of a complete process control system.** (6 marks)

b) **State the TWO types of control loop used in flour milling.** (2 marks)

c) **Describe a practical example of ONE of these two control loops.** (4 marks)

7. **Describe THREE examples of process control systems used in the mill.** (12 marks)