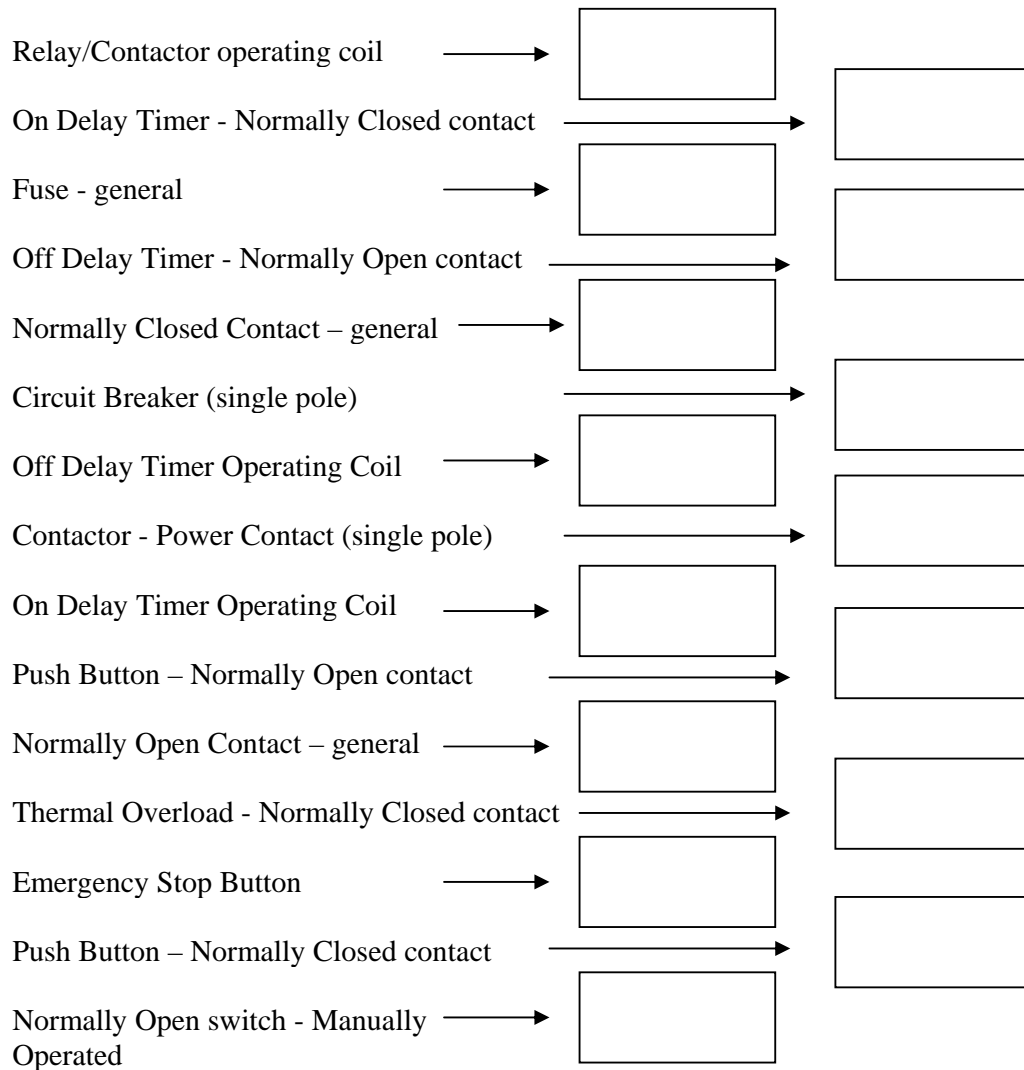


**NUE066 Review**

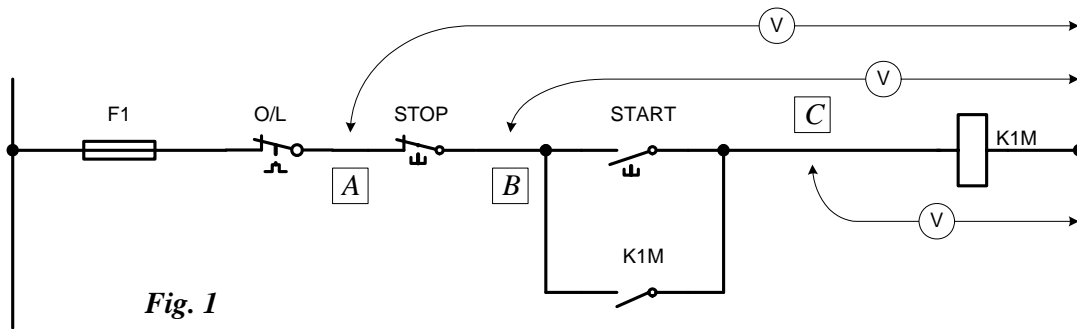
Q1. From the list below, choose TWO protective devices commonly used to protect electrical control circuits.

- (a) Thermal Overload Unit
- (b) Fuse
- (c) Surge Suppressor
- (d) RCD
- (e) Circuit Breaker
- (f) Contactor

Q2. Sketch the SAA circuit diagram symbols for each of the devices listed below:



- Q3. Refer to circuit of Figure 1 below. Assume the circuit is supplied with 230V AC. Indicate the voltages that would present at each of the points indicated, with the start button pressed, if each of the following conditions existed:



- (a) The fuse has blown  
\_\_\_\_\_
- (b) The start pushbutton contact is welded closed  
\_\_\_\_\_
- (c) The overload N.C. contact is tripped open  
\_\_\_\_\_
- (d) The stop pushbutton is open circuited  
\_\_\_\_\_

- Q4. Refer to Fig 1 above. Assume the circuit is supplied with 24V AC. A fault exists where the relay does not operate when the start button is pressed. The following voltages are present in the circuit of Figure 1 (with the start button pressed):

**A = 24 volts;      B = 24 volts;      C = 24 volts**

Given these voltages, select the most likely fault is:

- (a) the start and stop pushbuttons are short circuited
- (b) the stop pushbutton is open circuited
- (c) the neutral conductor to the coil has become open circuit
- (d) the neutral conductor is replaced with an active

Q10. Assume a conveyor belt installation of three conveyors “A”, “B” and “C”, with “A” feeding material on to “B”, the “B” feeding material on to “C”.

If conveyor “A” were to **START** before “B” or “B” **START** before “C” then a pile-up of material would occur. Similarly if “C” were to **STOP** before “B” or if “B” were to **STOP** before “A”, then a pile-up of material would occur.

Design the following circuit. The specifications are:

- All motors to have separate stop/start control.
- There must be a time delay of 25 seconds between the starting of any two motors.
- Motor "A" to start ONLY if motor "B" is already running.
- Motor "B" to start ONLY if motor "C" is already running.
- If "Stop C" is pressed, ALL motors are to stop.
- If "Stop B" is pressed, BOTH motors “B” and “A” are to stop.
- If "Stop A" is pressed, only motor "A" is to stop.
- If overload "C" trips, ALL motors are to stop.
- If overload "B" trips, BOTH motors “B” and “A” are to stop.
- If overload "A" trips, only motor "A" is to stop.
- "Conveyor Stopped" lamps for each motor
- Lamps to be OFF when appropriate motor is RUNNING.
- Lamps to be ON when appropriate motor is OFF.

***Draw Circuit Diagram on a blank page***

*Australian Standard Circuit Diagram Symbols and techniques MUST be used*