Week-12 Assignment-1

The due date for submitting this assignment has passed. Due on 2018-04-18, 23:59 IST.

Submitted assignment

Assignment-1

Answer all the multiple choice question.

1) What is the main purpose of the control valve positioner?

- Change the valve characteristic
- Improve the precision of the valve
- Minimize cavitation in the valve
- Reduce leakage of process fluid

No, the answer is incorrect.

Score: 0

Accepted Answers:
Improve the precision of the valve

2) Choose the correct option.

Statement I: Single seated valves are suitable for small flow rates.
Statement II: With double seated valves, the flow can be shut off completely.

- Only statement I is correct
- Only statement II is correct
- Both statements I and II are correct
- Both statements I and II are false

No, the answer is incorrect.

Score: 0

Accepted Answers:
Only statement I is correct

3) A control valve has to control the inlet flow of cooling water to a cooling jacket on an exothermic chemical reactor. We should select

- Air-to-open valve
- Air-to-close valve

No, the answer is incorrect.

Score: 0

Accepted Answers:
Air-to-close valve

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Funded by
Air-to-close valve

4) Match the following:

<table>
<thead>
<tr>
<th>Valve type</th>
<th>Sensitivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>P) Linear</td>
<td>1) Constant</td>
</tr>
<tr>
<td>Q) Equal percentage</td>
<td>2) Increasing</td>
</tr>
<tr>
<td>R) Quick opening</td>
<td>3) Decreasing</td>
</tr>
</tbody>
</table>

- P-1, Q-2, R-3
- P-2, Q-1, R-3
- P-3, Q-1, R-2
- P-1, Q-3, R-2

No, the answer is incorrect.
Score: 0
Accepted Answers:
P-1, Q-2, R-3

5) For water, if the pressure drop across the valve is 15 ft of water, \(C_V = 60\), what is the flow rate?  
The valve is fully open.

- 900 \(\text{ft}^3/\text{min}\)
- 900 GPM
- 153 GPM
- 225 \(\text{ft}^3/\text{min}\)

No, the answer is incorrect.
Score: 0
Accepted Answers:
153 GPM

6) Match the instrument’s location

- P) Mounted in control room
- Q) Mounted locally
- R) Not accessible

- P-1, Q-2, R-3
- P-1, Q-3, R-2
- P-2, Q-1, R-3
- P-2, Q-3, R-1

No, the answer is incorrect.
Score: 0
Accepted Answers:
P-2, Q-1, R-3

7) Choose the correct option.
Piping and instrumentation diagram indicates

- 1 point
P) Variables being measured
Q) Type of connecting lines
R) Location of instruments
S) Size of equipment

- All of P, Q, R, and S
- P, Q, and R only
- P, Q, and S only
- Q and S only

No, the answer is incorrect.
Score: 0
Accepted Answers:
P, Q, and R only

8) What does the following symbol indicate? Choose the best option.

- Timer
- Temperature indicating controller, locally mounted
- Temperature indicating controller, not accessible
- Temperature indicating controller, mounted in the control room, part of distributed control system

No, the answer is incorrect.
Score: 0
Accepted Answers:
Temperature indicating controller, mounted in the control room, part of distributed control system

9) Match the following:

<table>
<thead>
<tr>
<th>P</th>
<th>Q</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Electrical signal</td>
<td>2) Pneumatic signal</td>
<td>3) Process connection</td>
</tr>
</tbody>
</table>

- P-1, Q-2, R-3
- P-2, Q-1, R-3
- P-3, Q-1, R-2
- P-1, Q-3, R-2

No, the answer is incorrect.
Score: 0
Accepted Answers:
P-3, Q-1, R-2

10) Choose the correct option.

P) The gain of a quick opening valve is non-linear.
Q) An equal percentage valve is not recommended when the pressure drop across the control valve varies.

- Only P is true
11) A fluid flows through an equal percentage valve at a rate of 5 m$^3$/h when the valve is 10% open. **1 point**
When the valve opens to 20%, the flow rate increases to 10 m$^3$/h. What is the flow rate in m$^3$/h when the valve opens to 30%? The pressure drop across the valve remains constant.

- 15
- 20
- 30
- 10

No, the answer is incorrect.
Score: 0
Accepted Answers:
Only P is true

12) A fluid flows through a linear valve at a rate of 15 m$^3$/h when the valve is 15% open. **1 point**
When the valve opens to 30%, the flow rate increases to 30 m$^3$/h. What is the flow rate in m$^3$/h when the valve opens to 45%? The pressure drop across the valve remains constant.

- 15
- 30
- 45
- 60

No, the answer is incorrect.
Score: 0
Accepted Answers:
45