Marine Automation
VTU CBCS Question Paper Set 2018
Eighth Semester B.E. Degree Examination, June/July 2017
Marine Automation

Time: 3 hrs. Max. Marks: 100

Note: Answer FIVE full questions, selecting at least TWO questions from each part.

PART - A

1. a. Briefly explain different types of photo-electric sensor. (12 Marks)
   b. Explain the construction and working of LVDT. (08 Marks)

2. a. Explain construction and working principle of following:
   (i) Orifice meter  (ii) Target flow meter  (iii) Manometer (15 Marks)
   b. Write the difference between photo electric cells and photo voltaic cells. (05 Marks)

3. a. Explain measurement of torque using strain gauges. (10 Marks)
   b. Explain resistance temperature detectors. (10 Marks)

4. a. Explain the working principle and characteristics of nozzle flapper. (12 Marks)
   b. Write a note on signal conditioning. (08 Marks)

PART - B

5. a. Explain ON-OFF control system. (10 Marks)
   b. Write the difference between open loop and closed loop control system. (10 Marks)

6. a. Explain stacked type control with circuit diagram. (10 Marks)
   b. Define relay and write a brief note on its types. (10 Marks)

7. a. Explain Piston actuators with its application. (08 Marks)
   b. Sketch and explain a pneumatic operated diaphragm valve actuator with positioner. (12 Marks)

8. a. Explain with a block diagram, the feed water circulation system. (10 Marks)
   b. Explain lubricating oil temperature control system. (10 Marks)
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PART – A

1. a. Mention and explain any five characteristics of transducers. (10 Marks)
    b. With a neat sketch explain the working of hall effect sensor. (10 Marks)

2. a. With a neat diagram explain photoelectric cell photo conductive cell and photovoltaic cell. (12 Marks)
    b. With a neat sketch explain the working of viscosity sensor. (08 Marks)

3. a. With a neat diagram explain the working of variable capacitance pressure transducer. (10 Marks)
    b. With a neat diagram explain bimetallic temperatures sensor. (10 Marks)

4. a. Explain the working current to voltage and voltage to current converters. (08 Marks)
    Name the different type of filters and explain any two them. (12 Marks)

    PART – B

5. a. With an example and a neat block diagram explain open loop and closed loop control system. (12 Marks)
    b. Explain the P + I + D (proportional, Integral and derivative) controller with system response graph. (08 Marks)

6. a. What are logic blocks? Explain AND, OR and NOT functions. (08 Marks)
    b. With a neat diagram explain how a control valve operates with the signal from P + I + D controller. (12 Marks)

7. a. Write a short note on piston actuators. (08 Marks)
    b. With a neat sketch explain diaphragm actuators and mention any four points where positioners are necessary. (12 Marks)

8. a. With a neat diagram explain the fuel oil viscosity control. (12 Marks)
    b. Explain the working of a feed water control of boiler. (08 Marks)

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