C09–AEI–**406**

# 3416

## BOARD DIPLOMA EXAMINATION, (C–09)
## OCT/NOV—2015
## DAEIE—FOURTH SEMESTER EXAMINATION

PROCESS CONTROL

*Time* : 3 hours ]　　　　　　　　　　　　　[ *Total Marks* : 80

**PART—A**　　　　　　　3×10=30

*Instructions* : (1) Answer **all** questions.

(2) Each question carries **three** marks.

(3) Answer should be brief and straight to the point and shall not exceed *five* simple sentences.

1. Define manipulated variable with an example.

2. Define integral control mode and list any two advantages.

3. State the need for tuning of controllers.

4. Define the quick opening control valve.

5. Draw the diagram of valve positioner.

6. List any three applications of cascade control system.

\*　7. List any three applications of feedforward control system.

8. Define adaptive control system.

9. Define P & I diagram.

10. List any three standards used in instrumentation.

**PART—B**                                                        10×5=50

***Instructions*** : (1) Answer *any* **five** questions.

(2) Each question carries **ten** marks.

(3) Answers should be comprehensive and the criterion for valuation is the content but not the length of the answer.

**11.** Draw the block diagram of process control loop and explain each block.                                                   3+7

**12.** Explain two-position and multi-position control modes with an example.

**13.** Explain the PID controller and list any two advantages and disadvantages.

**14.** Define the following control system parameters :

*(a)* Error                                                            2

*(b)* Variable range                                                   2

*(c)* Cycling                                                          2

*(d)* Dead time                                                        2

*(e)* Control lag                                                      2

**15.** Explain the principle of operation of the following actuators with legible sketche :                                        5+5

*(a)* Pneumatic actuator

*(b)* Hydraulic actuator

**16.** Explain the principle of operation of the following converters with legible sketches.                                        5+5

*(a)* P/I converter

*(b)* I/P converter

**17.** Explain the characteristics of single and multi-variable control systems.

**18.** Draw the symbols of the following :

*(a)* Butterfly valve                                                  2

*(b)* Flow transmitter                                                 2

*(c)* Pneumatic control valve                                          2

*(d)* Instrument locally mounted                                       2

*(e)* Instrument at control centre                                     2

★ ★ ★