

SEAT No. \_\_\_\_\_

**SARDAR PATEL UNIVERSITY**

Vallabh Vidyanagar - 388120

M. Sc. (2<sup>nd</sup> Semester) Examination - 2018

Instrumentation and Control

**PS02CINC23 (COMPUTER AIDED PROCESS CONTROL)**Monday, 16<sup>th</sup> April, 2018

Time: 10:00 am - 1:00 pm

**Total Marks: 70****Q-1. Objective Type Questions.****08**

1. \_\_\_\_\_ Variable is used to maintain the controlled variable at its set point.  
(a) Controlled variable (b) Manipulated variable  
(c) Set point (d) Uncontrolled variable
2. The \_\_\_\_\_ state is used only in systems where the number of task control block is fixed.  
(a) Executing (b) dormant  
(c) ready (d) suspended
3. The \_\_\_\_\_ are those programs that help the user to prepare the application program.  
(a) system support software (b) application software  
(c) system software (d) a and c both
4. In process control application the system that performs a set of operations in prescribed manners is known as \_\_\_\_\_ control.  
(a) override (b) sequential  
(c) hydraulic (d) numerical
5. If NE (Number of Equations) is greater than NV (Number of Variables), then the system is said to be \_\_\_\_\_.  
(a) under specified (b) unpredictable  
(c) over specified (d) first order
6. \_\_\_\_\_ is the time required for the response to reach half of its final value for the very first time.  
(a) Peak time (b) Settling time  
(c) Delay time (d) Rise time
7. SQA stands for \_\_\_\_\_.  
(a) Software Quality Assessment (b) Software Quality Assignment  
(c) Security Quality Assessment (d) Security Quality Assignment
8. \_\_\_\_\_ is a field of computer science concerned with the development and deployment of machines that mimic human behavior.  
(a) Artificial intelligence (b) Neural network  
(c) Fuzzy logic (d) CNC

1. Define the term Range and Span.
2. Explain dynamic and steady state process model.
3. List out the types of industrial process variables.
4. What are the uses of process models?
5. Write down the difference between batch and continuous process.
6. Describe the logic of an inferential control scheme.
7. Write a note on memory management for operating system.
8. Discuss the benefits of using computer aided process control system.
9. Explain incremental model.

- Q-3 (a) Explain feedback control system with necessary example. 6
- (b) What is cascade control system? Illustrate with neat sketch a cascade control system for stirred-tank heat exchanger temperature control. 6

OR

- (b) Explain Ratio control system. 6

- Q-4 (a) Explain different types of simple empirical model. 6
- (b) What are the general steps for modelling procedure? 6

OR

- (b) What are the principle control considerations that affect the scope of mathematical modeling of a chemical process? 6

- Q-5 (a) Draw and explain the structure of real time operating system. 6
- (b) Explain the classification of computer aided process control system. Which category of the classification is used most for process control function? 6

OR

- (b) What are the different types of real time application languages for process control application? What are its features? 6

- Q-6 (a) Explain waterfall model for process design. 6
- (b) Describe in detail software life cycle. 6

OR

- (b) What is adaptive control? Why it is needed in process control application? 6