

(Following Paper ID and Roll No. to be filled in your Answer Books)

Paper ID : 140664

Roll No.

B.TECH.

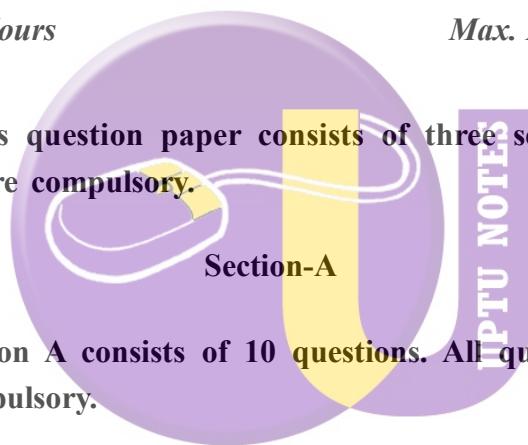
Theory Examination (Semester-VI) 2015-16

MECHATRONICS

Time : 3 Hours

Max. Marks : 100

Note: This question paper consists of three sections. All sections are compulsory.



1. Section A consists of 10 questions. All questions are compulsory. $(2 \times 10 = 20)$

- (a) List down two types of proximity sensors.
- (b) Differentiate between conventional and mechatronics system design.
- (c) Write down the names of control components in hydraulic actuator system.

- (d) What is servo motor?
- (e) What is PLC?
- (f) How are the sensors classified ?
- (g) Give any two examples of mechatronics systems currently used now a day.
- (h) Write down the names of pneumatic actuators.
- (i) What are flip-flops?
- (j) Write down the names of mechanical components used in mechatronics system.

Section-B

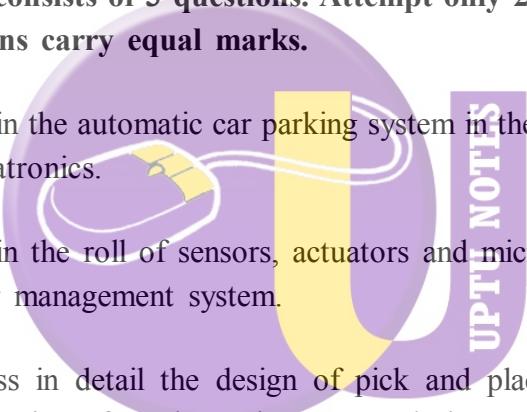
2. Section B consists of 8 questions. Attempt only 5 questions. All questions carry equal marks. ($10 \times 5 = 50$)

- (a) Explain the push-pull sensors and capacitive proximity sensors.
- (b) Explain various types of cam followers.
- (c) How the speed control is done in AC and DC motors?
- (d) Discuss in detail PI and PD mode electronic controllers.
- (e) Explain the working of pneumatic load cell.

- (f) Explain in detail the features of flexible manufacturing system.
- (g) What is JIT? Discuss the advantages of it.
- (h) Discuss the model building block of automatic suspension system and electric motor.

Section-C

**Section C consists of 3 questions. Attempt only 2 questions.
All questions carry equal marks. (2×15=30)**

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- UPTU NOTES
- 3. Explain the automatic car parking system in the context of mechatronics.
 - 4. Explain the role of sensors, actuators and microprocessor in car management system.
 - 5. Discuss in detail the design of pick and place robot in perspective of mechatronics system design.