

Total No. of Questions : 4]

SEAT No. :

**PE112**

**[6579]-418**

[Total No. of Pages : 1

**T.E. (Robotics & Automation Engineering) (Insem)**

**EMBEDDED SYSTEM IN ROBOTICS**

**(2019 Pattern) (Semester - I) (311501 (A))**

*Time : 1 Hour]*

*[Max. Marks : 30*

*Instructions to the candidates:*

- 1) *All questions are compulsory i.e. Solve Q.1 or Q.2, Q.3 or Q.4.*
- 2) *Assume suitable data, if necessary.*
- 3) *Figure to the right indicate full marks.*
- 4) *Neat diagrams must be drawn wherever necessary.*

**Q1) a)** Explain Basic structure of Embedded system in detail with suitable diagram. **[8]**

**b)** What is mean by Embedded system? Write short note on Environmental issues present in embedded system. **[7]**

OR

**Q2) a)** What is Real Time Operating System explain in detail with its types. **[7]**

**b)** Explain Inter communication protocol of Embedded system in detail. **[8]**

**Q3) a)** Explain the architecture of ARM-v7-M (Cortex-M3) Architecture in detail With suitable diagram. **[8]**

**b)** Explain the Embedded Product development life cycle. **[7]**

OR

**Q4) a)** Explain the concept of Watchdog timer and Harvard Architecture in detail. **[8]**

**b)** Compare ARM-v7-M (Cortex-M3) and ARM-v7-R (Cortex-R4) in detail. **[7]**

