Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_



**End Semester Examination – Nov/Dec – 2018**

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
| **Code :** | **18CS3027** | **Duration :** | **3hrs** |
| **Sub. Name :** | **CYBER PHYSICAL SYSTEMS** | **Max. marks :** | **100** |

**ANSWER ANY FIVE QUESTIONS (5 x 16 = 80 Marks)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | Assess the design challenges of Cyber physical systems. | CO1 | 8 |
| b. | Much research has been done to create a more reliable and secure system using a combination of cyber and physical components together to guard the smart grid. Illustrate the CPS security in smart grids. | CO4 | 8 |
|  |  |  |  |  |
| 2. | a. | Present the key design drivers and quality attributes of medical CPSs. | CO2 | 8 |
| b. | Introduce the modeling, estimation and decision-making paradigm – DyMonDS as a basis for new cyber design and implementation for sustainable SEES. | CO6 | 8 |
|  |  |  |  |  |
| 3. | a. | Summarize the impact of sensor networks in cyber-physical systems applications. | CO2 | 8 |
| b. | The growth in the number of mobile devices and global positioning systems (GPS) over the past decade makes community sensing a reality. Write a note on the devices and programs involved in community sensing and the areas community sensing could be applied. | CO2 | 8 |
|  |  |  |  |  |
| 4. | a. | Illustrate the architecture and security of wireless embedded/ implanted microsystems. | CO3 | 8 |
| b. | Highlight the various machine learning approaches that find application in monitoring physical activity. | CO6 | 8 |
|  |  |  |  |  |
| 5. | a. | Discuss the principles and approaches to evaluate and design secure CPSs. | CO5 | 8 |
| b. | Review the ongoing security and privacy challenges for CPSs. | CO4 | 8 |
|  |  |  |  |  |
| 6. | a. | Mention the security attack points in CPSs. Depict how information and physical security principles support each other. | CO1 | 8 |
| b. | Cite examples of security and privacy in action in CPSs. | CO2 | 8 |
|  |  |  |  |  |
| 7. | a. | Survey the various security and privacy threats in CPSs and discuss the strategies for securing local communication. | CO2 | 8 |
| b. | Data in cloud-interconnected CPSs is subject to several threats. Illustrate the security and privacy mechanisms for cloud-interconnected CPSs. | CO3 | 8 |
|  | | | | |
| **COMPULSORY QUESTION (1 x 20 = 20 Marks)** | | | | |
| 8. | a. | The CPS need to be more secure, safe, should be able to operate in real time, and must be dependable and secure enough. Write a note on intrusion detection, prevention and privacy of big data for CPS. | CO1 | 10 |
| b. | Outline the generalized framework based on trust with privacy for security in cyber-physical systems. | CO4 | 10 |