

## SEM 1 – 5 (RC 16-17)

### F.E. (Semester – I) (Revised in 2016-2017) Examination, Nov./Dec. 2017 FUNDAMENTALS OF COMPUTER ENGINEERING

Duration : 3 Hours

Max. Marks : 100

**Instructions :** 1) Answer **any 5** questions by selecting **two** questions from Part – A, **two** from Part – B and **one** question from Part – C.  
2) Make suitable assumptions **if required**.

#### PART – A

Answer **any two** questions from the following.

1. a) Explain the following DOS commands with a suitable example of each : 4
  - i) CD
  - ii) FORMAT
  - iii) DEL
  - iv) REN.
- b) Explain how graphics data is represented in binary form to be used with a computer. 5
- c) What do you mean by RFID ? Explain any 2 applications of RFID technology. 7
- d) What is a URL ? With the help of an example, explain the structure of an URL. 4
2. a) Define software, hardware and firmware. 3
- b) Write a short note on partitioning a hard drive. 6
- c) Discuss the different types of memory. 5
- d) What do you mean by a compiler ? Explain how it works. 6
3. a) Explain the various CPU components. 6
- b) State and explain any 2 coding systems for text-based data. 4
- c) Explain the following flat-panel display technologies : 6
  - i) LCD
  - ii) LED and OLED displays
  - iii) Plasma displays.
- d) Explain various reasons why a business may choose to network its employees' computers. 4





## PART – B

Answer any two questions from the following.

4. a) Explain RSA algorithm. 6
- b) What are the features supported in MATLAB for input output ? Provide examples. 4
- c) Give reasons why electronic banking is required. 4
- d) Explain the security requirements for application to application communication. 3
- e) Create a vector x with values ranging from 1 to 100 in steps of 5. Create a vector y that is the square root of each value in x. Plot these points with appropriate axis label and title of the plot. 3
5. a) What is MATLAB ? What are the various applications of MATLAB ? 4
- b) Explain the asymmetric key cryptography. 4
- c) Explain how is legal recognition of digital signature done. 5
- d) List the various cases in which a certifying authority may revoke a digital signature certificate. 4
- e) Given vector  $a = [3 \ 2 \ 1 \ 0]$  and  $b = [5 \ 6 \ 7 \ 8]$ , write the output of each of the following MATLAB commands : 3
- i)  $x.*y$
- ii)  $y'$
- iii)  $y-x(2)+4$
6. a) What is Cipher feedback mode ? Explain. 4
- b) List the various data structures of a typical banking system. 4
- c) What are the various risks in electronic banking ? 4





d) Write MATLAB command to initialize the following array A.

8

$$A = \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 2 & 0 & 2 \\ 3 & 1 & 3 & 1 \end{bmatrix}$$

Write commands that will perform each of the following operations on array A. Re-create array A again before each option i.e. updated array at each step goes as an input to the next state.

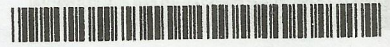
- i) Return the second column of A.
- ii) Return the first and third rows of A.
- iii) Delete the first and second columns of A.
- iv) Append the column vector [7; 8; 9] to A.

### PART – C

Answer **any one** question from the following.

- 7. a) Explain file management in operating system. 4
  - b) Explain the difference between a compiler and an interpreter. 4
  - c) Write short notes on : (4×3)
    - i) Dot-matrix printer
    - ii) Cipher block chaining mode
    - iii) Hash functions.
- 8. a) Explain the following functions of an operating system : 6
  - i) Booting the computer
  - ii) Configuring devices
  - iii) Monitoring resources and jobs.
- b) What do you mean by a spreadsheet ? State the difference between absolute addressing and relative cell referencing. 4





c) Write a short note on the Linux OS. Explain the following Linux Commands : 6

- i) pwd
- ii) chmod
- iii) cat
- iv) ping
- v) ls
- vi) cp.

d) Write commands in MATLAB for the following expressions : 4

i) Area =  $\pi r^3$  with  $r = \pi^{1/3}$

ii)  $\frac{7^8}{4^8 - 1}$