SEM 1 – 6 (RC 16-17)

F.E. (Semester – I) (Revised in 2016 – 2017)
Examination, May/June 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** questions 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. **(20)**

a) State the different generations of computers and explain them. **6**

b) Explain the IPOS operations/components for a supermarket barcode reading system. **4**

c) Explain the following functions of an operating system : **6**
   i) File management
   ii) Security
   iii) Configuring devices.

d) Explain the following DOS commands with a suitable example of **each** : **4**
   i) CD
   ii) FORMAT
   iii) DEL
   iv) REN.

2. **(20)**

a) What do you mean by the binary number system ? Convert 1100 from binary to decimal. **2**

b) Explain the four steps in a machine cycle. Explain the various machine cycles used to process the command 2+3. **8**

c) Explain the following processing techniques utilized by an operating system to increase efficiency. **6**
   i) Multitasking
   ii) Multiprocessing, parallel processing and coprocessing
   iii) Memory management.

d) Explain the difference between a compiler and an interpreter. **4**

P.T.O.

3. (20)

a) Explain the following terms : 4

i) Web page ii) Web site

iii) Web browser iv) Domain name

b) Explain the following storage systems characteristics : 6

i) Storage devices and storage media

ii) Volatility

iii) Random and sequential access.

c) What is the disk access time ? Explain the steps required for disk access. 4

d) Write a short note on the MAC OS and UNIX OS. 6

PART – B

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

4. (20)

a) Explain the security requirements for application to application communication. 5

b) List the various proprietary algorithms for symmetric key cryptography. 5

c) Explain RSA algorithm. 5

d) What is book keeping ? Explain the common methods of book keeping. 5

5. (20)

a) What are the various risks in electronic banking ? 5

b) Name the various technologies based banking products and services. 5

c) Consider the following matrix : 10

$$M = \begin{bmatrix} 1 & 4 & 7 \\ 2 & 5 & 8 \\ 3 & 6 & 9 \end{bmatrix}$$

i) Write MATLAB command to create the matrix M given above.

ii) Write MATLAB command to retrieve the following sub-matrix from the matrix M: $\begin{bmatrix} 1 & 4 \\ 2 & 5 \end{bmatrix}$.

iii) Given vector X = [2; 4; 6], write MATLAB command to multiply the matrix M by vector X.

iv) Write MATLAB command to find transpose of matrix M.

v) Write MATLAB command to exponentiate matrix M to power of 3 and write down the resultant matrix.

6. (20)

a) Write MATLAB commands for the following expressions : 6

a. $\frac{4^3 - 5}{5^2}$

b. $\frac{\sqrt{6} - 1}{(\sqrt{6} - 2)^2}$

c. $e^{\pi}\sqrt{200}$

b) Explain the file types in MATLAB. 6

c) Explain the use of following functions in MATLAB with suitable example. 8

i) polar

ii) bar.

PART – C

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

7. (20)

a) Write short notes on laser printers and ink-jet printers. 5

b) What do you mean by a spreadsheet ? State the difference between absolute addressing and relative cell referencing. Explain any 2 examples of common spreadsheet functions. 5

c) Write short note on Data Encryption Standard. 5

d) List and explain any five functions used for plotting 3-D plots. 5

8. (20)

a) State some regular system maintenance tips that every computer user should be aware of. 5

b) What do you mean by a database ? Explain the importance of a DBMS. 5

c) Explain the security measures that can prevent hacking. 5

d) What do you mean by view in MATLAB ? Explain two viewing angles with respect to 3-D plots. 5