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**F.E. Semester-I (Revised Course 2016-17)**  
**EXAMINATION AUGUST 2021**  
**Fundamentals of Computer Engineering**

**[Duration : Two Hours]****[Total Marks: 60]****Instructions:**

- 1) Answer THREE FULL QUESTIONS with ONE QUESTION FROM EACH PART
- 2) Make suitable assumptions if required.

**PART – A**

- |      |   |   |
|------|---|---|
| Q.1a | Differentiate between Interpreter and Compiler  | 4 |
| b    | Describe the characteristics of Data in Database  | 6 |
| c    | What do you mean by RFID? Explain any 2 applications of RFID technology.  | 6 |
| d    | State and explain any 2 coding systems for text-based data.   | 4 |
| Q.2a | Explain the working of CPU and memory with the help of a neat diagram.  | 6 |
| b    | With the help of a neat diagram explain the compilation process.  | 7 |
| c    | What do you mean by ROM. Explain the different types of ROM   | 7 |
| Q.3a | Write short notes on laser and ink-jet printers   | 6 |
| b    | Provide an example and the related output for the following Linux commands:<br>i) pwd ii) ping iii) chmod iv) cat | 4 |
| c    | Explain different generations of Computers  | 4 |
| d    | Write short note on:<br>i) Memory Management, ii) Multiprocessing   | 6 |

**PART – B**

- |      |   |   |
|------|---|---|
| Q.4a | Write a short note on IT ACT 2000   | 4 |
| b    | Explain RSA Algorithm   | 6 |
| c    | Explain the use of following functions in MATLAB with suitable example<br>i) fplot ii) fill | 4 |
| d    | Given   | 6 |
- $$P = \begin{bmatrix} 3 & 6 & 9 \\ 5 & 8 & 7 \\ 7 & 0 & 5 \\ 2 & 4 & 0 \end{bmatrix}$$

Write MATLAB commands along-with their output for each of the following questions.

- i) Reshape P to 6 rows and 2 columns and assign it to A.
- ii) Rotate P by 90° and assign it to B
- iii) Get sum of all the elements of matrix P.
- iv) Sort the elements of P row –wise and assign it to C.
- v) Extract 8 7

- vi) Update matrix P to
- |   |   |   |
|---|---|---|
|   | 0 | 5 |
| 3 | 6 | 9 |
| 9 | 9 | 9 |
| 0 | 0 | 0 |
| 2 | 4 | 0 |

- Q.5a What is Cipher feedback mode? Explain 4
- b Explain the different measures to prevent hacking 8
- c Given  $v = [4 \ -2 \ -1 \ 5 \ 0 \ 1 \ -3 \ 8 \ 2]$  and  $w = [0 \ 2 \ 1 \ -1 \ 0 \ -2 \ 4 \ 3 \ 2]$  8  
Write MATLAB commands along with outputs to evaluate the following expressions  
i)  $v \leq w$  ii)  $w = v$  iii)  $v \text{ xor } w$  iv)  $v \& w$
- Q.6a With a neat diagram explain Client Server Architecture. Also explain its components, 6
- b Write the MATLAB commands for the following expressions: 4
- i)  $e^{\pi\sqrt{163}}$
- ii)  $\frac{3(\sqrt{5}-1)}{(\sqrt{5}+1)^2}$
- iii)  $2 + \text{round}(6/9 + 3*2)2 - 3$
- iv)  $A = \cosh^2 x - \sinh^2 x$  With  $x = \pi$
- c Explain the file types in MATLAB. 6
- d What are the various risk in electronic banking? 4

### PART -C

- Q.7a Write a short note on IPOS. Explain IPOS operations/components for ATM Banking System. 6
- b Explain the following functions of an operation system: 6
- i) File Management
- ii) Configuring devices
- iii) Monitoring resources and jobs.
- c Given 2 polynomials p1 & p2. 8
- $p1 = 6x^5 - 4x^3 + 2x + 7$
- $p2 = x^3 + 2x^2 - 4x + 5$
- Write MATLAB Commands for each of the following. Also show the mathematical part separately. Solve each sub-question independently.
- i) Get the sum of p1 & p2
- ii) Multiple p1 & p2.
- iii) Find the derivative of p1
- iv) Find the integral of p2 (k=3)

- Q.8a) Explain limitations of symmetric key cryptography. 4
- b) Explain the characteristics of a monitor. 6
- c) Explain how graphics data is represented in binary form 6
- d) Write the output of each of the following MATLAB commands. 4
- i)  $x = [20: -3: 10]$  &  $y = \text{linspace}(1, 13, 4)$
  - ii)  $q = x .* y$
  - iii)  $r = x.^2$
  - iv)  $s = x * y'$
  - v)

