

I B.Tech Supplementary Examinations, November/December 2005
INFORMATION TECHNOLOGY & NUMERICAL METHODS
 (Common to Electrical & Electronic Engineering, Electronics &
 Communication Engineering, Computer Science & Engineering, Electronics
 & Instrumentation Engineering, Bio-Medical Engineering, Information
 Technology, Electronics & Control Engineering, Computer Science &
 Systems Engineering, Electronics & Telematics, Electronics & Computer
 Engineering, Instrumentation & Control Engineering and Bio-Technology)
Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

1. (a) Describe the main tasks, performed by CPU.
 (b) What are interrupts? Name different types of interrupts.
 (c) Name at least three sources of computer interrupts.
[5+6+5]
2. (a) Distinguish between Windows 95 and Windows NT.
 (b) Explain the important features of PC operating systems.
[6+10]
3. (a) What are the advantages of computer programming languages.
 (b) What are the differences between compiler and interpreter.
[8+8]
4. Explain: LANS and WANS [16].
5. Describe the Standard Toolbar of Office - 2000 [16]
6. (a) Evaluate the square root of 5 by applying the method of Successive approximation.
 (b) Explain Convergence of Successive Approximation method.
[10+6]
7. (a) Let $E(f(x_1) = f(x_1+h))$, $D(f(x_1) = f(x_1+h) - f(x_1))$, $d(f(x_1) = f(x_1) - f(x_1+h))$. Prove that $E = 1 + D = (1 - d)^{-1}$.
 (b) Find $f(1.3)$, given $x = -2, -1, 5, 1, 2, 3$, $f(x) = 6, 5, -2, 3, 6$. Using central difference method.
[8+8]
8. (a) Evaluate $I = \int_0^1 (1/(x^3 + 10)) \cdot dx$ using
 i. Trapezoidal rule and

- ii. Simpson's rule with 3,5 points.
- (b) Explain 'Gauss Quadrature'

[10+6]

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1. How do elements of a computer communicate with each other? Describe what information is necessary for successful communication between elements of a computer?
[16]
2. Give a neat sketch showing major components of Unix OS and explain functions of each of them. [16]
3. (a) What is meant by 'portability' in computer languages.
(b) Distinguish between third generation and fourth generation languages.
[6+10]
4. (a) Write about hierarchical databases and network databases.
(b) Write about relational databases and object oriented databases.
[8+8]
5. (a) Explain about the Pull-down Menu available in Office - 2000
(b) Give top side ten Keyboard Shortcuts.
[6+10]
6. (a) Briefly explain the Gauss - Seidel Method and give the algorithm.
(b) Obtain the solution of the following system using Gauss - Seidel iteration Method
$$\begin{aligned} 2x_1 + x_2 + x_3 &= 5 \\ 3x_1 + 5x_2 + 2x_3 &= 15 \\ 2x_1 + x_2 + 4x_3 &= 8 \end{aligned}$$
[8+8]
7. (a) Compare the Lagrangian and Newton interpolation methods.
(b) Find $f(3.8)$ given $x = 1, 2, 3, 4, 5$, $f(x) = 6, -3, 6, 2, -6$. Using central difference method.
[8+8]

8. (a) Solve $x' = -4tx^2$, $x(0) = 2$ with $h = 0.2$ on the interval $[0,1]$ using Euler method.
- (b) Write an algorithm for Trapezoidal method.

[10+6]

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1. How do elements of a computer communicate with each other? Describe what information is necessary for successful communication between elements of a computer?
[16]
2. (a) Write a brief notes on user interface features of an operating system.
 (b) Write short notes on the program running features in operating system.
[8+8]
3. Describe the characteristics, domain of applications for the following third generation languages.
 (a) FORTRAN
 (b) COBOL
 (c) BASIC
 (d) Pascal
[4+4+4+4]
4. What is MODEM? What factors do you consider to buy a MODEM? What are the uses for a MODEM?
[16]
5. Describe the Standard Toolbar of Office - 2000
[16]
6. (a) Prove that, if $\phi(x)$ is a continuous function in the interval $[a, b]$ that contains the root and $|\phi^1(x)| \leq c < 1$ in this interval, then for any choice of $x_0 \in [a, b]$, the sequence $\{x_k\}$ determined
 From $x_{k+1} = \phi(x_k)$, $k = 0, 1, 2, \dots$
 Converges to the root ε of $x = \phi(x)$
 (b) Explain Acceleration of the Convergence and efficiency of a method.
[10+6]
7. (a) Show that $\Delta^2 f_i = (f_i + f_{i+1}) \Delta f_i$

(b) If $f(x) = u(x) v(x)$ Show that $f[x_0, x_1] = u[x_0] \cdot v[x_0, x_1] + u[x_0, x_1] v[x_1]$

[8+8]

8. Solve $y' = -x/y$, $y(0) = 20$ with $h = 2$ using

(a) Modified Euler method

(b) and Runge-Kutta 4th order method.

[8+8]

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1. Describe the process of a laser-xerographic printing. What are the advantages and disadvantages of this form of printing? [16]
2. (a) What are RISC and CISC processors? Explain.
(b) Explain about parallel processing.
(c) Explain about Motorola processors. [6+5+5]
3. (a) How are programming languages categorized? Explain.
(b) What are various third generation languages? Explain their features briefly. [8+8]
4. (a) Explain: FAX MODEM, Cable MODEM.
(b) Explain briefly about ATM. [8+8]
5. (a) Explain Customizing Toolbars and Menus of Office - 2000
(b) Explain the creation of a drawing with auto shapes and drawing tools available in Office-2000. [8+8]
6. (a) Explain the iterative method approach in solving the problems
(b) Explain the classification of iterative method based on the number of guesses [8+8]
7. (a) Explain the Lagrange interpolation technique.
(b) Determine the approximate step size in the construction of a table of $f(x) = (1 + x)^6$ in the interval $[0, 2]$. [6+10]

8. Evaluate $\int_0^1 (dx)/(1+x^2)$ using

- (a) Composite Trapezoidal rule with 2,3,5,9 nodes and
- (b) Composite Simpson's rule with 3,5,9 nodes.

[8+8]
