

I B.Tech Supplementary Examinations, Aug/Sep 2008
INFORMATION TECHNOLOGY AND 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) What are the three main functional elements of a Computer? Briefly describe the purpose of each functional elements of the computer.
(b) Compare and contrast the differences among mini and microcomputers. [10+6]
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. (a) What are the advantages of computer programming languages.
(b) What are the differences between compiler and interpreter. [8+8]
4. Explain about any four common media for data communication. [16]
5. Describe the customizing word and list the common word options and their description by taking the location and option name. [16]
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 [8+8]
$$\begin{aligned} 2x_1 + x_2 + x_3 &= 5 \\ 3x_1 + 5x_2 + 2x_3 &= 15 \\ 2x_1 + x_2 + 4x_3 &= 8 \end{aligned}$$
7. (a) Explain Newton's causal difference interpolation method.
(b) Determine the piecewise quadratic fit $p(x)$ to $f(x) = (1 + x^2)^{-1/2}$ with knots at -1, -1/2, 0, 1/2, 1. [8+8]
8. Solve $y' = 4-2x$, $y(0) = 2$, with $h = 0.5$
Using
(a) Improved Euler method and
(b) Modified Euler method
(c) compare the results with the theoretical values. [6+5+5]

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1. Give a broad classification scheme of computers. Explain each type in brief. [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) Explain the following text codes:
 - i. EBCDIC.
 - ii. ASCII.
 - iii. Unicode.(b) What are interrupts? Explain. [10+6]
4. Explain the following internet terminology: [4+3+3+3+3]
 - (a) HTML tag
 - (b) Web browser
 - (c) HTTP
 - (d) URL
 - (e) Homepage.
5. Describe the Standard Toolbar of Office - 2000. [16]
6. Find the iterative equation based on Newton-Raphsons method for finding $\sqrt{N}$, $1/N$, $N^{1/3}$, where N is a real Number. Apply the Methods to N=18 to obtain the results correct to 2 decimals. [16]
7. (a) Find the error term in Lagrange interpolation formula.
(b) The population between 1921-1981 for every 10 years is 35, 42, 58, 84, 120, 165, 220 (in thousands). Using difference tables interpolate for population in the year 1925 and 1975. [8+8]
8. (a) Explain Predictor corrector method.

- (b) Consider the initial value problem $y' = x(y + x) - 2$, $y(0) = 2$ using step sizes $h = 0.1, 0.2$ and 0.15 and Euler's method, Compute approximation to $y(0.6)$ upto 5 decimals. [8+8]

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1. (a) What is a cache memory? How is it different from a primary memory? What is the advantage of using Cache memory?
(b) Explain the idea of cache memory in computers. How does the presence of Cache increase the processing speed? [8+8]
2. (a) What are RISC and CISC processors? Explain.
(b) Explain about parallel processing.
(c) Explain about Motorola processors. [6+5+5]
3. (a) What are the characteristics of fourth generation high-level languages.
(b) What are the advantages of 'C' language over other third generation languages. [8+8]
4. Explain: [4+4+4+4]
 - (a) Network servers
 - (b) File servers
 - (c) Application servers
 - (d) Spooling.
5. Describe the customizing word and list the common word options and their description by taking the location and option name. [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) Define finite differences and show how they are used for interpolation.
(b) Given $x = 0.4, 0.5, 0.7, 0.8$ and $f(x) = -0.916, -0.693, -0.357, -0.223$. Estimate $f(0.6)$ using Lagrange method. [8+8]
8. (a) Evaluate $I = \int_0^{0.8} (1 + (\sin x/x)) \cdot dx$ with an error $< 10^{-5}$ using Simpson's rule.

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(b) Give an algorithm for linear regression.

[9+7]

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1. (a) What are the prime responsibilities of output devices? List and explain them in brief.
(b) Describe the role and importance of memory unit in a computer. [10+6]
2. Write a brief notes on the following: [4+4+4+4]
 - (a) Multi-processing operating system
 - (b) Time sharing system
 - (c) Multi tasking OS
 - (d) Batch Processing.
3. (a) What is meant by 'portability' in computer languages.
(b) Distinguish between third generation and fourth generation languages. [6+10]
4. (a) What is teleconference? What is videoconferencing?
(b) Explain: bridge, routes, gateway. [8+8]
5. Describe the Standard Toolbar of Office - 2000. [16]
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. Find the interpolation polynomial for $x = 3.2, 2.7, 1.0, 4.8, 5.6$, $f(x) = 22, 17.8, 14.2, 38.3, 51.7$, using difference tables and thus find $f(3)$. [16]
8. (a) Derive an expression for the truncation error in Taylor Series (Single Step Method) method.
(b) Given $y''' + 2y'' + y' - y = \cos(x)$
 $y(0) = 0, y'(0) = 1, y''(0) = 2$
Compute $y(1), y'(1), y''(1)$ using Taylor Series Solution with $h = 1$. [8+8]
