

BSIT/J-21**26405****COMMUNICATION SKILLS (English)–II****Paper–BSIT–201–II**

Time Allowed : 3 Hours]

[Maximum Marks : 40

Note : Attempt **five** questions in all, selecting **one** question from each Unit.
Question No. **1** is compulsory. All questions carry equal marks.

Compulsory Question

1. Write short notes on the following : 4×2=8
- (a) Define a Business letter.
 - (b) Importance of Subject heading of Letter.
 - (c) What is the agreement between Subject and Verb ?
 - (d) Syllable.

UNIT–I

2. Describe Seven C's of Business Communication. 8
3. Describe the lay out of Business Letter. 8

UNIT–II

4. Write a letter to a Firm requesting to grant you an Agency of their goods. 8
5. Write a precis of the following passage and also assign it a suitable title :
- Over the last fifty years, millions of rupees have undoubtedly been spent on Child care in this country. Yet, it is not Sub-Saharan Africa that is the home of the malnutrition child but India where, according to UNICEF statistics, 53% of all children are malnourished. The reasons for malnourished among Indian children are not for to seek. It is a multi-sectorial, multi-level problem that involves not just the availability, but also adequate Mother and Child care in terms of easy access to health facilities, safe drinking water, environmental sanitation and of course, literacy.
- Neither the setting up of the National Nutrition Council in 1994, under the chairmanship of the Prime Minister, nor the integrated Child Development Scheme launched in 1975 to promote the holistic development of the child

under six years of age, have made any visible or vocal difference or improvement in the sordid situation. Unfortunately, the purpose of strengthening the capacities of the community and of those who care has failed to deliver the goods because the schemes envisaged have had only marginal impact in the area of nutrition where it is most wanting and woeful. On paper we have plenty of policies and programmes, but as far as performance is concerned we have earned enough notoriety. The need of the hour is to translate them into deeds and results what we have tried to sell in the form of promises and populist pronouncements.

The most urgent areas of attention and immediate actions are ‘nutrition, health and education’ of children, whose well-being reflects the health of the society and caring outlook of the polity. Since the causes of malnutrition of children are many, like exploding population, bias against the female child, weak and suffering mothers, the remedy calls for “care of the mother and care by the mother”, besides an effective control over population explosion. Ignorance on what foods should be taken, is another contributory factor that results in malnutrition among women and children. The implementation of various schemes to fight the menace of malnutrition and undernourishment of children requires planning, co-ordination and monitoring by high-powered bodies right down to the village level. 8

UNIT-III

6. (a) Fill in the blanks with proper Articles :
- (i) I met European on a Tour to China.
 - (ii) He was MLA and had higher reputation.
 - (iii) Cricket is a popular game in India.
 - (iv) He went to United States of America in 2001.
- (b) Fill in the blanks with appropriate Modal auxiliary :
- (i) He not enter my office.
 - (ii) He rather die than beg.
 - (iii) You not involve in Criminal activities.
 - (iv) He go if he wanted. 8

7. (a) Fill in the blanks with correct form of Verb :
- (i) Either Ram or his brothers dancing. (was/were)
 - (ii) Ram as well as his friends crossing the road.
(was/were)

- (iii) Bread and butter my favourite dish. (is/are)
(iv) News very fast. (travel/travels).
- (b) Change the Voice :
- (i) What does he do ?
(ii) Whom did he know ?
(iii) I have had tea.
(iv) He will have played Cricket. 8

UNIT-IV

8. Write a detailed note on Stress and Intonation. 8
9. Translate the following words with stress mark : 8
- (i) of, (ii) Receipt, (iii) tomb, (iv) climb, (v) Women, (vi) heart,
(vii) System, (viii) Career.

BSIT/M21

26406

**MATHEMATICAL FOUNDATION FOR INFORMATION
TECHNOLOGY-II**

Paper – BSIT-202

Time allowed : 3 Hours

Maximum Marks : 40

Note: Attempt **five** questions in all, selecting **one** question from each unit.
Question No. 1 is compulsory. All questions carry equal marks.

Compulsory Question

1. (a) Find iterative formula for cube root of number N. 2
- (b) Obtain the Chebyshev linear polynomial approximate to the function $f(x) = x^3$ on $[0, 1]$. 2
- (c) Define Bolzanoor Bisection Method. 2
- (d) Given that $f(0) = 8$, $f(1) = 68$ and $f(5) = 123$. Construct a divided difference table. Using the table, determine the value of $f(2)$. 2

UNIT-I

2. (a) Find the real root of the equation $x^3 - x^2 - x - 3 = 0$ by bisection method, correct to three places of decimals. 4
- (b) Show that order of convergence of Regula Falsi Method is 1.618. 4
3. (a) Find $\sqrt{2}$ correct to four decimal places by Newton Raphson Method. 4
- (b) Find the root of the following equation correct to three decimal places by the Secant Method : $x^3 - 5x + 3 = 0$. 4

UNIT-II

4. (a) Solve the following equations by Gauss Elimination Method :

$$4x_1 + x_2 + 3x_3 = 11$$

$$3x_1 + 4x_2 + 2x_3 = 11$$

$$2x_1 + 3x_2 + x_3 = 7.$$
4
- (b) Solve the following equations by Gauss-Jordan Method :

$$3x - 5y + z = 6$$

$$2x + 4y + z = 1$$

$$x + 2y + 2z = -1.$$
4

5. (a) Solve the following equation by using triangularization method :
 $2x + y + z = 2$
 $x + 3y + 2z = 2$
 $3x + y + 2z = 2.$ 4
- (b) By use of pivoting, solve the following equations :
 $x + y + z = 6$
 $3x + 3y + 4z = 20$
 $2x + y + 3z = 13.$ 4

UNIT-III

6. (a) Apply Gauss-Seidel Iteration Method to solve the following equations :
 $20x + y - 2z = 17$
 $3x + 20y - z = -18$
 $2x - 3y + 20z = 25.$ 4
- (b) Use Euler's Method, with $h = 0.1$ to find the solution of the equation :
 $\frac{dy}{dx} = x^2 + y^2, y(0) = 0$ in the range $0 \leq x \leq 0.5.$ 4
7. (a) Apply Runge-Kutta Fourth Order Method to find an approximate value of y , when $x = 0.2$, given that :
 $\frac{dy}{dx} = x + y$ & $y = 1$, when $x = 0.$ 4
- (b) Given $\frac{dy}{dx} = 1 + y^2$, where $y(0) = 0, y(0.2) = 0.2027, y(0.4) = 0.4228,$
 $y(0.6) = 06.841.$ By Milne's Method. Compute $y(0.8).$ 4

UNIT-IV

8. (a) Derive Newton-Gregory Formula for Forward Interpolation. 4
- (b) Apply Newton's divided difference formula to find the values of $f(7)$ & $f(8)$; given $f(1) = 3, f(3) = 31, f(6) = 223, f(10) = 1011,$
 $f(11) = 1343.$ 4
9. (a) Use Lagrange's Formula to find $f(6)$ from the following data : 4
- | | | | | | |
|---------|----|-----|-----|------|-------|
| $x:$ | 2 | 5 | 7 | 10 | 12 |
| $f(x):$ | 18 | 180 | 448 | 1210 | 2028. |
- (b) Prove that Chebyshev Polynomial $T_n(x)$ satisfy the differential equation : 4
- $$(1 - x^2) \frac{d^2y}{dx^2} - x \frac{dy}{dx} + n^2y = 0.$$

BSIT/M21**26407****APPLICATIONS OF EM WAVES**

Paper–BSIT-204

Time allowed : 3 Hours**Maximum Marks : 40**

Note: Attempt **five** questions in all, selecting **one** question from each unit.
Question No. **1** is compulsory. All questions carry equal marks.

Compulsory Question

1. Attempt all questions : 2×4=8
- (a) Why is the sky wave propagation generally better at night than during the day?
- (b) Define the gain of an antenna.
- (c) For what reasons are high frequency antenna likely to differ from antenna at lower frequencies?
- (d) Define the elevation angle.

UNIT-I

2. (a) Describe ground wave propagation. What is the angle of tilt? 4
- (b) Describe briefly the strata of ionosphere and their effects on the sky wave propagation. 4
3. (a) Explain the terms virtual height and critical frequency. 4
- (b) What is fading? List its major causes. 4

UNIT-II

4. (a) What function does an antenna fulfil? 4
- (b) What is meant by the Gain of Antenna? What part does the isotropic antenna play in its calculations? 4
5. (a) Explain what is meant by Resonant Antenna? 4
- (b) Define the radiation resistance of an antenna. What is the significance of this quantity? 4

UNIT-III

6. (a) What is Antenna Coupling ? What are the major functions that must be fulfilled by antenna couplers ? 4
- (b) What is an Antenna Array ? What specific properties does it have that make it so useful at high frequencies ? 4

7. (a) What factors governs selection of the feed point of a dipole antenna? 4
(b) Explain the folded dipole single antenna. What are its applications? 4

UNIT-IV

8. (a) Explain Kepler's Second Law of Planetary Motion. Why is it called Law of Areas? 4
(b) Explain the orbital perturbations in satellite communication. 4
9. What is remote sensing and write its applications. 8

BSIT/M-21**26408****DIGITAL ELECTRONICS-I****Paper-BSIT-204**

Time Allowed : 3 Hours]

[Maximum Marks : 40

Note : Attempt **five** questions in all, selecting **one** question from each Unit.
Question No. **1** is compulsory. All questions carry equal marks.

Compulsory Question

1. Write short answer of the following :
 - (a) Define Radix. What is the radix of binary number system ? 2
 - (b) What do you understand by Logics ? Discuss AND operation. 2
 - (c) Write two characteristics of digital IC's. 2
 - (d) What are the advantages of CMOS logic ? 2

UNIT-I

2. (a) Explain 1's and 2's complement representation of Binary numbers. 4
 - (b) Perform the following subtraction using 2's complement method.
 - (i) 01100-00011 (ii) 48-23. 4
3. (a) Write the decimal number 795 in BCD system. 1
 - (b) Multiply $(110111)_2$ by $(1111)_2$. 2
 - (c) What is Gray code ? Why these are called reflected binary codes ? 3
 - (d) Write a short note on EBCDIC. 2

UNIT-II

4. (a) Define exclusive-OR gate. Also draw the truth table and symbol. 2
 - (b) Using the theorem of Boolean algebra, prove the following Identities. 6

$$(i) A.B + A.C + \bar{B}.C = A.B + \bar{B}.C \quad (ii) A.\bar{B} + \bar{A}.B = \overline{(A.B + \bar{A}.\bar{B})}$$

5. (a) Simplify using K map and make the circuit diagram using NOR gates only. 4

$$F(x,y,z,w) = \sum (0,1,5,8,10,14) + \sum_{\phi} (2,7,11,15)$$

- (b) Simplify the following logic function and realize using NOR gates
 $F(A, B,C,D) = \pi M(0,1,4,5,8,12,14,15). \pi_{\phi} (9,11,13).$ 4

UNIT-III

6. Draw the ckt diagram of two input positive logic DTL NAND gate and explain its working with the help of truth table. 8
7. (a) Draw the DCTL circuit of three input NOR gate and explain its operation. 5
- (b) Write a short note on unipolar logic families. 3

UNIT-IV

8. Draw the circuit diagram, truth table and symbol of TTL NAND gate. Also explain its working. 8
9. Explain the working of CMOS NAND gate with the help of circuit diagram. Also write its advantages and disadvantages. 8

BSIT/J-21**26409****ELECTRONIC COMMUNICATION–II****Paper–BSIT-205**

Time Allowed : 3 Hours]

[Maximum Marks : 40

Note : Attempt **five** questions in all, selecting **one** question from each Unit.
Question No. 1 is compulsory. All questions carry equal marks.

Compulsory Question

1. Write short answer of the following : 2×4=8
- (a) What are the advantages of Coherent Binary Modulation techniques over Non-Coherent techniques ?
 - (b) Define Hamming distance and calculate its value for codes 11010 and 11001.
 - (c) What are the main features of Syndrome decoder ?
 - (d) A source generates two symbols with probability 0.5 and 0.5. Find the source entropy.

UNIT–I

2. (a) Draw and explain the Operating principle of ASK Modulator. 6
- (b) Why Digital modulation techniques are preferred over Analog techniques ? 2
3. (a) Explain the process of Coherent detection of FSK signals. 6
- (b) Write the advantages of Digital communication. 2

UNIT–II

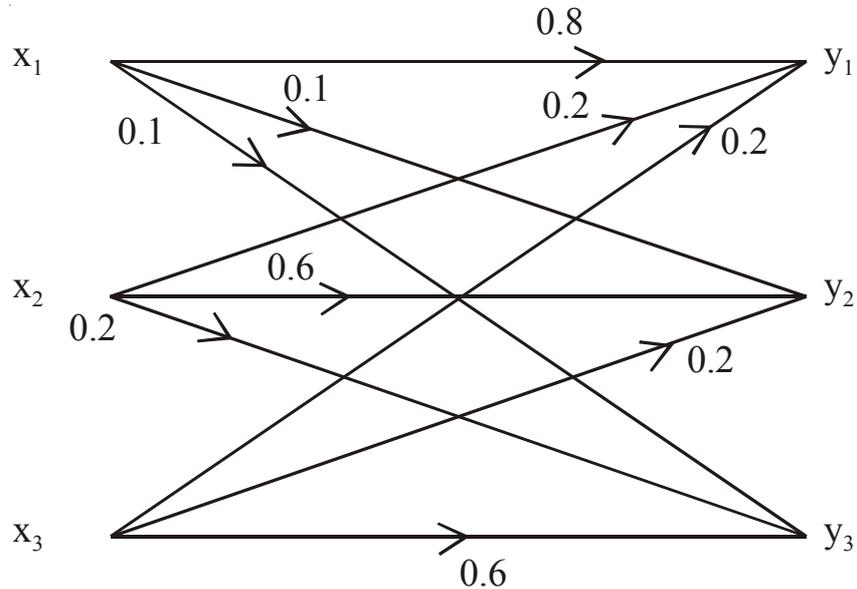
4. (a) Give the matrix description of Linear block codes in detail. 5
- (b) Define Bit rate and Baud rate. Write the relationship between them. 3
5. (a) A generator matrix $G = [10011, 01101]$ generates a (4, 2) code. What is the Parity check matrix of this code ? 6
- (b) State the importance of minimum distance of Linear block codes. 2

UNIT-III

6. Explain briefly the Syndrome calculation for (n, k) cyclic code. 8
7. (a) Find the generator and parity check matrices of a $(7, 4)$ cyclic code with generator polynomial $g(X) = 1 + X + X^3$? 6
- (b) What are the properties of Cyclic codes. 2

UNIT-IV

8. (a) A message source generates of four messages randomly every microsecond. The probabilities of these message are 0.4, 0.3, 0.2 and 0.1. Each emitted message is independent of the other messages in the sequence. Find the rate of Information generated by this source (in bits per second). 4
- (b) Define the following :
- (i) Joint entropy.
- (ii) Conditional entropy. 4
9. Consider that two sources emit messages x_1, x_2, x_3 and y_1, y_2, y_3 with the joint probabilities $p(X, Y)$ as shown in the matrix form :



- (a) Calculate the entropies of X and Y.
- (b) Calculate the joint and conditional entropies, $H(X, Y)$, $H(X/Y)$, $H(Y/X)$ between X and Y.
- (c) Calculate the average mutual information $I(X;Y)$. 8

BSIT/M21**26410****PROGRAMMING TECHNIQUES****Paper–BSTI-206****Time allowed : 3 Hours****Maximum Marks : 40**

Note : Attempt **five** questions in all, selecting **one** question from each unit.
Question No. **1** is compulsory. All questions carry equal marks.

Compulsory Question

1. Attempt all questions : 8
- (i) Define Flowchart and write symbols used.
 - (ii) Write verification procedure for Algorithm.
 - (iii) Write an algorithm to Add Ten numbers.
 - (iv) Define IF statement in Excel.

UNIT-I

2. (i) What is Program Planning. 8
- (ii) Discuss advantages and limitation of Pseudocode.
3. (i) Define Decision Table and its structure. 8
- (ii) Make a Flowchart to Find Largest of 3 numbers

UNIT-II

4. (i) Write characteristics of a Good Algorithm. 8
- (ii) Discuss Top-Down Design for Algorithm.
5. (i) Explain ways to find efficiency of Algorithm. 8
- (ii) Find Time and space Complexity for Algorithm.

UNIT-III

6. (i) Write an Algorithm to Find Fibonacci Sequence upto first 30 terms. 8
- (ii) Write an algorithm For Linear Search.
7. (i) Write an Algorithm for Bubble Sort. 8
- (ii) Write an algorithm for finding Square Root of a number.

UNIT-IV

8. Using Excel explain : 8
- (i) Copy and Move.
 - (ii) Sum and Autosum.
 - (iii) MAX and SIN.
 - (iv) Sort.
9. Write notes on : 8
- (i) Macros in excel.
 - (ii) Charts in Excel.

OBSIT/J-21**26412****MATHEMATICAL FOUNDATIONS FOR
INFORMATION TECHNOLOGY-II****Paper–BSIT-202**

Time Allowed : 3 Hours]

[Maximum Marks : 40

Note : Attempt **five** questions in all, selecting **one** question from each Unit.
Question No. **1** is compulsory.

Compulsory Question

1. (a) Define the Order of convergence of iterative method. 2
- (b) Define the Pivoting. 2
- (c) Use Taylor's series method to find the value of y at $x = 0.2$ for the differential equation $\frac{dy}{dx} = 2y + 3e^x$, $y(0) = 0$. 2
- (d) If $f(x) = x^3$, find divided difference $f(a, b, c)$. 2

UNIT-I

2. (a) Find the real root of the equation $x^3 - 9x + 1 = 0$ by bisection method correct to three places of decimal. 4
- (b) Find real root of the equation $x^3 - 2x - 5 = 0$ by Newton–Raphson method correct to three places of decimal. 4
3. (a) Find the real root of the equation $x^3 - 5x - 7 = 0$ by Regula Falsi Method correct to three places of decimal. 4
- (b) Find the Cube root of 5, correct to three places of decimal by 'Iterative method'. 4

UNIT-II

4. (a) Solve the equations : 4

$$2x + 4y + z = 3$$

$$3x + 2y - 2z = -2$$

$$x - y + z = 6$$
 By Gauss-elimination Method.

- (b) Explain the Partial Pivoting and complete pivoting. 4
5. (a) Establish whether the system : 4

$$x + \frac{1}{3}y = 1.33$$

$$3x + y = 4$$

Is well-conditioned or not.

- (b) An approximate solution of the equations. 4

$$x + 4y + 7z = 5$$

$$2x + 5y + 8z = 7$$

$$3x + 6y + 9.1z = 9.1$$

Is given by $x = 1.8, y = -1.2, z = 1$

Improve this solution by using Iterative method.

UNIT-III

6. (a) Solve the equations : 4

$$10x + y + z = 12$$

$$2x + 10y + z = 13$$

$$2x + 2y + 10z = 14$$

By Gauss-Seidel method.

- (b) Apply Evler's method to solve : 4

$$\frac{dy}{dx} = x + y, \quad y(0) = 0,$$

Choosing the step length = 0.2 find $y(1)$.

7. (a) Use Runge-Kutta Method to solve : 4

$$\frac{dy}{dx} = xy$$

For $x = 1.4$ initially $x = 1, y = 2$ (taking $h = 0.2$).

- (b) Solve the following equations by Jacobi's method : 4

$$10x + y + 2z = 44$$

$$2x + 10y + z = 51$$

$$x + 2y + 10z = 61.$$

UNIT-IV

8. (a) Find the number of men getting wages between Rs. 10 and Rs. 15 from the following table using Newton Gregorg formula for forward inter polation. 4

Wages in (Rs.)	Frequency
0-10	9
10-20	30
20-30	35
30-40	42

- (b) Using Newton divided difference formula, find $f(x)$ from the following data : 4

x	0	1	2	4	5	6
f(x)	1	14	15	5	6	19

9. (a) The values of the function $f(x)$ for the values of x are given as : 4

$$f(1) = 4, f(2) = 5, f(7) = 5, f(8) = 4$$

Find value of $f(6)$ using lagrange's Interpolation formula.

- (b) Prove that : 4

$$\int_{-1}^1 \frac{T_m(x) T_n(x)}{\sqrt{1-x^2}} dx = \begin{cases} 0, & \text{if } m \neq n \\ \frac{\pi}{2}, & m = n \neq 0 \\ \pi, & m = n = 0. \end{cases}$$

OBSIT/M-21**26413****ELECTRONIC DEVICES AND CIRCUITS****Paper–BSIT-203****Time allowed : 3 Hours****Maximum Marks : 40**

Note : Attempt **five** questions in all, selecting **one** question from each unit.
Question No. **1** is compulsory. All questions carry equal marks.

Compulsory Question

1. (i) Explain that current flows due to diffusion motion of majority carriers in forward biased pn Junction diode.
- (ii) Explain two advantages of Bridge FWR.
- (iii) Why CE configuration is preferred in Amplifiers?
- (iv) Why drain current becomes nearly constant after pinch-off in FET biased in enhancement mode. 2×4 = 8

UNIT-I

2. (i) Discuss drift and diffusion currents in semiconductor. 4
- (ii) Explain characteristic of junction diode biased in forward mode. 4
3. (i) Differentiate between Avalanche Breakdown and Zener Breakdown. 4
- (ii) Explain the working of First Order LPF using suitable circuit diagram. 4

UNIT-II

4. (i) Define and discuss DC component in rectifiers. 3
- (ii) Draw circuit diagram for C-Filter and explain its working. 5
5. Discuss clamping circuits in detail. 8

UNIT-III

6. (i) Discuss potential curve for pnp transistor biased in active mode in CB configuration. 4
- (ii) Discuss output static characteristics of CB configuration. 4
7. Discuss Transistor as an Amplifier in detail using suitable circuit diagram. 8

UNIT-IV

8. (i) Differentiate between FET and BJT. 4
- (ii) Discuss Small Signal Low Frequency FET model. 4
9. (i) Discuss construction of Depletion type MOSFET. 3
- (ii) Discuss Drain characteristic of JEFT. 5

OBSIT/M21
DIGITAL ELECTRONICS-II
Paper–BSIT-204

26414

Time allowed : 3 Hours

Maximum Marks : 40

Note: Attempt **five** questions in all, selecting **one** question from each unit.
Question No. **1** is compulsory. All questions carry equal marks.

Compulsory Question

1. Attempt all questions : 2×4=8
- (a) What is twisted ring counter?
 - (b) Define resolution and accuracy in D/A converter.
 - (c) What is the 1-bit memory cell?
 - (d) Differentiate between static and dynamic RAM.

UNIT-I

2. (a) Describe the working of parallel in parallel out shift register. Explain how numbers can be shifted in or out from this register. 4
- (b) Explain the working of serial in parallel out shift register with timing diagrams. 4
3. (a) What do you understand by the Cyclic Shift Register? Explain the operation of ring counter using timing diagram. 4
- (b) Discuss the use of shift register in sequence generator. 4

UNIT-II

4. (a) Draw the schematic diagram of binary ladder digital to analog converter. Explain its merits and demerits. 6
- (b) What are the performance criteria for D/A converter? 2
5. Describe the successive approximation method for A/D converter. Also list the advantages and disadvantages of this converter. 8

UNIT-III

6. (a) What is Memory Unit ? Explain with block diagram the concept of memory using registers connected to memory unit. 6
- (b) Differentiate between volatile and non volatile memories. 2
7. (a) Explain the dynamic RAM cell in detail. 4

- (b) Describe the EEPROM. What is the difference between EPROM and EEPROM. 4

UNIT-IV

8. Explain the principle of magnetic core memories. How these are used to store large information. 8
9. Explain content addressable memory in detail. 8

OBSIT/M-21**26415****ELECTRONICS COMMUNICATION-II****Paper–BSIT-205****Time allowed : 3 Hours****Maximum Marks : 40**

Note : Attempt **five** questions in all, selecting **one** question from each unit.
Question No. **1** is compulsory. All questions carry equal marks.

Compulsory Question

1. (i) Write the merits of coherent binary modulation techniques over its non-coherent techniques.
- (ii) Define Hamming weight and minimum distance.
- (iii) Write the properties of cyclic codes.
- (iv) What is the relation between rate of generation of message and rate of information? 2×4 = 8

UNIT-I

2. With a neat block diagram, explain the generation and detection of BPSK signal. What is the significance of QPSK? 8
3. What is the difference between BPSK and DPSK? Explain the operation of DPSK for the binary sequence 11010101. Assume reference bit as 1. 8

UNIT-II

4. (i) Describe single error-correcting Hamming Code with a suitable example. 6
- (ii) State the significance of minimum distance of linear block code. 2
5. Define the steps involved in the generation of linear block codes. Define and explain the properties of syndrome. 8

UNIT-III

6. (i) Explain the algebraic structure of cyclic codes in suitable detail. 4
- (ii) Explain the syndrome decodes for cyclic codes. 4
7. Explain the generation of (nik) blocks codes and how block codes can be used for error control. 8

UNIT-IV

8. (i) What do you understand by information? What are the units? How does it relate with the entropy? 4

- (ii) A channel has the error probability $p = 0.2$ and the input to the channel consists of 4 equiprobable messages $X_1 = 000$; $X_2 = 001$; $X_3 = 011$ and $X_4 = 111$.

Calculate :

(a) $p(0)$ and $p(1)$ at the input

(b) Efficiency of the code. 4

9. (i) Discuss Shannon's Hartley theorem based on channel capacity. How does channel capacity change if bandwidth is increased to infinity. Comment on the orthogonal signaling performance on the basis of theorem. 4

(ii) Write short notes on the following : 4

(a) Channel capacity

(b) Huffman coding.

OBSIT/M21
PROGRAMMING TECHNIQUES
Paper – BSIT-206

26416**Time allowed : 3 Hours****Maximum Marks : 40**

Note: Attempt **five** questions in all, selecting **one** question from each unit.
Question No. 1 is compulsory. All questions carry equal marks.

Compulsory Question

1. (a) Write short note on Pseudocode.
(b) Explain problem definition phase of problem solving aspect.
(c) Write an algorithm to print sum of given n numbers.
(d) Write short note on Macro. 4×2 = 8

UNIT-I

2. Explain Decision Table using suitable examples. 8
3. What do you mean by Flow Chart? What are its rules, advantages and limitations. 8

UNIT-II

4. What do you mean by Program Verification? Explain with example. 8
5. What do you mean by Algorithm? Explain the qualities of good algorithm. 8

UNIT-III

6. Design an algorithm to generate Prime numbers in the first n positive integers. 8
7. Design an algorithm to search a given number in the given sorted list using Binary Search. 8

UNIT-IV

8. Write short notes on the following : 4×2 = 8
 - (a) Filter
 - (b) Formula
 - (c) Page Orientation
 - (d) Sort.
9. Write the steps to insert, delete and move a worksheet in a workbook. 8

Roll No.....

Total No. of page(s): 2

BSIT/J-21: 26417
BSIT 401: Digital Electronics-III

Time: 3 hrs]

[Max. Marks: 40

NSTRUCTIONS:

- (i) *There are NINE questions in this paper. All questions carry equal marks.*
- (ii) *Attempt FIVE questions in all.*
- (iii) **Question No 1 is compulsory.**
- (iv) *Attempt remaining four questions by selecting only one question from each unit.*

- a) Write the difference between the synchronous and asynchronous counters. **2.0**
- b) Write the four applications of shift registers. **2.0**
- c) What are the main advantages of magnetic memories over semiconductor memories? **2.0**
- d) Define the terms Linearity and resolution of DAC. **2.0**

UNIT – I

- a) Design a modulo-8 synchronous counter using T flip-flops. **6.0**
- b) Write the uses of counters. **2.0**

- a) Design an asynchronous binary counter and also draw the waveform obtained at the outputs. **5.0**
- b) Write the basic principle of digital clock. **3.0**

UNIT – II

- a) What is Shift register? Describe the working of 4-bit serial-in serial-out register. **4.0**
- b) Explain with the help of circuit diagram the working of twisted ring counter. **4.0**

With the help of circuit diagram explain the working of 4-bit bi-directional Shift register. **8.0**

UNIT – III

- Q 6** a) With the help of diagram, explain the working of a Dynamic RAM. **4.0**
b) With the help of a circuit diagram, explain the read and write operation of a static RAM cell. **4.0**
- Q 7** Describe the methods of storing data in ROM, PROM and EPROM. What are their relative merits? **8.0**

UNIT – IV

- Q 8** a) Discuss the binary ladder digital- to -analog converter (DAC). Find the general expression for the output voltage of a binary ladder network. **5.0**
b) Find out how many bits A/D converter is required to achieve a resolution of 1mV if the maximum full scale input voltage is 10 volts. **3.0**
- Q 9** a) Calculate the values of LSB, MSB and full-scale output for an 8-bit digital to analog converter for 0-24V range. **3.0**
b) Discuss the working of Successive Approximation A/D converter. **5.0**

BSIT/J-21: 26418
OSCILLATORS AND MULTIVIBRATORS
BSIT-402

Time : Three Hours]

[Maximum Marks : 40

Note : There are nine questions in this paper. Attempt *Five* questions in all. Q. No. 1 is compulsory. Attempt remaining *four* questions by selecting only *one* question from each Unit. All questions carry equal marks.

1. (a) Define input bias current and input offset current. 2
- (b) Write the advantages of negative feedback. 2
- (c) Write the conditions for sustained oscillation in oscillators. 2
- (d) Write the applications of Astable Multivibrator. 2

Unit I

2. (a) Discuss the working of Op-amp as a differentiator using circuit diagram. 4
- (b) Draw the circuit diagram of first Order Active filter using Op-amp and explain its working. 4

3. (a) What is input offset voltage in an operational amplifier ? What is the cause of this voltage in an operational amplifier ? Discuss the methods of reducing the effect input offset voltage. **4**
- (b) Draw the circuit diagram of Op-amp as Schmitt Trigger and discuss its working. **4**

Unit II

4. (a) Write the names of the four feedback topologies. Find the expression of transfer function of voltage series feedback topology. **4**
- (b) Discuss the effect of negative feedback on output resistance of an amplifier. **4**
5. (a) Explain the effect of negative feedback on input resistance of an amplifier. **4**
- (b) Explain the effect of negative feedback on frequency response of an amplifier. **4**

Unit III

6. Draw the circuit diagram of Colpitts oscillator and discuss its working. Also find the expression for the frequency of oscillations. **8**

7. Draw the circuit diagram of Wein Bridge oscillator and discuss its operation. Also find the expression for frequency of oscillations and the condition for sustained oscillations. **8**

Unit IV

8. Draw the circuit diagram of monostable multivibrator using transistors and explain its working. Calculate the delay time T for which the circuit will remain in quasi-stable state after triggering. **8**
9. (a) Design Monostable multivibrator using IC 555 and explain its operation. **4**
- (b) Draw the circuit diagram of a triangular waveform generator and also explain its working. **4**

BSIT/J-21**26419****TELECOMMUNICATION & NETWORK-II****Paper–BSIT–403**

Time Allowed : 3 Hours]

[Maximum Marks : 40

Note : Attempt **five** questions in all, selecting **one** question from each Unit.
Question No. **1** is compulsory.

Compulsory Question

1. (i) Write a short note on Hub. 2
- (ii) Elaborate the concept of “Call set-up”. 2
- (iii) Write two benefits of using Fibre optics. 2
- (iv) Elaborate the concept of Cable variation. 2

UNIT–II

2. (a) Write a short note on “Gate-ways”. 4
- (b) Illustrate different types of Connectors. 4
3. (a) What are different twisted Pair cable? 4
- (b) Give its advantages and disadvantages. 4

UNIT–III

4. (a) Explain the technology of Cellular networks and its features. 4
- (b) Explain the role of Frequency reuse and Call switch. 4
5. (a) Elaborate the difference between “GSM” and IS95 networks. 4
- (b) Explain various features of “3G” and “4G” Wireless networks. 4

UNIT–IV

6. (a) Elaborate various applications of Fiber optics. 4
- (b) Give its benefits. 4
7. (a) Elaborate the construction of Fiber optics. 4
- (b) Write its working. 4

UNIT-V

8. (a) What are Single and Multifibre optic cables. 4
- (b) What do you understand by Cable attenuation ? 4
9. (a) Draw and explain the block diagram of Fibre Optic Communication Network. 4
- (b) Draw and explain the Fibre optic transmitter circuit. 4

BSIT/J-21**26420****MICROPROCESSOR ARCHITECTURE &
PROGRAMMING-II****Paper-BSIT-404**

Time Allowed : 3 Hours]

[Maximum Marks : 40

Note : Attempt **five** questions in all, selecting **one** question from each Unit.
Question No. **1** is compulsory. All questions carry equal marks.

Compulsory Question

1. Write short answer of the following : 2×4=8
- (a) What are the basic modes of Operation of 8255 ?
- (b) List any four features of 8086 microprocessor.
- (c) What it is a Port and why it is needed ? Enlist the Ports available in 8255.
- (d) Define the following statements :
- (i) Conditional Jump, (ii) Multiple if then elase.

UNIT-I

2. Show and explain the ADC interfacing with 8085 microprocessor. 8
3. Explain the operation of 8255 PPI Port-A programmed as input and output in Mode 1 with necessary handshaking signals. 8

UNIT-II

4. (a) Write a program to initialize counter 2 of 8254 in mode 0 with count of 50000_{10} . 5
- (b) Discuss Mode 4 & Mode 5 of 8254 in brief. 3
5. Discuss the Block diagram of 8257 DMA controller in detail. 8

UNIT-III

6. (a) Describe the following 8086 instructions : 4
- (i) CMP, (ii) PUSH, (iii) IMUL, (iv) NOT.

- (b) Write a program to add two 16 bit numbers : 5893 and 3B61 hexadecimal numbers. 4
7. Show the Pin configuration and function of signals of 8086 microprocessor. 8

UNIT-IV

8. Name the flag bits of 8086 and explain the use of each one of them. 8
9. (a) Discuss the following statements with the help of flow charts :
(i) If-then, (ii) While-do. 4
- (b) Make the coding templates to construct the machine code for 8086 instructions IN & MOV. 4

BSIT/J-21**26421****OPERATING SYSTEM–II**

Paper–BSIT-405

Time Allowed : 3 Hours]

[Maximum Marks : 40

Note : Attempt **five** questions in all, selecting **one** question from each Unit.
Question No. 1 is compulsory. All questions carry equal marks.

Compulsory Question

1. (i) Differentiate between Contiguous memory allocation and Non-contiguous memory allocation.
- (ii) Differentiate between Clean page and Dirty page.
- (iii) Differentiate between Authentication and Authorization.
- (iv) Name operations that can be performed on File. 2×4=8

UNIT–I

2. A worst fit allocation always splits largest free memory area while making an allocation. Compare its performance with first fit and best fit allocations. 8
3. Discuss merits and demerits of variable partitioned Memory management scheme over fixed partitioned Memory management scheme. 8

UNIT–II

4. Consider a system allocates pages of different sizes to its processes. What are the advantages of such a paging scheme? What modification to this Virtual memory system provide this functionality? 8
5. Discuss the following Page replacement policies with merits and demerits :
 - (a) Least Recently Used (LRU). 4
 - (b) Not Recently Used (NRU). 4

UNIT–III

6. What is an Access Control List (ACL)? What are its advantages and disadvantages over Access Control Matrix (ACM)? 8

7. (a) Explain Directory structure of files in detail. 4
(b) Define File allocation strategies. 4

UNIT-IV

8. Explain the following : 4,4
(a) Goals of Protection. (b) Access matrix.
9. Discuss, how Encryption algorithm can be used to achieve : 4,4
(a) Authentication. (b) Secrecy.

BSIT/J-21**26422****COMPUTER PROGRAMMING WITH C-II****Paper-BSIT-406**

Time Allowed : 3 Hours]

[Maximum Marks : 40

Note : Attempt **five** questions in all, selecting **one** question from each Unit.
Question No. 1 is compulsory.

Compulsory Question

1. (a) What will the preprocessor do for a program? 2
- (b) Is it better to use a macro or a function? Comment. 2
- (c) Describe a void pointer. 2
- (d) Differentiate Structure and Union. 2

UNIT-I

3. Write short notes on the following : 8
 - (a) Macro substitution directives.
 - (b) Compiler directives.
3. Explain the String I/O functions with examples. 8

UNIT-II

4. What is pass by reference? Explain swapping of two values using pass by reference in 'C'. 8
5. (a) What are Formal and Actual parameters in functions? 4
- (b) Write a program to pass an array to a function. 4

UNIT-III

6. (a) What will be the output of the C program? 4

```
#include<stdio.h>
int main () {
int i = 5;
```

```
void *vptr;  
vptr = &i;  
printf("\n Value of iptr = %d", *vptr);  
return 0;  
}
```

- (b) What is a Pointer? What is the significance of using Pointer? 4
7. How the Enum is different from Union? Explain with example. 8

UNIT-IV

8. Differentiate Extern and Register storage classes in C. 8
9. How to create and process a Data file? Explain with C program. 8

OBSIT/J-21**26423****MATHEMATICAL FOUNDATIONS OF
INFORMATION TECHNOLOGY-IV****Paper-BSIT-401**

Time Allowed : 3 Hours]

[Maximum Marks : 40

Note : Attempt **five** questions in all, selecting **one** question from each Unit.
Question No. **1** is compulsory. All questions carry equal marks.

Compulsory Question

1. Write short answer of the following :

- (a) The sum of 10 items is 12 and sum of their squares is 16.9. Find variance. 1½
- (b) Define Spanning tree. 1½
- (c) Define weighted graph. 1½
- (d) Let X be a random variable. Find the value of k , if

$$f(x) = \begin{cases} k(1 - e^{-x})^2 & , x > 0 \\ 0 & , \text{otherwise} \end{cases}$$

is a distribution function. 1½

- (e) Find the coefficient of variation of Poisson distribution with mean 4. 2

UNIT-I

2. (a) The first of the two samples has 100 items with mean 15 and standard deviation 3. If the whole group has 250 items with mean 15.6 and S.D. $\sqrt{13.44}$, find the S.D. of second group. 4
- (b) Calculate the first four moments of the following distribution about the mean and hence find β_1 and β_2 : 4

x :	0	1	2	3	4	5	6	7	8
y :	1	8	28	56	70	50	28	8	1

3. (a) An incomplete frequency distribution given as follow :

Variable :	10–20	20–30	30–40	40–50	50–60	60–70	70–80	Total
Frequency :	12	30	?	65	?	25	18	220

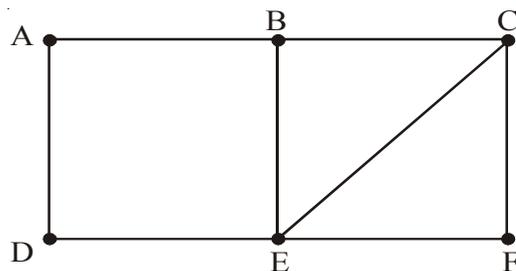
given that the median value is 46, determine the missing frequencies. 4

(b) Karl Pearson's co-efficient of skewness of a distribution is 0.32, its S.D. is 6.5 and mean is 29.6. Find the mode of the distribution. 4

UNIT-II

4. (a) Let G be a connected planar graph with p vertices and q edges, where $p \geq 3$. Then prove that $q \geq 3P - 6$. 4

(b) Consider the given graph G. Find the set $V(G)$ of vertices of G and the set $F(G)$ of edges of G. Find the degree of each vertices : 4



5. (a) Draw all trees with exactly six vertices. 4

(b) Draw the graph G corresponding to the adjacency matrix : 4

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

UNIT-III

6. (a) A continuous Random variable X has p.d.f. $f(x) = 3x^2$, $0 \leq x \leq 1$. Find a and b such that : 4

(i) $p(x \leq a) = p(x > a)$ (ii) $p(x > x) = 0.05$.

(b) A random variable X is distributed at random between 0 and 1 so that its probability density function is : $f(x) = kx^2(1-x^3)$, where k is a constant. Find the value of k and its mean and variance. 4

7. (a) Find the mean, variance and the co-efficients β_1, β_2 of the distribution :
 $dF = kx^2 e^{-x} dx = 1, 0 < x < \infty$. 4

(b) The distribution function of a random variable x is given by : 4

$$f(x) = \begin{cases} 1 - (1+x)e^{-x}, & \text{for } x \geq 0 \\ 0 & \text{for } x < 0. \end{cases}$$

Find the corresponding density function of Random variable x .

UNIT-IV

8. (a) A Card is drawn and replaced in an ordinary deck of 52 cards. How many times must a card be drawn so that there is at least an even chance of becoming a heart. 4

(b) In a Poisson frequency distribution, frequency corresponding to 3 successes is $\frac{2}{3}$ times frequency corresponding to 4 successes. Find the mean and S.D. of the distribution. 4

9. (a) If a fair coin is tossed an even number $2n$ times, show that probability of obtaining more heads than tails is : 4

$$\frac{1}{2} \left\{ 1 - \binom{2n}{n} \left(\frac{1}{2} \right)^{2n} \right\}.$$

(b) In an Intelligence test administered to 1000 Children. The average Score is 42 and S.D. 24. Find the number of Children exceeding the Score 60. 4

OBSIT/M21**26424****ELECTRONIC CIRCUITS AND APPLICATIONS**

Paper–BSIT-402

Time allowed : 3 Hours**Maximum Marks : 40**

Note : Attempt **five** questions in all, selecting **one** question from each unit.
Question No. **1** is compulsory. All questions carry equal marks.

Compulsory Question

1. (i) Define input offset current. State the reasons for the offset currents at the input of the Op-amp. 2
- (ii) Write the advantages of negative feedback. 2
- (iii) Why do we need three R-C networks for a phase shift oscillator? 2
- (iv) Write the uses of Triac and Diac. 2

UNIT-I

2. (i) Draw the schematic diagram to use an Op-amp as difference amplifier and derive the expression for the output voltage. 4
- (ii) Draw the circuit diagram of first Order Active low pass filter using Op-amp and explain its working. 4
3. (i) Draw and explain Op-amp as an integrator. Also write the disadvantages of the basic integrator circuit. 4
- (ii) Draw the circuit diagram of Op-amp as Schmitt Trigger and explain its working 4

UNIT-II

4. (i) Write the names of the four feedback topologies. Find the expression of transfer function of voltage series feedback topology. 4
- (ii) Explain the effect of negative feedback on output resistance of an amplifier. 4
5. (i) Draw and explain a practical circuit for voltage shunt feedback topology. 4
- (ii) Explain the effect of negative feedback on non-linear distortion of an amplifier. 4

UNIT-III

6. Draw the circuit diagram of phase shift oscillator and discuss its operation. Also find the expression for frequency of oscillations and the condition for sustained oscillations. 8
7. Draw the circuit diagram of Hartley oscillator and explain its working. Also find the expression for the frequency of oscillations. 8

UNIT-IV

8. (i) Draw the circuit diagram of a monostable multivibrator. Also explain its operation and find the expression for output pulse width. 4
- (ii) Explain the construction and working of Silicon controlled rectifier. 4
9. (i) With the help of circuit diagram of a triangular waveform generator explain its working. Also find the frequency of waveform. 4
- (ii) Design Monostable multivibrator using IC-555 and explain its operation. 4

OBSIT/M-21
TELECOMMUNICATION-II
Paper-BSIT-403

26425

Time Allowed : 3 Hours]

[Maximum Marks : 40

Note : Attempt **five** questions in all, selecting **one** question from each Unit.
Question No. **1** is compulsory.

Compulsory Question

1. (a) Which range of frequency is preferred in satellite communication and why? 2
- (b) Define the following terms : 2
(i) Posigrade orbit. (ii) Retrograde orbit.
- (c) What is PCS in optical fiber? 2
- (d) Which type of source is used in single mode step index fibre? 2

UNIT-I

2. (a) Explain the Launching of a satellite in detail. 4
- (b) Explain the following terms : 4
(i) Station altitude. (ii) Station keeping.
3. (a) Explain how the altitude of satellite is controlled? 4
- (b) Discuss the Spin stabilization. 4

UNIT-II

4. Explain the following with their uses in satellite communication : 8
(i) Varactor diode. (ii) Step recovery diode.
5. Discuss the Klystron and magnetron in detail. 8

UNIT-III

6. Discuss the Light wave communication system in detail. 8

7. (a) What are the advantages and disadvantages of optical Fibre cable? 4
(b) Explain the construction of optical Fibre cable. 4

UNIT-IV

8. (a) Explain different type of attenuation in optical Fibre cable. 4
(b) What do you understand by Cable variation? 4
9. Explain different type of transmitter and receiver used in optical Fibre cable. 8

OBSIT/M-21
OPERATING SYSTEM-II
Paper–BSIT-405

26427

Time allowed : 3 Hours

Maximum Marks : 40

Note : Attempt **five** questions in all, selecting **one** question from each unit.
Question No. **1** is compulsory. All questions carry equal marks.

Compulsory Question

1. (i) What is Logical Address Space
- (ii) Name attributes of a File
- (iii) What is sequential Access and Direct access
- (iv) Define cause of Thrashing.

UNIT-I

2. Explain Contiguous Memory Management.
- 3 (i) Explain concept of Paging and sharing in Paging.
- (ii) Discuss concept of Segmentation and compare with Paging.

UNIT-II

4. What is Demand Paging. Explain any two Page Replacement Algorithms.
5. Explain concept of thrashing and discuss Virtual memory management.

UNIT-III

6. Define term 'File', write its various operations.
7. (i) Explain File Access strategies.
- (ii) Discuss various Directory Structure.

UNIT-IV

8. What is File allocation. Explain File system allocation methods.
9. Write note on :
 - (i) Cryptography management
 - (ii) Security management.

Roll No.

Total Pages : 3

BSIT/J-21

26429

COMPUTER SYSTEM ARCHITECTURE

Paper–BSIT-601

Time Allowed : 3 Hours]

[Maximum Marks : 40

Note : Attempt **five** questions in all, selecting **one** question from each Unit. Question No. 1 is compulsory. All questions carry equal marks.

Compulsory Question

1. (i) Explain implicit and explicit parallelism programming.
- (ii) Design a 8 input omega network using 2×2 switches as building blocks.
- (iii) Explain synchronous data transfer.
- (iv) Explain distributed caching. 2×4=8

UNIT-I

2. Compare a RISC and CISE scalar processor architecture. 8

26429/K/788

P. T. O.

3. Write short notes on the following :
- (a) Pipeline stalling. 4
 - (b) Fine-grain parallelism. 4

UNIT-II

4. Describe direct-mapped cache memory with suitable explanation. 8
5. Write notes on the following :
- (a) Advantages of Auxiliary memory. 4
 - (b) Memory table for mapping a Virtual address in Virtual memory. 4

UNIT-III

6. Explain the following :
- (a) Array Processing. 4
 - (b) Vector Processing. 4
7. (a) How Hardware synchronization can be achieved in a Multiprocessor system? 4

- (b) Explain the COMA model for Multiprocessor systems. 4

UNIT-IV

8. Explain the following :
- (a) DMA controller. 4
- (b) I/O Processor. 4
9. (a) How can you justify Daisy Chain priority is useful in Priority interrupt? 4
- (b) What are Hand shaking signals? 4

Roll No.

Total Pages : 2

BSIT/M-21

26431

**WEBSITE DESIGN IMPLEMENTING BASIC
DESIGN TOOLS-II**

Paper-BSIT-603

Time Allowed : 3 Hours]

[Maximum Marks : 40

Note : Attempt **five** questions in all, selecting **one** question from each Unit. Question No. 1 is compulsory. All questions carry equal marks.

Compulsory Question

1. Write short notes on the following :

(i) Inline Frame.

(ii) Image Maps.

(iii) Embedded Style Sheet.

(iv) Naming Rules in XML.

4×2=8

UNIT-I

2. Explain any four FRAME attributes using appropriate examples. 8

26431/K/789

P. T. O.

3. (a) Differentiate the Get and Post methods of Form. 4
- (b) Explain the Multiline Text Input Control. 4

UNIT-II

4. Explain the various ways to add Audio and Video files in the Webpage. 8
5. What is Frontpage used for? Write the steps to create a Webpage using Frontpage. 8

UNIT-III

6. What do you mean by the term Cascading? How are the various rules evaluated in a Cascading style sheet? 8
7. Explain the CSS properties for Border and Table. 8

UNIT-IV

8. What is DTD? Differentiate Internal and External DTDs. 8
9. (a) Define the element and attribute in an XML document. 4
- (b) Explain the Data Instance and Flow Object. 4

BSIT/J-21

26432

INTERNET CONCEPTS & APPLICATIONS–II

Paper–BSIT-604

Time Allowed : 3 Hours]

[Maximum Marks : 40

Note : Attempt **five** questions in all, selecting **one** question from each Unit.
Question No. **1** is compulsory. All questions carry equal marks.

Compulsory Question

1. Write short notes on the following :
 - (a) Symmetric Key Encryption.
 - (b) Uses of Multimedia.
 - (c) EFT.
 - (d) Extranet.

UNIT–I

2. What are the various sources of Viruses ?
3. What do you mean by Security Breach ? Explain the various types of Security Breaches.

UNIT–II

4. What is Multimedia ? Explain its components.
5. (a) Explain Etiquettes of Online Chatting.
(b) What do you mean by Conferencing ? Explain its types.

UNIT–III

6. What are the various E-commerce Business Models ?
7. What is EDI ? Explain its implementation and applications.

UNIT–IV

8. Write short notes on the following :
 - (a) Groupware.
 - (b) HTML.
 - (c) Hypertext.
9. What are the various Audio and Video Conferencing Platforms ? Explain in detail.

Roll No.

Total Pages : 2

BSIT/M21
EMBEDDED SYSTEMS AND 8051
MICROCONTROLLER-II
BSIT-605

26433

Time allowed : 3 Hours

Maximum Marks : 40

Note: Attempt **five** questions in all, selecting **one** question from each unit.
Question No. **1** is compulsory. All questions carry equal marks.

Compulsory Question

1. Attempt all questions : 2×4 = 8
- (a) Define embedded system with examples.
 - (b) Write the main difference between microprocessor and microcontroller.
 - (c) Write a program to multiply 25 by 5 using repeated addition.
 - (d) Why testing is required for a microcontroller design?

UNIT-I

2. Explain different hardware units used in 8051 microcontroller based embedded system in detail. 8
3. (a) Discuss the difference between CISC and RISC architecture. 4
- (b) Discuss different memory devices used for an embedded system. 4

UNIT-II

4. (a) Discuss different port configuration used in 8051. 4
- (b) Explain internal RAM organization of 8051. 4
5. (a) Discuss following pins of 8051 : 4
- (i) TXD & RXD (ii) PSEN & ALE
 - (iii) INTO & INT1 (iv) XTAL1 & XTAL2.
- (b) Discuss the working of timers in all modes. 4

UNIT-III

6. Explain the serial data transmission of 8051 in different modes. 8
7. (a) How many interrupts are used in 8051? Explain IP & IE special function register. 4

26433/K/320

P.T.O.

- (b) Explain the following instructions in 8051 :
 - (i) CJNE & DJNE
 - (ii) JB & JBC. 4

UNIT-IV

- 8. (a) What are the specifications keeping in mind while designing a micro-controller? 4
- (b) What is asynchronous and synchronous data transmission? 4
- 9. (a) How we can test the RAM & ROM of a microcontroller? 4
- (b) For a system designer what are the important consideration while selecting a microcontroller. 4