

Total number of printed pages-3

52 (BScIT-3) 3-2 (O)

2022

(Held in 2023)

### COMPUTER ORGANIZATION

Paper : 3-2

Full Marks : 60

Time : Three hours

**The figures in the margin indicate full marks for the questions.**

1. Answer the following questions : **(any five)** 2×5=10
- (a) What are RISC and CISC instructions ?
  - (b) Define memory address register.
  - (c) What do you mean by micro-operation ?
  - (d) Define semiconductor memory.
  - (e) What is bus ? Draw the single bus structure.
  - (f) Define interrupt.

Contd.

2. Answer the following questions : **(any four)**

5×4=20

- (a) Write the differences between hardwired control and micro programmed control.
- (b) Explain the structure of hard disk.
- (c) What is inter register transfer ? Explain the notation that is used for inter register transfer.
- (d) Explain program controlled R/O.
- (e) Explain the processor organization in terms of common buses.

3. What is addressing mode ? Explain different types of addressing modes with diagram.

10

**Or**

Explain the steps that are required to design a simple computer.

4. Answer the following questions :

- (a) Explain briefly the microprogrammed CPU organization with diagram. 7

**Or**

Draw and explain bus system for four registers.

- (b) What do you mean by enabling and disabling interrupts ? Explain. 3

5. Write short notes on : **(any two)** 5×2=10

- (a) Shift micro-operation
- (b) DMA
- (c) Memory address

Total number of printed pages-3

52 (3) ITB-HC-3016

2022

( Held in 2023 )

## COMPUTER ORGANIZATION

Paper : ITB-HC-3016

Full Marks : 80

Time : Three hours

**The figures in the margin indicate full marks for the questions.**

1. Answer the following questions :  $2 \times 10 = 20$

- What is assembly language ?
- What do you mean by microoperations ?
- What do you mean by status register ?
- Define interrupts.
- What is Cache memory ?
- What is I/O Instruction ?

Contd.

(g) What are the advantages of multiple bus organization over a single bus organization?

(h) Define CD-ROM.

(i) What are SRAM and DRAM.

(j) What is Hardware Control?

2. Answer **any four** questions :  $5 \times 4 = 20$

(a) What is bus? What are the different components of bus?

(b) Explain mapping functions.

(c) What is memory mapped I/O? How does it differ from I/O mapped I/O?

(d) Draw 4-bit arithmetic circuit to perform arithmetic microoperation.

(e) Explain micro-programmed control block diagram.

3. (a) What is addressing mode? Explain different addressing modes with diagram.  $2 + 8 = 10$

(b) Explain the working of DMA. 5

(c) Explain the steps that are required to design accumulator. 10

**Or**

Explain the steps that are required to design a simple computer.

(d) How can you handle interrupts from multiple resources? Explain. 5

4. Write short notes on : **(any two)**

$5 \times 2 = 10$

(a) Semiconductor memory

(b) Memory Operation

(c) Shift micro-operation

(d) Processor Organization

3. Answer **any two** questions from the following :  $10 \times 2 = 20$

(a) Solve the following equation using Gauss-Seidel method :

$$x + y + z = 7$$

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

$$x + 3y + z = 13$$

(b) Find solution for the equation  $2x^3 - 4x + 1$  using Newton's Forward Difference formula at  $x = 2.1$ ; where  $x_1 = 2$  and  $x_2 = 4$ . ( $h = 0.25$ )

(c) Solve the following equation using bisection method :

$$x^2 - 25 = 0,$$

where  $x_0 = 2.0000$  and  $x_2 = 7.0000$

(No. of iterations required : 10)

Total number of printed pages-4

52 (3) ITB-HG-3026

2022

(Held in 2023)

### COMPUTER ORIENTED NUMERICAL METHODS

Paper : ITB-HG-3026

Full Marks : 60

Time : Three hours

**The figures in the margin indicate full marks for the questions.**

1. Answer **any five** questions from the following :  $2 \times 5 = 10$

(a) What are the errors in representing numbers ?

(b) Represent the following two numbers in normalized floating point mode and add them :

Number 1 :  $76.92 \times 10^7$

Number 2 :  $21.11 \times 10^5$

(c) What are the advantages of using Gauss-Jordan method? What are the advantages of Regula-Falsi over Bisection method?

(d) Describe the generalized formula for 4th order Runge-Kutta method.

(e) What do you mean by Pivoting?

(f) Write down the generalized formula for Simpson's 1/3rd Rule.

2. Answer **any five** questions from the following :  $6 \times 5 = 30$

(a) Find the positive root of the following equation using Secant method :

$$f(x) = x^3 - 3x^2 + x + 1 = 0$$

(b) Solve the following equation using Gauss-Jordan method :

$$x + y + z = 9$$

$$2x - 3y + 4z = 13$$

$$3x + 4y + 5z = 40$$

(c) Using Regula-Falsi method solve the following equation :

$$x^2 - 25 = 0,$$

where  $x_0 = 2.0000$  and  $x_1 = 7.0000$ .

(d) Using Gauss Elimination Back Substitution method solve the following equation :

$$2x + 5y = 21$$

$$x + 2y = 8$$

(e) Find solution using Lagrange's interpolation formula at  $x = 1$  :

$x$	-1	0	3	6	7
$f(x)$	3	-6	39	822	1611

(f) Solve the following equation using Gauss-Jacobi method (Initial Gauss  $(0, 0)$ ) :

$$2x + 5y = 21$$

$$x + 2y = 8$$

(g) Find using Simpson's 3/8 rule :

$x$	0.0	0.1	0.2	0.3	0.4
$f(x)$	1.0000	0.9975	0.9900	0.9776	0.8604

Total number of printed pages-5

52 (3) ITB-HC-3036/IT-3-4 (O)

2022

( Held in 2023 )

**DATABASE MANAGEMENT SYSTEM**

Paper : HC-3036/IT-3-4

Full Marks : 60

Time : Three hours

**The figures in the margin indicate  
full marks for the questions.**

Answer **any six** questions.

1. Define the following terms with example :  
2×5=10
  - (a) Composite Primary key
  - (b) Referential Integrity Construct
  - (c) Entities and attributes
  - (d) Union Compatibility
  - (e) Degree and cardinality

Contd.

2. (a) Define DBMS. What are the major characteristics of DBMS? 2+3=5
- (b) What are the advantages and disadvantages of DBMS? 5
3. (a) Define data independence. Why do we have data independence in DBMS? 5
- (b) Define integrity constraint. What do you mean by Entity and Domain integrity constraint? 5
4. (a) Define relational algebra. Explain *any two* relational algebra operations with example. 5
- (b) What are the major differences between Cartesian product and join operation? Explain with *one* example. 5
5. (a) Define Normalization. Why do we need it? 1+3=4
- (b) "The BCNF is the stricter version of 3NF."  
Justify the above statement with *one* example. 4

8. Write short notes on : (*any two*) 5×2=10
- (a) Third Normal form
- (b) Fixed and variable length record
- (c) Aggregate functions
-

(b) Consider the following relational schema and solve the following queries:

Employee (Eno, Ename, Salary, Dnumber)

Department (Dnumber, Dname, MgreNo)

where,

Eno → Employee number

Ename → Employee name

Dnumber → Department number

MgreNo → Manager employee number

Primary key of Employee table is Eno and Primary key of Department table is Dnumber.

MgreNo is the foreign key.

Dnumber in Employee is foreign key.

(a) Give the name of the employee who works for 'Research' Department. 2

(b) Give the name of the manager of administration department. 2

(c) How many employees are working in each department? 1

- (c) Define data redundancy and data inconsistency. 2
6. (a) Define SQL. What are DDL and DML commands? What are the major data types in SQL? 1+3+2=6
- (b) Define functional dependency. What do you mean by partial dependency? Give one example to explain. 4
7. (a) Consider the two tables T1 and T2 given below. Show the result of the following operation.  $2\frac{1}{2} \times 2 = 5$

(i)  $T1 \bowtie T2$   
 $T1 \cdot P \quad T2 \cdot A$

(ii)  $T1 \cup T2$

Table T1		
P	Q	R
10	a	5
15	b	8
25	a	6

Table T2		
A	B	C
10	b	6
25	c	3
10	b	5

(b) Consider the following relational schema and solve the following queries :

Employee (Eno, Ename, Salary, Dnumber)

Department (Dnumber, Dname, Mgreno)

where,

Eno → Employee number

Ename → Employee name

Dnumber → Department number

Dname → Department name

Mgreno → Manager employee number

Primary key of Employee table is Eno and Primary key of Department table is Dnumber.

Mgreno is the foreign key.

Dnumber in Employee is foreign key.

(a) Give the name of the employee who works for 'Research' Department.

2

(b) Give the name of the manager of administration department.

2

(c) How many employees are working in each department ?

1

(vi) Define OCR.

(vii) The text color in presentation should contrast with the color of \_\_\_\_\_.

(Fill in the blank)

(viii) Images included in many softwares are called

(a) Clip art

(b) Pop-ups

(c) JPG files

(d) TIFF files

(ix) Sound pressure levels are measured in \_\_\_\_\_.

(Fill in the blank)

(x) MPEG is an acronym for \_\_\_\_\_.

(Fill in the blank)

(xi) High-Definition Television is displayed in a/an \_\_\_\_\_ aspect ratio.

(xii) The future of multimedia will include high bandwidth access to wide array of multimedia resources and learning materials. \_\_\_\_\_ (True or False)

(xiii) TIFF stands for \_\_\_\_\_.

(Fill in the blank)

(xiv) What does SSP stand for?

(xv) The first and last frames of an action are called \_\_\_\_\_.

(Fill in the blank)

2. Answer the following questions :  $2 \times 4 = 8$

(a) What is meant by bit rate of a video signal?

(b) Mention different Audio File Formats.

(c) What do you mean by Virtual Reality?

(d) What do you mean by animation?

3. Answer **any three** from the following :

$4 \times 3 = 12$

(a) State the differences between hypertext and hypermedia.

(b) Discuss multimedia file formats.

(c) Differences between verification and validation.

(d) What are the different animation File Formats?

4. Answer **any three** from the following :

5×3=15

- (a) Explain various components of multimedia.
- (b) What do you mean by web browsing? Give example of *three* popular web browsers.
- (c) Explain about different multimedia softwares and authoring tools.
- (d) What are the requirements for making a good multimedia project?

5. Write short notes on : **(any two)** 5×2=10

- (i) Audio file format
- (ii) Applications of multimedia
- (iii) Image file format

**Or**

Describe with the help of diagram various stages of a multimedia project. 10

Total number of printed pages-4

52 (3) ITB-HG-3016

2022

( Held in 2023 )

## MULTIMEDIA AND APPLICATION

Paper : ITB-HG-3016

Full Marks : 60

Time : Three hours

**The figures in the margin indicate full marks for the questions.**

1. Answer the following questions :

1×15=15

- (i) What is multimedia?
- (ii) Define JPEG.
- (iii) Define MIDI.
- (iv) A prototype is sometimes called a proof-of-concept or \_\_\_\_\_ .  
(Fill in the blank)
- (v) Discuss MUI.

(d) Test the convergence of the series

$$\frac{1}{1^p} + \frac{1}{2^p} + \frac{1}{3^p} + \dots + \frac{1}{n^p} \text{ for } p > 1. \quad 3$$

2. (a) Find the equation whose roots are the  $n$ th powers of the roots of the equation

$$x^2 - 2x \cos \theta + 1 = 0. \quad 3$$

(b) Show that

$$(1+i)^n + (1-i)^n = 2^{\frac{n}{2}+1} \cdot \cos\left(\frac{n\pi}{4}\right), \forall n \in I^+ \quad 3$$

(c) Find all the values of  $i^{1/5}$ . 3

(d) If  $z_1$  and  $z_2$  are two complex numbers then prove that

$$\arg(z_1 \cdot z_2) = \arg z_1 + \arg z_2. \quad 2$$

3. Answer **any four** from the following :

$$3 \times 4 = 12$$

(a) Prove that identity element of group is unique.

(b) Prove that the intersection of two subgroups is again a subgroup.

(c) Prove that intersection of two normal subgroups is again a normal subgroup.

(d) Prove that every cyclic group is abelian group.

(e) Show that the set of elements  $G = \{1, -1, i, -i\}$  forms a group with respect to multiplication.

(f) The operation  $*$  is defined by  $a * b = a + b + 2$ ;  $a, b \in \mathbb{Z}$ . Show that  $(\mathbb{Z}, *)$  forms a group.

4. (a) Let  $(R, +, \cdot)$  be a ring. Then prove that

$$(i) \quad (-a) \cdot (-b) = ab \quad a, b, c \in R$$

$$(ii) \quad a \cdot (b - c) = a \cdot b - a \cdot c$$

2

(b) Define field and integral domain with example. 2

5. (a) Find the condition that the roots of the equation  $ax^3 + bx^2 + cx + d = 0$  are in G.P. 4

(b) Solve the equation  $2x^3 + x^2 - 7x - 6 = 0$  if the difference of two roots is 3.

3

(c) If  $\alpha, \beta, \gamma$  are roots of the cubic equation  $x^3 + qx - r = 0$  evaluate  $\sum (\beta + \gamma - \alpha)^2$

3

6. (a) State Lagrange's mean value theorem and give the Geometrical Interpretation.

2+2=4

(b) Verify Rolle's theorem for

$f(x) = x^2 - 3x + 2; x \in (1, 2).$  3

(c) Find the maximum or minimum value of  $x^{1/x}$ . 3

Total number of printed pages-4

52 (BScIT-1) 1-2

2022

(Held in 2023)

**MATHEMATICS-I**

Paper : 1-2

Full Marks : 60

Time : Three hours

**The figures in the margin indicate full marks for the questions.**

1. (a) Define sequence with example. 2

(b) Prove that every convergent sequence is convergent. 2

(c) Prove that the sequence  $\{u_n\}$  where

$u_n = \frac{5n+3}{n+7}$  is monotonic increasing

and bounded. Find its limit.

(2+2)+2=6

(g) Prove that the set of all solutions  $(a, b, c)$  of the equation  $a + b + 2c = 0$  is a sub-space of the vector space  $V_3(\mathbb{R})$ .

(h) Define rank of a matrix. Find the rank of the following matrix by reducing it to its echelon form :

$$A = \begin{bmatrix} 1 & 2 & 3 & 0 \\ 2 & 4 & 3 & 2 \\ 3 & 2 & 1 & 3 \\ 6 & 8 & 7 & 5 \end{bmatrix}$$

(i) (i) Prove that  ${}^n C_r + {}^n C_{r-1} = {}^{n+1} C_r$

(ii) If  ${}^n C_9 = {}^n C_8$ , find  ${}^n C_{17}$  3+2

Total number of printed pages-6

52 (1) ITB-HC-1026

2022

(Held in 2023)

**MATHEMATICS-I**

Paper : ITB-HC-1026

Full Marks : 80

Time : Three hours

**The figures in the margin indicate full marks for the questions.**

1. Answer **any five** of the following : 1×5=5

- (a) What do you mean by a pendent vertex?
- (b) Draw a regular graph having '4' vertices and having degree of each vertex as '3'.
- (c) Define basis of a vector space.
- (d) Write dimensions of the vector spaces  $\mathcal{C}(\mathbb{R})$  and  $\mathbb{R}(\mathbb{R})$

(e) State Cayley-Hamilton theorem.

(f) What is a partial order relation?

2. Answer **any five** of the following :

$$2 \times 5 = 10$$

(a) How many vertices are there in a graph  $G$  with 15 edges, if its each vertex is of degree 3?

(b) Construct the truth table for  $\sim p \vee q$ .

(c) If two vectors are linearly dependent, then prove that, one of them is scalar multiple of the other.

(d) State the pigeon-hole principle. Give an example.

(e) Show that the subset  $S = \{(1, 0, 0); (0, 1, 0); (0, 0, 1)\}$  of  $V_3(\mathbb{F})$  generates or spans the entire vector space  $V_3(\mathbb{F})$ , i.e.,  $L(S) = V_3(\mathbb{F})$

(f) State the principle of inclusion and exclusion.

5. Answer **any six** of the following :  $5 \times 6 = 30$

(a) Prove Cayley-Hamilton theorem.

(b) Define tree. Show that a graph is a tree if there exists a unique path between every pair of vertices in the graph.

(c) Find the characteristic equation of the

$$\text{matrix } A = \begin{bmatrix} 2 & -1 & 1 \\ -1 & 2 & -1 \\ 1 & -1 & 2 \end{bmatrix}$$

and verify that it is satisfied by  $A$ . Hence, obtain  $A^{-1}$ .

(d) State and prove rank-nullity theorem.

(e) What do you mean by an equivalence relation? Let  $R$  be a relation defined on the set of integers  $\mathbb{Z}$ , such that  $R = \{(x, y) \mid x - y \text{ is divisible by } 3\}$  where  $x, y \in \mathbb{Z}$ . Prove that  $R$  is an equivalence relation.

(f) Using Cayley-Hamilton theorem, express  $2A^5 - 3A^4 + A^2 - 4I$  as a linear

$$\text{polynomial in } A, \text{ when } A = \begin{bmatrix} 3 & 1 \\ -1 & 2 \end{bmatrix}$$

3. Answer the following:  $3 \times 5 = 15$

(a) Show that maximum number of edges in a simple graph with  $n$  vertices is

$$\frac{n(n-1)}{2}$$

(b) What is a tautology? Show that

$(p \rightarrow q) \rightarrow (\sim q \rightarrow \sim p)$  is a tautology.

(c) Convert the following DNF (Disjunctive Normal Form) to CNF (Conjunctive Normal Form):

$$\alpha = xy + x'y + x'y'$$

(d) A committee of 3 persons is to be constituted from a group of 2 men and 3 women. In how many ways can this be done? How many of these committees would constitute of 1 man and 2 women?

(e) What is a connected graph? Draw a connected graph and a disconnected graph.

4. Answer **any five** of the following: 4×5=20

(a) Show that the matrix

$$A = \begin{bmatrix} 0 & c & -b \\ -c & 0 & a \\ b & -a & 0 \end{bmatrix} \text{ satisfies Cayley-Hamilton theorem.}$$

(b) Express the Boolean expression in CNF  
 $(x + y + z)(xy + x'z)'$

(c) Construct the truth table for

$$(p \vee q) \wedge (p \vee r)$$

(d) By mathematical induction prove that  $7^n - 3^n$  is divisible by 4, where  $n$  is a positive integer.

(e) Prove that in a graph the number of odd vertices is always even.

(f) Prove that a tree with  $n$  vertices has  $n - 1$  edges.

(g) Show that

$$p \rightarrow (q \wedge r) \equiv (p \rightarrow q) \wedge (p \rightarrow r).$$

- (b) What is beam penetration method?  
Explain briefly with diagram. 5
3. (a) Give DDA line drawing algorithm.  
Explain with the help of *one* example. 7
- (b) What are the major differences between  
DDA line drawing and Bresenham's line  
drawing algorithm? 3
4. (a) What are boundary fill and flood fill  
algorithm? Discuss. 5
- (b) What do you mean by 2D viewing?  
Explain window to viewport mapping. 5
5. (a) What do you mean by 2D  
transformation? Give matrix  
representation of rotation, translation  
and scaling. 1+3=4
- (b) Explain the working of Cohen-  
Sutherland algorithm with the help of  
*one* example. 6

6. Write short notes on : **(any two)** 5×2=10
- (a) Basic illumination model
- (b) Warn model
- (c) Depth buffer method
7. (a) What are parallel and perspective  
projection? What are the major  
differences between them? 5
- (b) What is visible surface detection?  
Explain briefly. 5
-

Total number of printed pages-3

52 (BSc IT-5) 5-3

**2022**  
**(Held in 2023)**

**COMPUTER GRAPHICS**

Paper : 5-3

Full Marks : 60

Time : Three hours

**The figures in the margin indicate  
full marks for the questions.**

Answer **any six** questions.

1. (a) What do you mean by computer graphics? What are the major applications of computer graphics? 5
- (b) What are input and output devices? Explain *any one* input and output device. 5
2. (a) Differentiate between random and raster scan displays. 5

Contd.

Total number of printed pages-3

52 (5) ITB-HD-5036

2022

( Held in 2023 )

**COMPUTER ORIENTED  
OPTIMIZATION TECHNIQUE**

Paper : ITB-HD-5036

Full Marks : 80

Time : Three hours

**The figures in the margin indicate  
full marks for the questions.**

Answer **any five** questions.

1. (a) Write the important characteristics of duality. 8
- (b) Discuss the advantages and applications of duality. 8
2. (a) Discuss the steps of stepping stone method. 8
- (b) What do you mean the assignment problem ? Give a brief introduction of assignment problem. 8

Contd.

3. (a) What are the important characteristics of queuing model ? 4

(b) Discuss transient state and steady state queuing systems. 6

(c) Draw the transition diagram for M/M/I queuing model. 6

4. Minimize  $f = x^2 + 2y^2 + 3z^2$   
subject to the constraints

$$x - y - 2z \leq 12$$

$$x + 2x - 3z \leq 8$$

16

5. (a) Discuss Monte Carlo simulation method. 9

(b) What are the uses of simulation model in queuing theory ? Discuss briefly. 7

6. (a) What is two-phase method ? Solve the L.P.P. by two-phase method 3+7=10

Minimize,  $Z = x - 2y$

subject to  $x + y \geq 2$

$$-x + y \geq 1$$

$$x \leq 3$$

$$x, y \geq 0$$

(b) What is sensitivity analysis ? Discuss. 6

7. Discuss briefly : 4×4=16

(a) Transportation problem

(b) Charne's method of penalties

(c) Cost vector

(d) Quadratic programming

Total number of printed pages-3

52 (5) ITB-HD-5026

2022

(Held in 2023)

**OBJECT ORIENTED ANALYSIS AND DESIGN**

Paper : ITB-HD-5026

Full Marks : 80

Time : Three hours

**The figures in the margin indicate full marks for the questions.**

1. (a) What do you mean by object oriented programming? Explain the concept of encapsulation and inheritance briefly.  $2+4=6$
- (b) Define the following terms : **(any two)**  $2 \times 2 = 4$
- (i) Abstraction
  - (ii) Data hiding
  - (iii) Polymorphism

Contd.

2. Answer **any three** :  $5 \times 3 = 15$

(a) Define class diagram. Explain with the help of *one* diagram.

(b) Differentiate between generalisation and specialisation with proper example.

(c) What is a state chart diagram? Explain with the help of *one* diagram.

(d) Define object oriented analysis. What are its major advantages?

3. Answer **any five** :  $3 \times 5 = 15$

(a) What are the main phases of software development using object oriented methodology? Explain.

(b) Define links and association. What do you mean by degree of an association?

(c) Define object model. What are the benefits of object model?

(d) What is dynamic modelling? What is interaction diagram?

(e) What do you mean by functional modelling? How can we represent a functional modelling?

(f) Define DFD. What are the major advantages and disadvantages of DFD?

4. (a) Define UML. What are the basic building blocks of UML? Explain. 5

(b) What do you mean by component diagram and deployment diagram? 5

5. (a) Define data flow diagram. What are its main components? Draw content diagram for *any* system showing the components of DFO. 5

(b) Define a package. What are the relationship among object, dynamic and functional modelling? 5

6. Write short notes on : **(any two)**  $5 \times 2 = 10$

(a) Handling boundary conditions

(b) Identifying concurrency

(c) Management of data stores

7. (a) Define controlling events. What are different types of events? 5

(b) What do you mean by aggregation and multiplicity? Explain with example. 5

- (e) Write a note on digital signature.
- (f) Briefly explain the pros and cons of online shopping.
- (g) Define EDI. Explain the features of EDI.
- (h) Explain different models of internet advertising.
- (i) Explain the different types of network topologies.
- (j) What are the various types of B2B models ?
- (k) Explain the threats to internet security.

Total number of printed pages-4

**52 (5) ITB-HE-5016**

**2022**

**( Held in 2023 )**

**E-COMMERCE**

Paper : ITB-HE-5016

Full Marks : 60

Time : Three hours

**The figures in the margin indicate  
full marks for the questions.**

1. Answer **all** questions : (Each question carries **1** mark) 1×5=5
  - (a) Electronic exchange of business documents in a standard format is known as
    - (i) E-commerce
    - (b) E-business
    - (c) EDI
    - (d) None of the above

(b) B2B e-commerce has been conducted between

(i) Business to Bank

(ii) Business to Buyer

(iii) Business to Business

(iv) Business to Cost

(c) Each web site has a unique address called

(i) URL

(ii) IP address

(iii) Domain name

(iv) None of the above

(d) Online business attempt to reach other business units is

(i) B2B

(ii) B2C

(iii) C2C

(iv) B2G

(e) ISP stands for \_\_\_\_\_.

2. Answer **any five** questions from the following :  $2 \times 5 = 10$

(a) What is business model ?

(b) What do you mean by Encryption and Decryption ?

(c) Define Internet and Extranet.

(d) Define E-commerce.

(e) What is C2C E-commerce ?

(f) What is E-Business ?

(g) What is a domain name ?

3. Answer **any nine** questions from the following :  $5 \times 9 = 45$

(a) Explain the importance and advantages of E-commerce.

(b) Briefly explain the various types of electronic payments used in E-Commerce sites.

(c) Discuss the main security risk in E-Commerce.

(d) Explain the types of internet protocols.

2. Answer **any four** from the following questions : 5×4=20

- (a) Discuss the *foreground and background processes* ?
- (b) What are *hard links and symbolic links* ?
- (c) Explain the different decision-making shell scripts in Linux.
- (d) What are the different modes of operation in *vi editor* ?
- (e) What is the difference between Linux and Windows operating systems ?

3. Answer **any two** from the following questions : 10×2=20

- (a) What are the different Linux file types ? Explain.
- (b) Write a shell script to find the greatest number among the *three* numbers.
- (c) Write a shell script to find the factorial of a given number.
- (d) Explain the steps involved in installation of Linux operating system.

Total number of printed pages-2

52 (3) ITB-SE-3014

2022

( Held in 2023 )

**UNIX/LINUX PROGRAMMING**

Paper : ITB-SE-3014

Full Marks : 50

Time : Two hours

***The figures in the margin indicate full marks for the questions.***

1. Answer the following questions :  $5 \times 2 = 10$
- (a) What are daemons in Linux ?
  - (b) What is fork in OS ?
  - (c) Why is pipe needed in Linux ?
  - (d) Which command is used to execute a shell program ? Provide the syntax of while loop.
  - (e) What is the difference between *sh* and *bash* ?

Contd.

(ii) In HTML, which part defines user visible data ?

- (a) < head >
- (b) < header >
- (c) < body >
- (d) < section >

(iii) The href attribute is used for

- (a) < table >
- (b) < text >
- (c) < img >
- (d) < a >

(iv) A dropdown menu is created by using

- (a) < menu >
- (b) < select >
- (c) < option >
- (d) < input >

(v) \_\_\_ tag is used for headers specification of a table.

- (a) < td >
- (b) < tr >

4. (a) Define CSS. State and describe different types of CSS. 1+4=5

(b) Write the syntax of < select > and < button > tags. 5

5. (a) Design a form web page with different input fields like textbox, textarea, checkbox, radio button, submit, select option and reset button. 5

(b) What is framing ? Describe various tags and attributes used in framing with an example. 5

6. (a) What is HTML ? Write different characteristics of HTML. 1+4=5

(b) What is definition list ? Write the syntax of creating a definition list with an example. 1+4=5

Total number of printed pages-5

52 (3) ITB-SE-3034

**2022**  
**( Held in 2023 )**

**HTML PROGRAMMING**

Paper : ITB-SE-3034

Full Marks : 50

Time : Two hours

**The figures in the margin indicate  
full marks for the questions.**

Answer Question No. 1 and **any four** from the rest.

1. Fill up the blanks : 1×10=10

(i) \_\_\_\_\_ tag is used for inserting an image into a webpage.

(a) < image >

(b) < i >

(c) < ing >

(d) None of the above

Contd.

- (c) `< tt >`
- (d) `< th >`
- (vi) \_\_\_\_\_ tag is used for bulletting the list of items.
- (a) `< li >`
- (b) `< ol >`
- (c) `< ul >`
- (d) `< dl >`
- (vii) Monospacing of characters can be done by using
- (a) `< tr >`
- (b) `< tt >`
- (c) `< td >`
- (d) `< th >`
- (viii) `< meta >` tag is enclosed with
- (a) `< body >`
- (b) `< header >`
- (c) `< head >`
- (d) `< list >`

(ix) Which of the following is not a header ?

(a) `< h8 >`

(b) `< h5 >`

(c) `< h3 >`

(d) None of the above

(x) The \_\_\_\_\_ attribute specifies the width of a textarea.

(a) rows

(b) width

(c) cols

(d) None of the above

2. (a) How to create tables in HTML ? Explain with an example.  $2+3=5$

(b) What do you mean by text formatting tags ? Give examples.  $4+1=5$

3. (a) How to form an ordered list using HTML ? Explain with an example.  $3+2=5$

(b) What is linking ? Design a web page which demonstrates the effect of internal linking.  $2+3=5$

Total number of printed pages-3

52 (3) ITB-SE-3024

2022

( Held in 2023 )

## PROGRAMMING IN PYTHON

Paper : ITB-SE-3024

Full Marks : 50

Time : Two hours

**The figures in the margin indicate full marks for the questions.**

1. Answer the following questions :  $1 \times 5 = 5$ 
  - (a) Define flowchart.
  - (b) Define decision table.
  - (c) Write *any two* advantages of pseudo code.
  - (d) Write *two* features of Python programming.
  - (e) What is Python interpreter ?

Contd.

2. Answer **any five** questions :  $2 \times 5 = 10$

- (a) Write the standard data types in Python.
- (b) What do you mean by module in Python ?
- (c) What do you mean by Python shell ?
- (d) What are logical operators and bitwise operators ?
- (e) What is Python continue statement ?
- (f) What is Python pass statement ?
- (g) What is the difference between tuples and lists in Python ?

3. Answer **any three** questions :  $5 \times 3 = 15$

- (a) Describe the syntax and semantics of *any two* loop structures provided by Python.
- (b) How to perform a user input in Python ? Explain with example.
- (c) Explain call by value and call by reference in Python.
- (d) What do you mean by top-down and bottom-up programming ?

(e) Briefly explain the built-in functions that are used in Python.

4. Write **any four** Python programs for the following :  $4 \times 5 = 20$

- (a) To find the sum of first 100 integers.
- (b) To find the first  $n$  numbers in a Fibonacci series.
- (c) To find the sum of digits of a number.
- (d) To read  $n$  integers and display them as a histogram.
- (e) To display sine and cosine curves.
- (f) To calculate sum of two compatible matrices.

5. (a) What are storage classes ? What do you mean by scope and lifetime of variables? 5  
 (b) What are relational operators? Give example. 2  
 (c) Define an algorithm ? What are pseudo-code and flowchart? 3
6. Answer **any two** : 5×2=10  
 (a) Write a program in C to copy a text file to another.  
 (b) Write a program to multiply two matrices.  
 (c) Write a program to sort  $n$  number of string in ascending order using pointer.  
 (d) Write a program to implement binary search algorithm.  
 (e) Write a program to implement Q selection sort algorithm.
7. (a) What do you mean by statement in C ? Explain **any two** with example. 5  
 (b) What do you mean by call by reference and call by value? Explain with **one** example. 5
8. (a) Write a program in C to reverse a string without using Library function. 5  
 (b) What do you mean by multidimensional array? Give a real life application of multidirectional array with example. 5

Total number of printed pages-4

52 (1) ITB-HC-1016-IT/1.4 (O)

2022

( Held in 2023 )

**COMPUTER FUNDAMENTALS  
 AND PROGRAMMING**

Paper : ITB-HC-1016

Full Marks : 60

Time : Three hours

**The figures in the margin indicate  
 full marks for the questions.**

Answer **any six** questions.

1. (a) Fill in the blanks : 1×3=3  
 (i) The \_\_\_\_\_ conversion specified is used to read or write an integer.  
 (ii) The \_\_\_\_\_ function reads data from the keyboard.  
 (iii) \_\_\_\_\_ is a comparative operator in C.
- (b) State True **or** False : 1×2=2  
 (i) The purpose of header files to store a program's source code.

(ii) Recursion is a repetitive process in which a function calls itself.

(c) Define a computer. What are the major components of a computer? Explain its block diagram. 5

2. Answer **any five**: 2×5=10

(a) Define an array. How do we initialize an array? Give example.

(b) What do you mean by recursion? Give example to explain.

(c) Define looping. Why do we need it? Give syntax for while loop.

(d) Define pointer. How do we declare a pointer? Explain with example.

(e) Write the basic structure of a C program.

(f) Define a structure. What do you mean by array of structure? Give example.

(g) What are the fundamental data types? Give example.

3. (a) What is the output of the following program code?

(i) 

```
for (int x = 12; x <= 10; x--)
    print f ("%d | n", x);
```

 2

(ii) 

```
x = 0;
where (x < 10)
```

 2

```
{
Print f ("%d | n", x);
x++;
```

(iii) # include <stdio.h> 3  
int main ()

```
{
int list [10] = {0}; || local declaration
for (int i=0; i < 5; ++i) || statements
list [2 * i + 1] = i + 2;
for (int i=0; i < 10; i++)
print f ("%d/n", list [i]);
return 0;
```

(b) What do you mean by actual and formal parameters? Explain with the help of one example. 3

4. Define the following terms: 2×5=10

(a) Linker and loader

(b) Bootstrapping

(c) L-value & R-value

(d) Size of operator

(e) Gray codes

(f) Briefly explain the web server architecture.

(g) What is JavaScript? Mention the main usage and features of JavaScript.

(h) What is JavaScript technology? Explain about the execution of JavaScript.

2+3=5

Total number of printed pages-4

52 (BScIT-5) 5-2

2022

(Held in 2023)

## WEB TECHNOLOGY

Paper : 5-2

Full Marks : 60

Time : Three hours

**The figures in the margin indicate full marks for the questions.**

1. Answer the following questions : **(any five)**

1×5=5

- (a) What do you mean by Internet?
- (b) FTP stands for \_\_\_\_\_.
- (c) What is the full form of URL?
- (d) CORBA stands for \_\_\_\_\_.
- (e) What is the HTML tag for the largest heading?
- (f) What do you mean by web browsers?

2. Answer **any five** from the following questions :  $2 \times 5 = 10$

- (a) What is domain name system ?
- (b) What is a web server ?
- (c) Why is JavaScript called client side scripting language ?
- (d) What is a computer network ?
- (e) What do you mean by Proxy Server ?
- (f) Why do we need `<form>` tag in HTML ? Give *one* example.

3. Answer **any five** questions :  $3 \times 5 = 15$

- (a) What are the advantages of dynamic web page ?
- (b) Write *three* differences between Java and JavaScript.
- (c) Write a short note on CORBA.
- (d) What do you mean by mailserver ? Explain.
- (e) What is an IP address ? Why is it needed ?

(f) Explain about hyperlink in HTML with suitable example.

4. Answer the following questions : (**any six**)  $5 \times 6 = 30$

(a) Why are the following tags used in HTML ? Explain with example.

- (i) `<p>`
- (ii) `<br/>`
- (iii) `<center>`
- (iv) `<hr/>`
- (v) `<ul>`

(b) Explain the roles of JDBC and ODBC in linking database to the web.

(c) Discuss about the history and evolution of Internet.

(d) Create an HTML document consisting of HTML heading, paragraph and images.

(e) What do you mean by XML DTD ? Briefly explain with a simple DTD program.  $2+3=5$

Total number of printed pages-3

52 (5) ITB-HC-5026

2022

(Held in 2023)

## WEB TECHNOLOGY

Paper : ITB-HC-5026

Full Marks : 60

Time : Three hours

**The figures in the margin indicate  
full marks for the questions.**

Answer Question No. 1 and **any five** from the rest.

1. Write in short : **(any five)** 2×5=10
- (a) Write *any two* features of DHTML.
  - (b) What is the importance of XML parser ?
  - (c) Write *any two* major functions of web browser. Give examples.
  - (d) What do you mean by URL ?
  - (e) What is DOM ? Why is it used ?

Contd.

- (f) What do you mean by event handling ? Give example of event handling attributes.
2. (a) What is scripting language ? Write the differences between client-side scripting and server-side scripting. 2+3=5
- (b) Briefly explain the functions and architecture of a web server with proper diagram. 5
3. (a) What is a well-formed XML document ? Give the syntax of a well-formed XML. 2+3=5
- (b) What is an image map ? Write some features of image map. 2+3=5
4. (a) Construct a DTD to validate the details of one or more books information. The information include (book\_title, ISBN, author, price, publication, year) etc. 5
- (b) What is J2EE ? Write different technologies embraced in J2EE. 2+3=5

5. (a) What is Firewall ? Explain the application level gateway in detail. 1+4=5
- (b) State the differences between the static web page and dynamic web page ? 5
6. Write JavaScript programs : **(any two)** 5×2=10
- (a) To find a substring starting at an index 'i' and ending at an index 'j'.
- (b) To design a digital clock by using date object and event handling attribute.
- (c) To design a digital calculator.
7. Write short notes on : **(any two)** 5×2=10
- (a) JNDI
- (b) CGI
- (c) CORBA
- (d) Search engine
-

Total number of printed pages-7

52 (BSc IT-3) 3·1 (O)

2022

(Held in 2023)

**ENVIRONMENTAL STUDIES**

Paper : 3·1 (EVS)

Full Marks : 80

Time : Three hours

**The figures in the margin indicate  
full marks for the questions.**

1. Fill in the blanks : 1×6=6
- (a) Gas leaked in the Bhopal Tragedy was \_\_\_\_\_.
  - (b) Ozone layer is being depleted by \_\_\_\_\_.
  - (c) Ozone layer occurs in \_\_\_\_\_.
  - (d) The Ganga pollution is due to dumping of \_\_\_\_\_.
  - (e) Chernobyl Disaster occurred due to \_\_\_\_\_.
  - (f) Jhum cultivation is prevalent in \_\_\_\_\_.

Contd.

2. Write the full form of the following :  
1×4=4

AIDS, HIV, SST, DDT

3. Write the correct answer of the following :  
1×10=10

(a) Biosphere reserve project was initiated in India during

(i) 1986

(ii) 1984

(iii) 1989

(iv) 1985

(b) In our country the percentage of land under forests is about

(i) 30%

(ii) 25%

(iii) 19%

(iv) 20%

(c) In a national park, protection is provided to

(i) flora only

(ii) fauna only

(iii) entire ecosystem

(iv) flora and fauna

(f) What is the impact of population explosion in our environment ?

(g) What is sustainable development ? How can sustainable development be achieved ?  
5+5=10

- (ii) Global Warming
- (iii) Pollution Control
- (iv) Greenhouse Gases
- (v) Deforestation

6. Answer the following : **(any four)**  $10 \times 4 = 40$

- (a) (i) What are the various sources of air pollution ? 5
- (ii) Give a few measures to control landslides. 5
- (b) (i) What is environment ? What are the components of environment ?  
 $2+3=5$
- (ii) What is ecology ? 5
- (c) Define ecosystem. Classify ecosystem. Mention the components of ecosystem ?
- (d) Write a note on pollution of water.
- (e) Write a note on :  $5+5=10$ 
  - (i) Chipko Movement
  - (ii) Narmada Bachao Andolan

(d) Planting trees is called

- (i) social forestation
- (ii) agro forestry
- (iii) afforestation
- (iv) deforestation

(e) First national park established in India was

- (i) Bandipur
- (ii) Corbett
- (iii) Kanha
- (iv) Periyar

(f) Removal of top fertile layer of soil by water or wind is

- (i) soil erosion
- (ii) weathering of soil
- (iii) leaching land weathering of soil
- (iv) leaching

(g) Animals and plants are best protected in

- (i) sanctuaries
- (ii) national parks
- (iii) botanical gardens
- (iv) zoos

(h) Deforestation generally decreases

- (i) rainfall
- (ii) global warming
- (iii) soil erosion
- (iv) drought

(i) The area reserved for the welfare of wildlife is called

- (i) forest
- (ii) national park
- (iii) sanctuary
- (iv) botanical Garden

(j) Kaziranga National Park is famous for

- (i) musk deer
- (ii) rhinoceros
- (iii) tiger
- (iv) elephant

4. Match the following : 1×5=5

**Column A**

**Column B**

- |   |            |
|---|------------|
| (i) Wildlife (Protection) Act                         | (i) 1974   |
| (ii) Water (Prevention and Control of Pollution) Act  | (ii) 1981  |
| (iii) The Motor Vehicles Act                          | (iii) 1972 |
| (iv) The Environment (Protection) Act                 | (iv) 1988  |
| (v) The Air (Prevention and Control of Pollution) Act | (v) 1986   |

5. Write short notes on : **(any three)** 5×3=15

- (i) Bhopal Gas Tragedy

(c) A disk contains 200 tracks (0-199). Request queue contains track number 82, 170, 43, 140, 24, 16, 190. Current portion of R/W head = 50. What is the total head movement needed to satisfy the request for the following scheduling algorithms ?

SCAN and C-SCAN

(d) Define deadlock with example. What are the *four* necessary conditions for deadlock ? Explain.

5. Answer **any three** questions :  $5 \times 3 = 15$

(a) What is device controller ? Describe the goals of I/O software.

(b) What is the basic idea behind the linked list allocation using index method ? What does FAT contains ?

(c) Explain the best fit, first fit and worst fit algorithms with examples.

(d) Briefly explain the Banker's algorithm with example.

Total number of printed pages-4

52 (3) ITB-HC-3026

2022

( Held in 2023 )

## OPERATING SYSTEM

Paper : ITB-HC-3026

Full Marks : 60

Time : Three hours

**The figures in the margin indicate full marks for the questions.**

1. Fill in the blanks :  $1 \times 5 = 5$

(a) \_\_\_\_\_ system call is used to create child process.

(b) The operating system is a type of \_\_\_\_\_ software.

(c) PCB stands for \_\_\_\_\_ in operating system.

(d) In order to allow only one process to enter its critical section, binary semaphore is initialized to \_\_\_\_\_.

(e) The directory can be viewed as \_\_\_\_\_ that translates filenames into their directory entries.

2. Answer the following questions :  $2 \times 5 = 10$

(a) Define operating system. Write *two* functions of operating system.

(b) Define time sharing system with example.

(c) Define safe and unsafe state.

(d) What do mean by internal and external fragmentation ?

(e) Distinguish between preemptive and non-preemptive scheduling algorithm.

3. Answer **any three** questions :  $5 \times 3 = 15$

(a) Define critical section problem. Also explain all the requirements for a solution to critical section problem.

(b) Define process. Draw and explain process state diagram.

(c) What are semaphores ? Explain solution to producer-consumer problem using semaphores.

(d) Consider four processes P1, P2, P3 and P4 with arrival times and required CPU time (in ms) as shown in table :

Process	Arrival time	CPU time
P1	0	10
P2	1	5
P3	3	2
P4	4	3

Compute average waiting time and average turnaround time using shortest remaining time first scheduling algorithm.

4. Answer **any three** questions :  $5 \times 3 = 15$

(a) Briefly explain the virtual memory management technique.

(b) Describe the LRU page replacement, assuming there are 3 frames and the page reference string is 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1

Find the number of page faults.

Total number of printed pages-7

**52 (1) ENG-AE-1014**

**2022**  
**( Held in 2023 )**

**ENGLISH**

Paper : ENG-AE-1014

Full Marks : 80

Time : Three hours

**The figures in the margin indicate  
full marks for the questions.**

**UNIT-I**

1. Answer **any five** of the following : 2×5=10
- (i) Write *two* advantages and *two* disadvantages of informal communication.
- (ii) What is cross-cultural communication ?  
Write *two* importances of cross-cultural communication.

Contd.

(iii) Do you think feedback is an essential part of the communication process? Discuss.

(iv) What are semantic barriers? Give examples.

(v) Explain upward and downward communication.

(vi) Define communication network. How does a communication network affect the performance of a group?

2. Define communication on the basis of way of expression. Give *three* advantages of oral communication over written communication.

2+3=5

## UNIT-II

3. (i) Use the correct form of the verbs in brackets : **(any five)** 1×5=5

(a) To hate man (be) the biggest sin.

(b) The referee blew the whistle and the match (begin).

(c) The First World War (last) for four years and ended in 1918.

(iii) Assume yourself to be the Librarian of Wisdom Public School, Guwahati. Write a letter to the Sales Manager of Bharat Publishers Limited, New Delhi, complaining about the supply of wrong books to you.

(iv) Distinguish between an interview and a group discussion.

(v) Write *three* guidelines for speaking skills.

(vi) Mention *three* demerits of oral communication skills.

5. Define business report. Write the principles of drafting a business report. 1+4=5

#### UNIT-IV

6. Answer the following : **(any two)**

7×2=14

(i) Assume yourself to be the distributor of electronics accessories of Samsung. One of your customers' television set is not functioning for which he made a complaint. Write a confirmation letter by stating that you have accepted the complaint.

(ii) Assume yourself to be the owner of a bookstall at Panbazaar, Guwahati, who ordered some books from the publishing house. Write an enquiry letter by asking them whether your ordered books have been dispatched or not.

(d) I will speak to him when he (come).

(e) If I were you, I (not do) it.

(f) These days cricket (play) everywhere.

(ii) Fill in the blanks with appropriate articles : **(any five)** 1×5=5

(a) He will come back in \_\_\_\_\_ hour.

(b) I will give you \_\_\_\_\_ useful hint.

(c) My brother is \_\_\_\_\_ NCC cadet.

(d) Don't hate \_\_\_\_\_ poor.

(e) Switzerland is \_\_\_\_\_ European Country.

(f) She has read \_\_\_\_\_ best book in the library.

(iii) Fill in the blanks with appropriate prepositions : **(any five)** 1×5=5

(a) He is blind \_\_\_\_\_ the faults of his son.

(b) The students are sitting \_\_\_\_\_ their desks.

(c) I made \_\_\_\_\_ home as seen as the rain stopped.

- (d) The little girl was pleased \_\_\_\_\_ her new dress.
- (e) I congratulate you \_\_\_\_\_ your success.
- (f) A true friend will always stand \_\_\_\_\_ you in difficult times.
- (iv) Make sentences to illustrate the use of the following phrases : **(any five)**

1×5=5

- (a) Call on
- (b) Get over
- (c) Take for
- (d) Hold on
- (e) Bring out
- (f) Set out
- (v) Identify nouns and adjectives in the following passage :  $\frac{1}{2} \times 6 = 3$

A little boy once stole a book and brought it to his mother. The mother sold the book for ten rupees and gave him two rupees as a reward. The boy was happy. But for this conduct of his mother, the boy became a thief when he grew up.

- (vi) Punctuate the following : **(any two)**  
1×2=2

- (a) the king is dead he announced
- (b) i made some money yesterday he explained now you will be paid regularly
- (c) have you been to bombay he asked yes i replied

- (vii) Write a paragraph on **any one** of the following topics : 6

- (a) Social Media and the youth
- (b) WhatsApp
- (c) E-mail

### UNIT-III

4. Answer **any five** of the following :  
3×5=15

- (i) Discuss the purpose of group discussion.
- (ii) Write the differences between hearing and listening.
- (iii) What are the effectives of listening skills ?

(d) What are the main differences between syntax tree and DAG ? 3

Or

Explain runtime storage management.

Total number of printed pages-4

52 (BSc IT-5) 5-1

2022

(Held in 2023)

### COMPILER DESIGN

Paper : 5-1

Full Marks : 60

Time : Three hours

**The figures in the margin indicate full marks for the questions.**

1. Answer the following questions : 1×5=5
  - (a) What is lexeme ?
  - (b) Define type checking.
  - (c) What do you mean by parse tree ?
  - (d) What is DAG ?
  - (e) What is three address code ?
2. Answer **any five** questions from the following : 3×5=15
  - (a) What do you mean by common sub-expression elimination ? Explain with an example.

- (b) Define abstract syntax trees with an example.
- (c) What is loop optimisation ? Explain.
- (d) What is parsing ? Explain its various types.
- (e) Explain the structure of lex program.
- (f) What is linker ? Explain.

3. Answer **any four** questions :  $5 \times 4 = 20$

- (a) Define DFA. Draw a DFA to accept all string starting and ending with same symbol, where  $\Sigma = \{a, b\}$ .
- (b) What is operator precedence parsing ? Explain.
- (c) Write the semantic rules for Boolean expressions.
- (d) What getReg function ? Explain getReg function in terms of register allocation.
- (e) Explain structure preserving transformation on basic block.
- (f) Explain three-address code.

4. Answer the following questions :

- (a) Check whether the following grammar is ambiguous or not :

$$S \rightarrow aB \mid ab, \quad A \rightarrow aAB \mid a, \quad B \rightarrow ABb \mid b$$

5

- (b) What is compiler ? Explain its different phases.  $2+6=8$

**Or**

Design SLR parsing table for the following grammar :

$$\begin{aligned} E &\rightarrow TE' \\ E' &\rightarrow +TE' \mid \varepsilon \\ T &\rightarrow FT' \\ T' &\rightarrow *FT' \mid \varepsilon \\ F &\rightarrow (E) \mid id \end{aligned}$$

- (c) What do you mean by DAG ? Draw a DAG for the following expression :

$1+3=4$

$$a + a * (b - c) + (b - c) * d$$

Total number of printed pages-7

52 (BScIT-1) 1-1

2022

( Held in 2023 )

**COMMUNICATIVE ENGLISH**

Paper : 1-1

Full Marks : 80

Time : Three hours

**The figures in the margin indicate  
full marks for the questions.**

**UNIT-I**

1. Answer **any five** of the following :

2×5=10

- (i) Write *two* advantages and *two* disadvantages of formal communication.
- (ii) What is cross-cultural communication ?  
Write *two* advantages of cross-cultural communication.
- (iii) "Feedback is an essential part of the communication process." Discuss.

Contd.

- (iv) What is cultural barrier? Write with a suitable example.
- (v) Explain upward and downward communication.
- (vi) Define communication network. How does a communication network affect the performance of a group?
2. Define communication on the basis of way of expression. Give *three* advantages of oral communication over written communication.
- 2+3=5

### UNIT-II

3. (i) Use the correct form of the verbs in brackets : **(any four)**      1×4=4
- (a) These days cricket (play) everywhere.
- (b) I will speak to him when he (come).
- (c) To hate man (be) the biggest sin.
- (d) The referee blew the whistle and the match (begin).
- (e) If I were you, I (not do) it.

- (iii) Assume yourself to be the owner of a bookshop Panbazaar, Guwahati, who ordered some books from the publishers of New Delhi. Write an enquiry letter by asking them whether your ordered books have been dispatched or not.
-

- (iv) Distinguish between interview and group discussion.
- (v) Write *three* guidelines for speaking skills.
- (vi) Mention *three* demerits of oral communication skills.
5. Define business report. Write the principles of drafting a business report. 1+4=5

#### UNIT-IV

6. Answer the following : **(any two)** 7×2=14
- (i) Assume yourself to be the distributor of electronics accessories of Samsung. One of your customers' television set is not functioning for which he made a complaint. Write a confirmation letter by stating that you have accepted the complaint.
- (ii) Assume yourself to be the librarian of Wisdrom Public School, Guwahati. Write a letter to the Sales Manager of Bharat Publishers Limited, New Delhi, complaining about the supply of wrong books to you.

- (ii) Fill in the blanks with appropriate prepositions : **(any four)** 1×4=4
- (a) He is blind \_\_\_\_\_ the faults of his son.
- (b) The students are sitting \_\_\_\_\_ their desks.
- (c) I made \_\_\_\_\_ home as soon as the rain stopped.
- (d) The little girl was pleased \_\_\_\_\_ her new dress.
- (e) I congratulate you \_\_\_\_\_ your success.
- (iii) Fill up the blanks with appropriate conjunction : **(any four)** 1×4=4
- (a) \_\_\_\_\_ he works hard, he will not pass.
- (b) She cares for \_\_\_\_\_ gold nor silver.
- (c) \_\_\_\_\_ had the tiger seen the man, when it jumped over him.
- (d) She has lost \_\_\_\_\_ her handbag and purse.
- (e) No sooner had he left \_\_\_\_\_ his brother came.

(iv) Correct the following sentences :  
**(any four)**  $1 \times 4 = 4$

- (a) He does not know to drive.
- (b) What is the time in your watch ?
- (c) Neither he comes nor he writes.
- (d) I wish I was the king.
- (e) May you please lend me one thousand rupees ?

(v) Make sentences to illustrate the use of the following phrasal verbs : **(any four)**  
 $1 \times 4 = 4$

- (a) Call on
- (b) Get over
- (c) Take for
- (d) Bring out
- (e) Hold on

(vi) Identify nouns and adjectives from the following passage :  $\frac{1}{2} \times 6 = 3$

A little boy once stole a book and brought it to his mother. The mother sold the book for ten rupees and gave him two rupees as a reward. The boy was happy. But for this conduct of his mother, the boy became a thief when he grew up.

(vii) Punctuate the following : **(any two)**  
 $1 \times 2 = 2$

- (a) The king is dead he announced
- (b) i made some money yesterday he explained now you will be paid regularly
- (c) have you been to Bombay he asked you i replied

(viii) Write a paragraph on **any one** of the following topics :  $1 \times 6 = 6$

- (a) Social media and the youth
- (b) YouTube
- (c) Conference call

### UNIT-III

4. Answer **any five** of the following :

$3 \times 5 = 15$

- (i) Discuss the purpose of group discussion.
- (ii) Write the differences between hearing and listening.
- (iii) What are the effectiveness of listening skills ?

Total number of printed pages-3

52 (1) ITB-HG-1026

2022

(Held in 2023)

### OFFICE AUTOMATION

Paper : ITB-HG-1026

Full Marks : 60

Time : Three hours

**The figures in the margin indicate  
full marks for the questions.**

Answer Question No. 1 and **any five** from the rest.

1. Answer the following questions : 2×5=10

- (a) What do you mean by formatting a document ?
- (b) Write *two* features of word processing.
- (c) Write *two* importances of spreadsheet.
- (d) How can we copy-paste, undo-redo in MS-Word without using mouse ? Explain with example.
- (e) What do you mean by mail merge ?

Contd.

2. (a) Write the steps to insert a new slide in PowerPoint. 3
- (b) How to create slides, add clipart, pictures and adding animation in PowerPoint ? Explain. 7
3. (a) What are the ways to align paragraphs ? What is the use of Chart Wizard in Excel ? 2+3=5
- (b) What is a table ? How is it created in MS Word ? 1+4=5
4. (a) What is MS Excel ? Explain the components of Excel window. 7
- (b) How can you insert cells, rows and columns in MS Excel ? 3
5. (a) Explain *any five* library functions used in MS Excel with suitable example. 5
- (b) What is a presentation software ? What is the purpose of PowerPoint software ? 2+3=5

6. (a) What is spell check ? How to spell check a document ? Explain. 5
- (b) How will you enter a formula in MS Excel ? Explain with example. 5
7. (a) Write the advantages of DTP software. What do you mean by portable document format ? 3+2=5
- (b) Describe the autoforamt feature of MS Excel. Explain with example. 5

**Or**

Explain the design procedure for sequential circuits.

- (c) Explain the working of bidirectional shift register with parallel load. 5

**Or**

What do you mean by semiconductor memory? Explain RAM family.

5. Write short notes on : **(any two)** 5×2=10

- (a) Ring counter  
(b) Cache memory  
(c) Master-slave flip-flop  
(d) Magnitude Comparator

Total number of printed pages-4

**52 (BScIT-1) 1·3**

**2022**

**( Held in 2023 )**

**DIGITAL LOGIC**

Paper : 1·3

Full Marks : 60

Time : Three hours

**The figures in the margin indicate full marks for the questions.**

1. Answer the following questions : 1×5=5
- (a) What is Boolean operator ?  
(b) What do you mean by adder ?  
(c) De Morgan's law states that
- (i)  $(A + B)' = A' \cdot B'$   
(ii)  $(AB)' = A' + B'$   
(iii)  $(AB)' = A' + B$   
(iv)  $(AB)' = A + B$

Contd.

(d) The minterm of three variables is

(i) 8

(ii) 16

(iii) 2

(iv) 1

(e) The number of inputs in a half-adder is

(i) 8

(ii) 2

(iii) 11

(iv) 32

2. Answer **any five** questions from the following :  $2 \times 5 = 10$

(a) State De Morgan's theorem.

(b) What do you mean by Adder? What are its types?

(c) Define RS flip-flop.

(d) What are state table and state equation?

(e) Define shift registers.

(f) Explain binary counter.

(g) What is Encoder?

3. Answer **any four** questions from the following :  $5 \times 4 = 20$

(a) What is universal gate? Implement OR gate using NAND gate.

(b) Explain the following function in a sum of minterms :

$$F = A + B'C$$

(c) Simplify the Boolean function

$F(w, x, y, z) = \Sigma(0, 1, 2, 4, 5, 6, 8, 9, 12, 13, 14)$   
using K-map.

(d) Explain the working of multiplexer.

(e) Design and explain RS flip-flop.

(f) Explain parallel binary adder.

4. (a) What do you mean by synchronous counter? What are its applications?

3

(b) Explain and design the logic diagram of BCD ripple counter.

7

2022

( Held in 2023 )

**ICT HARDWARE**

Paper : ITB-HG-1016

Full Marks : 60

Time : Three hours

**The figures in the margin indicate full marks for the questions.**

1. Answer the following questions : 1×5=5
  - (a) What is the full form of BIOS ?
  - (b) CPU stands for \_\_\_\_\_.
  - (c) How many numbers of pins are available in LGA1150 processor socket ?
  - (d) NTFS file system was developed by \_\_\_\_\_.

(e) What was the first microprocessor developed by Intel Corporation ?

(f) What do you mean by GUI ?

2. Answer **any five** of the following questions :

2×5=10

(a) Write *two* basic differences between RAM and ROM.

(b) Write the full form of DDR SDRAM and SMPS.

(c) Why do we use RJ45 connector ? Explain.

(d) What is Linux ?

(e) Give *two* examples of optical media.

(f) Name *two* microprocessors developed by AMD.

3. Answer **any five** questions : 3×5=15

(a) What is cache memory ?

(b) How does antivirus software work ? Explain.

(c) How to install additional hard disk on a computer ? Explain.

(d) Differentiate between CRT and LCD monitor.

(e) Write the configuration of typical personal computer available in the market.

(f) What is modem ? Why is it used ?

4. Answer **any six** questions of the following :

5×6=30

(a) Describe the working principle of hard disk.

(b) Briefly explain about *two* recent Intel processors.

(c) Write the working principle of optical media.

(d) Write the steps to install Linux on a new hard disk.

(e) Explain the functions performed by BIOS.

(f) What is disk defragmentation ? Explain the effect and advantages of disk defragmentation.

(g) What is virtual memory ? How to create virtual memory ?

(h) What is a switch ? Explain how router works.