2016

Time : 3 hours

Full Marks : 80

The questions are of equal value.

*Answer **all** questions.*

NUMERICAL ANALYSIS AND STATISTICAL METHODS

(MATHEMATICS – II)

1. (a) Using Gauss Seidal method solve the following linear equations :

$$6x + 15y + 2z = 72$$

$$x + y + 54z = 110$$

$$27x + 6y - z = 85$$

(b) Explain Gauss-Jordan method with suitable example.

OR

(c) Find the root of the equation $3x + \sin x - e^x = 0$, correct to three decimal places.

(d) Discuss various types of errors in numerical computation.

2. (a) Find the approximately real root of the equation $x^3 - 2x - 5 = 0$ using of Newton divided difference formula.

(b) Write on Newton's Backward interpolation method.

OR

(c) Find Δ 10g f(x)

(d) By taking h = 1 find Δ f(x)

3. Write short notes on the following :

(a) Sample Space

(b) Probability Function

(c) Conditional Probability

(d) Random variable

OR

(a) Given P(A) = 0.50, P(B) = 0.40, $P(A \cap B)$ = 0.20

Compute $P(A \cup B)$, $P\overline{(A \cup B)}$, $P\overline{(A \cap B)}$, $P(\bar{A} \cap B)$.

(b) For a binomial distribution, Mean = 4 and standard deviation = $\sqrt{3}$, Find n, p and q.

4. (a) Write on the application of Number Theory in problem solving.

(b) If xy / zy then x/z prove.

OR

(c) If m and n are integers, calculate the least positive value of 1000 m + 200 n = 20.

(d) What are the concepts of Primes and convergence in number theory.

2016

Time : 3 hours

Full Marks : 80

The questions are of equal value.

*Answer **all** questions.*

(INTRODUCTION TO OPERATING SYSTEMS)

1. (a) Briefly discuss about the evolution process of operating systems.

   (b) Make a distinction between the Batch Processing and Multi Programming environment.

OR

   (c) Briefly discuss about the role of I/O interrupts in Operating Systems.

   (d) Discuss about the various operating system services and their importances.

2. (a) Discuss about the various file attributes and its relevance in file systems.

(b) Discuss the relevance of Tree Structure File Organisation and its importance in operating systems.

OR

(c) State the advantages and disadvantages of sequential file access mechanisms.

(d) Compare and contrast between index sequential and direct access mechanisms.

3. (a) What do you mean by process scheduling ? State about its importance.

(b) Briefly discuss about the role of schedulers in operating system functions.

OR

(c) What is Dead Lock ? Evaluate critically the conditions to avoid dead lock situation.

(d) Briefly discuss about the mechanism to detect and recover from dead lock conditions.

4. (a) What do you mean by swapping ? Discuss how it is used in memory management.

(b) Discuss about the usefulness of the virtual memory concept.

OR

(c) Compare and contrast between the Internal & External Memory fragmentation.

(d) The sequence of page request arrived in the given order.

0, 1, 0, 3, 4, 1, 2, 1, 2, 0, 4, 0, 2, 4, 3, 4, 0, 2, 3, 0, 2, 4.

Let there are three frames only. State, how many page faults will occur with LRU, FIFO and Optimal algorithm.

2016

Time : 3 hours

Full Marks : 80

The questions are of equal value.

*Answer **all** questions.*

(INTRODUCTION TO DATABASE MANAGEMENT SYSTEM)

1. (a) Describe the 3 level architecture for DBMS.

   (b) What is data independence and describe DDL, DML and DCL.

OR

What is DBMS ? Describe the different components and advantages of DBMS ?

2. What is hashing ? Describe the advantage and different hashing techniques used in DBMS ?

OR

Describe the different database file structures with their advantages and disadvantages.

3. Define Normalisation. Describe the different types of normal forms with suitable examples.

OR

Write short notes on the following :

(a) Join and division operators

(b) Structure of Relational database

(c) Direct access files

(d) DBTG codasyl model

4. With short notes on the following :

(a) HDAM and HIDAM

(b) HSAM and HISAM

OR

Write short notes on the following :

(a) Physical and Logical database records

(b) DBTG Retrieval and update facilities

2016

Time : 3 hours

Full Marks : 80

The questions are of equal value.

*Answer **all** questions.*

(COMPUTER ORGANISATION)

1. (a) What do you mean by shift registers ? Discuss about the application of shift registers.

   (b) State about the application usage of Decoders. Site examples about the application of decoders.

   OR

   (c) Briefly discuss about the application of counter circuits.

   (d) Briefly discuss about the Kernough Maps and state about its utilities.

2. (a) State the characteristics mechanisms of carry look ahead adder circuits.

(b) Briefly discuss about the floating point operation applications.

OR

(c) Subtract $(11000)_2$ from $(1000\ 0000)_2$ by using 2's complement method.

(d) Multiply 39 with (– 13) by using Booth multiplication algorithm.

3. (a) Define Instruction. State about zero, one and two address formats.

(b) Compare and contrast between Indirect and Indexed addressing modes.

OR

(c) Briefly discuss about the application of Stacks and Queues with examples.

(d) State about the characteristic features of absolute and immediate addressing modes.

4. (a) What is DMA ? Discuss the characteristic features of DMA.

(b) Briefly discuss about the interrupt service handling mechanism.

OR

(c) Briefly discuss about the vector interrupt applications.

(d) State about the addressing mechanism of input-output devices.