PGDCA-01/ PGDCA-101/MSCCS-01/MSCCS-101/MCA-101
December - Examination 2025
PGDCA/MSCCS-Previous/MCA 1st Year Examination
COMPUTER FUNDAMENTALS AND SYSTEM SOFTWARE
Paper : PGDCA-01/ PGDCA-101/MSCCS-01/MSCCS-101/MCA-101

[*Time: **3** Hours*] [*Maximum Marks: **80***]

Note :- The question paper is divided into three Sections A, B and C. Write answers as per the given instructions.

Section-A **8×2=16**

(Very Short Answer Type Questions)

Note :- Answer **all** questions. As per the nature of the question delimit your answer in one word, one sentence or maximum up to **30** words. Each question carries **2** marks.

1. (i) Define the terms: Tracks, Sector and Cylinder.
   (ii) Briefly explain the terms 'Mantissa' and 'Exponent'.
   (iii) Convert $(6337)_8 = (?)_{16}$
   (iv) What is a Real-time Operating System (RTOS)?
   (v) Give two main differences between a CD and a DVD.
   (vi) Define the term "Interrupt" and explain how it differs from polling in computer systems.
   (vii) What is the specific use of the chmod command? Provide one example of its syntax.
   (viii) What is a Zombie Process in a Linux environment?

Section-B **4×8=32**

(Short Answer Type Questions)

Note :- Answer **any four** questions. Each answer should not exceed **200** words. Each question carries **8** marks.

2. Explain the fundamental differences between Client-Server and Peer-to-Peer network models.
3. What are Threads? Discuss the performance advantages of Multithreading over single-threaded execution.
4. Draw and explain the various states of a process (New, Ready, Running, Waiting, Terminated).
5. Compare and contrast the advantages and disadvantages of inkjet and laser printers.

6. Define the 'Critical Section' problem. Why must process entry to a critical section be strictly restricted?
7. Explain the differences between Machine, Assembly and High-level languages with examples for each.
8. Explain how file permissions (Read, Write, Execute) are represented and managed in Unix/Linux using octal notation.
9. What is a Modem? Detail its working mechanism in data communication.

Section-C 2×16=32

(Long Answer Type Questions)

Note :- Answer **any two** questions. You have to delimit your each answer maximum up to **500** words. Each question carries **16** marks.

10. What do you understand by RAID systems? Explain the various levels of RAID (0, 1, 5) and discuss their benefits regarding data redundancy and performance.
11. Describe the Banker's Algorithm for deadlock avoidance. Provide a numerical example showing how a system determines if a state is "safe" or "unsafe".
12. What are threads? Explain advantages, types and issue related to threading.
13. Consider a disk with 200 cylinders (0-199). The disk head is at cylinder 53. The pending request queue is: 98, 183, 37, 122, 14, 124, 65, 67. Calculate the total head movement using FCFS, SSTF and SCAN scheduling.
