



**UNIVERSITY OF NORTH BENGAL**  
B.Sc. General Part-II Examination, 2020

**COMPUTER SCIENCE**

**PAPER-IV (Revised New Syllabus)**

Time Allotted: 1 Hour

Full Marks: 25

*The figures in the margin indicate full marks.*

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

1. Write short note on (any *one*): 5×1 = 5
    - (a) Recursion in C
    - (b) Pointers in C
    - (c) Semaphores
    - (d) Services offered by the operating system.
  
  2. (a) Define a process. Discuss the various states of a process and their relations with the help of a suitable diagram. 2+8 = 10  
(b) Define deadlock among a set of processes. Explain the necessary conditions that must hold for deadlock to occur. 2+8 = 10
  
  3. (a) Explain internal and external memory fragmentations. Discuss with a suitable example the process of compaction to eliminate memory fragmentations. (2+2)+8=12  
(b) Discuss any page replacement algorithm with the help of a suitable example. What do you mean by a 'page fault'? 6+2=8
  
  4. (a) Discuss the various types of loops in C and state their differences. 10  
(b) Write a C program to find the value of S using a recursive function to calculate the factorial: 10
- $$S = 1 + \frac{1}{2!} + \frac{1}{3!} + \frac{1}{4!} + \dots + \frac{1}{n!}$$
5. (a) Discuss the various functions associated with dynamic memory allocation in C. 10  
(b) Write a program in C to change all the characters of a string to upper case. 10

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