

**B.SC. (I. T.) SEM. - III (CBCS - 2015 COURSE) : WINTER -  
2017  
SUBJECT: OPERATING SYSTEM**

Day: **Monday**  
Date: **18/12/2017**

**W-2017-0850**

Time: **10.00 A.M. TO 01.00 P.M.**  
Max Marks: 60

**N.B:**

- 1) Answer any **SIX** questions.
- 2) Figures to the right indicate **FULL** marks.
- 3) Draw neat diagrams **WHEREVER** necessary.

- Q.1** What is an operating system? What are the different functions of an operating system? (10)
- Q.2** Explain different services provided by the operating system. List down the system call associated with each service. (10)
- Q.3** Consider the following reference string: (10)  
1, 3, 3, 2, 5, 4, 5, 4, 1, 4, 2, 2, 5  
Assume number of frames to be 3. Calculate the total number of page faults using LRU algorithm.
- Q.4** What is a deadlock? Describe the four necessary conditions for a deadlock to occur. (10)
- Q.5** Consider the following snapshots of a system: A,B,C, and D are resources types (10)

ALLOCATION					MAX				AVAILABLE			
	A	B	C	D	A	B	C	D	A	B	C	D
P <sub>0</sub>	0	0	1	2	0	0	1	2	1	5	2	0
P <sub>1</sub>	1	0	0	0	1	7	5	0				
P <sub>2</sub>	1	3	5	4	2	3	5	6				
P <sub>3</sub>	0	6	3	2	0	6	5	2				
P <sub>4</sub>	0	0	7	4	0	0	5	6				

Answer the following:

- i) What are the contents of a need array.
  - ii) If the system is in safe state, give the safe sequence.
  - iii) If a request from P<sub>1</sub> arrives for (0, 4, 2, 0), can it be granted immediately?
- Q.6** What are different memory allocation algorithms? Explain any two of them in detail with examples. (10)
- Q.7** What is a process? Describe the different states of a process with a neat diagram. (10)

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