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UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
SEMESTER I
SESSION 2016/2017**

COURSE NAME : BASIC OPERATING SYSTEM
COURSE CODE : DAT 10303
PROGRAMME : 1 DAT
EXAMINATION DATE : DECEMBER 2016/
JANUARY 2017
DURATION : 2 HOURS 30 MINUTES
INSTRUCTIONS : ANSWER **FOUR (4)**
QUESTIONS ONLY.

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THIS QUESTION PAPER CONSISTS OF FOUR (4) PAGES

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- Q1**
- (a) List **FIVE (5)** services of operating system. (5 marks)
 - (b) Describe each services of operating system in **Q1(a)** above. (10 marks)
 - (c) Differentiate the techniques used in memory management between message passing and shared memory. (8 marks)
 - (d) Explain the demand paging virtual memory techniques. (2 marks)

- Q2**
- (a) Illustrate memory page replacement for a sequence of process of queue in **Table 1(a)** below, number of frame in physical memory is set to 4.

TABLE 1(a)

Process in queue	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Process Id	6	0	1	2	3	0	2	1	6	3	0	1	2	6	3

- (i) FIFO page replacement (15 marks)
 - (ii) Optimum page replacement
 - (iii) LRU page replacement
- (b) Which of the algorithm are best suited to be used based on the diagram that you have obtained from **Q2(a)** above. (5 marks)
 - (c) Illustrate a hardware memory address protection using based and limit register. (5 marks)

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- Q3**
- (a) Explain how scheduling strategies decision between CPU bound and I/O bound approaches. (5 marks)
 - (b) Illustrate the process of interrupt. (5 marks)
 - (c) Illustrate how a system calls works when user application calling an **open()** Operation calls. (5 marks)
 - (d) Explain how a system calls works from your illustration in **Q3(c)** above. (5 marks)
 - (e) Illustrate the common operating layered design approach. (5 marks)
- Q4**
- (a) Explain demand paging memory techniques. (5 marks)
 - (b) Define the term **multitasking** in operating system. (5 marks)
 - (c) List **FIVE (5)** common process states. (5 marks)
 - (d) Illustrate a process state diagram. (5 marks)
 - (e) Describe the process state diagram in **Q4(d)** above. (5 marks)

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Q5 Calculate the average waiting for the following process queue in table Q5.

Table Q5

Process Id	Burst time (millisecond)	Priority
P1	10	3
P2	15	4
P3	3	5
P4	8	1
P5	4	2

- (a) FCFS (5 marks)
- (b) SJF (5 marks)
- (c) Priority scheduling (5 marks)
- (d) Round robin. (Let quantum time as **5 ms**) (10 marks)

- END OF QUESTIONS -

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