UNIVERSITI MALAYA UNIVERSITY OF MALAYA

PEPERIKSAAN IJAZAH SARJANA MUDA SAINS KOMPUTER / SARJANA MUDA TEKNOLOGI MAKLUMAT

EXAMINATION FOR THE DEGREE OF BACHELOR OF COMPUTER SCIENCE / BACHELOR OF INFORMATION TECHNOLOGY

SESI AKADEMIK 2014/2015 : SEMESTER I

ACADEMIC SESSION 2014/2015 : SEMESTER I

WXES2113 : Sistem Pengendalian Operating System

Dis 2014/Jan 2015 Masa: 2 jam Dec 2014/Jan 2015 Time: 2 hours

ARAHAN KEPADA CALON: INSTRUCTIONS TO CANDIDATES:

Calon dikehendaki menjawab **SEMUA** soalan (50 markah). Answer **ALL** questions (50 marks).

> (Kertas soalan ini mengandungi 5 soalan dalam 4 halaman yang dicetak) (This question paper consists of 5 questions on 4 printed pages)

1.. Terangkan istilah di bawah:

Explain the following terms:

a) Fragmentasi dalaman dan Fragmentasi luaran.

Internal fragmentation and External fragmentation.

b) Livelock dan Starvation.

Livelock and Starvation.

c) Multi-pengatucaraan dan Multi-pemprosessan.

Multiprogramming and multiprocessing.

(3 markah/marks)

2. a) Terangkan dengan ringkas Polisi-Polisi Penggantian Laman di bawah:

Explain briefly the following Page Replacement Policies:

- i) FIFO
- ii) LRU

(2 markah/marks)

b) Lukiskan gambarajah untuk menunjukkan bagaimana setiap Polisi Penggantian Laman yang menggunakan tiga (3) kerangka laman dan kerjakerja yang akan diproses adalah di dalam turutan berikut:

Draw a diagram to show how each of the Page Replacement Policy works by using three (3) Page Frames and the jobs to be processed is in the following order:

DCBADCEDCBAE

(8 markah/marks)

c) Dengan merujuk jawapan anda di 2(b), kira bilangan laman yang terganggu dan peratusan gagal/berjaya. Yang manakah algoritma penggantian laman yang terbaik? Kenapa anda berpendapat begitu?

Based on the answer given at 2(b), count the number of page interrupt and compute the failure and success ratios. Which of the page removal algorithms is the best? Why do you think so?

(4 markah/marks)

3. Diberi maklumat yang berikut:

Given the following information:

Kerja# Job #	Masa ketibaan Arrival Time	Kitaran CPU CPU Cycle
1	0	8
2	1	2
3	2	3
4	3	nen ni na 1 kina n
5	4 mlunino :	4

Lukiskan satu garis masa dan kira purata turnaround time dan purata masa menunggu yang diambil bagi setiap algoritma penjadualan berikut:

Draw a time line and calculate the average turnaround time and average waiting time for each of the following scheduling algorithms:

a) Kerja Terpendek Seterusnya.

Shortest Job Next.

(4 markah/marks)

b) Masa Baki Tersingkat.

Shortest Remaining Time.

(4 markah/marks)

4. Namakan DUA (2) jenis algoritma pemampatan data. Terangkan bagaimana algoritma pemampatan data tersebut berfungsi serta kegunaan mereka secara ringkas. Gunakan kaedah Pemampatan Front-End untuk memampatkan senarai berikut:

Name the **TWO** (2) types of data compression algorithm. Explain how the data compression algorithms work together with their usage in brief. Use Front-End Compression method to compress the following list:

POWE

POWELL

POWER

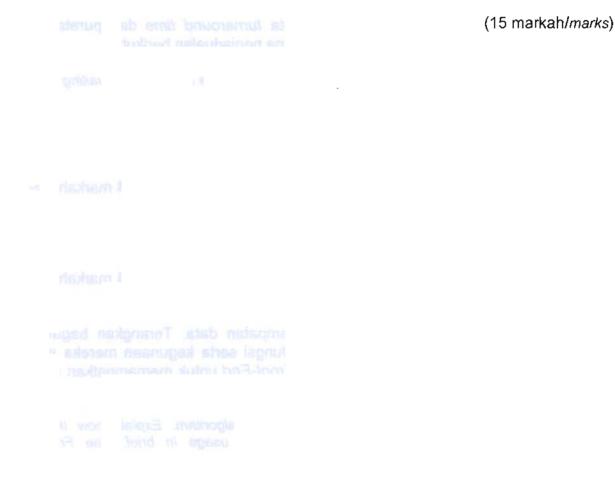
POWERS

PORUN

(10 markah/marks)

5. Senarai dan terangkan secara ringkas LIMA (5) matriks pengukuran prestasi sistem. Kira ketersediaan pemacu cakera keras dengan MTBF 1050 jam dan MTTR 8 jam. Menentukan sama ada cakera keras gagal atau tidak selepas 2400 minit kemudian. Tulis jawapan anda dalam format peratusan dalam 1 tempat perpuluhan. Andaikan e = 2.71828. (Petunjuk: Kira kebolehpercayaan pemacu cakera keras.)

List and explain briefly FIVE (5) of the system performance measurement matrix. Calculate the availability of a hard disk drive with an MTBF of 1050 hours and an MTTR of 8 hours. Determine whether the hard disk drive failed or did not fail after 2400 minutes later. Write your answer in percentage format and round up the answer to 1 decimal point. Assume e = 2.71828. (Hint: Calculate the reliability of the hard disk drive.)



TAMAT END