



UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**PEPERIKSAAN AKHIR
SEMESTER 2
SESI 2012/2013**

NAMA KURSUS	:	KEJURUTERAAN INDUSTRI DAN PENGURUSAN KUALITI
KOD KURSUS	:	DAJ21203
PROGRAM	:	1 DAJ
TARIKH PEPERIKSAAN	:	MAC 2013
JANGKA MASA	:	3 JAM
ARAHAN	:	JAWAB LIMA (5) SOALAN SAHAJA DARI TUJUH (7) SOALAN

KERTAS SOALAN INI MENGANDUNGI SEMBILAN BELAS (19) MUKA SURAT

SOALAN DI DALAM BAHASA MELAYU

S1 (a) Apakah definisi bagi 'kualiti'?

(2 Markah)

(b) Terangkan secara ringkas konsep bagi:

(i) Pemeriksaan

(ii) Kawalan Kualiti

(iii) Jaminan Kualiti

(iv)Pengurusan Kualiti Menyeluruh

(4 Markah)

(c) Bina Gambarajah Pareto menggunakan data dari **JADUAL S1(c)**. Maklumat ini menunjukkan jenis-jenis kecacatan produk.

(4 Markah)

(d) Data di **JADUAL S1(d)(i)** merupakan maklumat X-bar dan nilai R bagi 12 sampel bersaiz $n = 5$. Ianya diperolehi dari kawasan proses pemasangan bearing di mana pengukuran yang dibuat adalah pada 'diameter dalam' bearing tersebut.

(i) Sediakan Carta X-bar dan R bagi proses ini. Rujuk **JADUAL S1(d)(ii)** bagi menjawab soalan.

(ii) Adakah proses ini berada dalam kawalan? Nyatakan sebabnya, sama ada ya atau tidak.

(10 Markah)

S2 (a) Syarikat ABC mengeluarkan aksesori kereta untuk pasaran domestik. Data permintaan pelanggan bagi bahagian dalaman aksesori kereta tersebut adalah seperti dipaparkan oleh **JADUAL S2(a)**. Ramalan merupakan kaedah penting bagi menganggarkan kadar permintaan pada masa depan supaya syarikat sentiasa mampu memenuhi permintaan pelanggan. Sila sediakan nilai ramalan bagi bulan Oktober bagi syarikat ini menggunakan kaedah-kaedah yang diterangkan seperti maklumat (i)-(iv).

- (i) Kaedah naif.
- (ii) 4-tempoh purata pergerakan mudah.
- (iii) 3-tempoh purata pergerakan berpemberat dengan nilai pemberat ialah 0.5, 0.3 dan 0.2 (nilai tertinggi bagi masa terkini)
- (iv) Pelicinan eksponan mudah dengan $\alpha = 0.3$. Anggapkan ramalan bagi bulan Julai ialah 20.
- (v) Menggunakan kaedah regresi, ramalkan kadar permintaan pada bulan Disember.

$$b = \frac{n \sum xy - \sum x \sum y}{n \sum x^2 - (\sum x)^2} \quad a = \frac{\sum y - b \sum x}{n}$$

(15 Markah)

- (b) Sebuah syarikat pengeluaran pemampat bagi peti sejuk mempunyai kumpulan pemampat unik yang menunggu dua proses operasi terakhir sebelum pemampat tersebut dihantar kepada pelanggan. Operasi 1 mesti dilakukan sebelum Operasi 2, dan tugas ini mempunyai masa yang berbeza pada setiap operasi. Jam masa yang diperlukan seperti dalam **JADUAL S2(b)**.

Menggunakan Peraturan Johnson tentukan jujukan optimum. Kira jumlah masa siap dan masa melahu sekiranya ada.

(5 Markah)

- S3** (a) Satu kajian kerja telah dilakukan bagi proses melibatkan 6 elemen kerja secara berturutan. Data dari jam randik secara 'snap back' dalam minit bagi proses pemasangan manual dan automatik dipaparkan pada **JADUAL S3**. Elaun keletihan adalah 5%, elaun kelewatan 6% dan 7% bagi elaun kelegaan diri. Gaji pekerja adalah RM2000 sebulan.

- (i) Kira jumlah masa piawai bagi keseluruhan proses pemasangan tersebut.
- (ii) Sekiranya permintaan 10,000 unit sebulan, anggarkan bilangan operator yang diperlukan untuk proses pemasangan tersebut. Syarikat beroperasi 20 hari sebulan dengan hanya 8 jam per shift per hari.
- (iii) Sekiranya syarikat bercadang mengambil 50 orang pekerja, kirakan kos kerja lebih masa per hari bagi setiap pekerja untuk pengeluaran 10,000 unit sebulan. Bayangkan hanya 80% pekerja yang boleh melakukan kerja lebih masa dan kadar bayaran gaji lebih masa adalah 2 kali ganda gaji normal.

(10 Markah)

(b) Terangkan secara ringkas terminologi ergonomik di bawah:

- (i) Antropometrik
- (ii) Biomekanik
- (iii) Fisiologi kerja

(6 Markah)

(c) Bayangkan anda merupakan jurutera yang bertanggungjawab merekabentuk dan memfabrikasikan sebuah kerusi ergonomik. Apakah parameter kritikal yang perlu dititikberatkan dalam penghasilan produk ini?

(4 Markah)

S4 (a) Senaraikan empat (4) teknik dalam penilaian lokasi alternatif.

(4 Markah)

(b) Terangkan secara ringkas konsep analisis lokasi 'breakeven' dengan contoh yang bersesuaian bagi penilaian lokasi optimum.

(6 Markah)

(c) Amir Khan, seorang pembaik pulih mesin basuh bebas sedang membuat pertimbangan untuk membeli sebuah rumah di Batu Pahat, Johor. Ia bertujuan sebagai pusat operasi perniagaan kerja baik pulih tersebut. Sumber utama perniagaannya adalah 10 buah kedai dobi yang terletak di sekeliling kawasan Batu Pahat. Dia telah menggridkan peta kawasan bandar ini dan mengenalpasti kedudukan para pelanggannya termasuk anggaran panggilan telefon dari pelanggan yang bakal diterima setiap bulan. Rujuk **JADUAL S4**.

Dapatkan kedudukan optimum bagi rumah tersebut yang dapat meminimumkan jumlah pemberat secara lurus terhadap 10 pelanggannya. Kirakan juga kos pengangkutan optimum sekiranya kos adalah RM2.00/jarak.

(10 Markah)

- S5 (a)** Sebuah syarikat sedang mempertimbangkan untuk membina sebuah kilang baru samada di Bandar C atau Bandar D. Kilang sedia ada hanya di Bandar A dan Bandar B sahaja. Kilang sedia ada dan bakal kilang baru (jumlah tiga buah kilang sahaja) perlu membekalkan stok kepada lima buah gudang sedia ada seperti yang dipaparkan pada **JADUAL S5(a)**.

Menggunakan kaedah pengangkutan, tentukan lokasi terbaik bagi membina kilang baru tersebut yang juga sekaligus meminimumkan jumlah penggunaan kos.

(10 Markah)

- (b) JADUAL S5(b)(i)** menunjukkan lima tugas yang perlu diproses di ABC Sdn. Bhd. Masa memproses dan tarikh akhir turut ditunjukkan dalam jadual ini. Tentukan jujukan bagi proses ini berdasarkan kepada:

- (i) FCFS – ‘First Come, First Served’
- (ii) DDATE – ‘Earlier Due Date’
- (iii) SPT – ‘Shortest Processing Time’

Susun kesemua jawapan seperti di **JADUAL S5(b)(ii)**. Setiap jawapan perlu disokong oleh pengiraan yang berkaitan.

(10 Markah)

- S6 (a)** Terangkan secara ringkas konsep *Just-in-Time* (JIT) dan senaraikan dua (2) tujuan perlaksanaannya di lini pengeluaran.

(4 Markah)

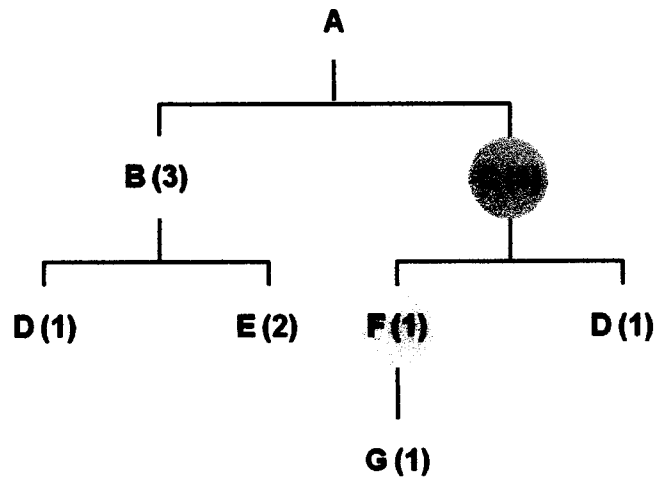
- (b)** Bandingkan antara kaedah kualitatif dan kuantitatif dalam pendekatan ramalan.

(6 Markah)

- (c)** Senaraikan lima (5) faedah pelaksanaan *Six Sigma* di industri pembuatan.

(5 Markah)

- (d) Merujuk kepada **RAJAH S6**, selesaikan soalan berikut. Sekiranya ada 2 unit bahagian B, 1 unit bahagian F dan 3 unit bahagian G sebagai inventori, berapa bilangan unit G dan D yang perlu dibeli bagi menghasilkan 10 unit produk A.



RAJAH S6

(5 Markah)

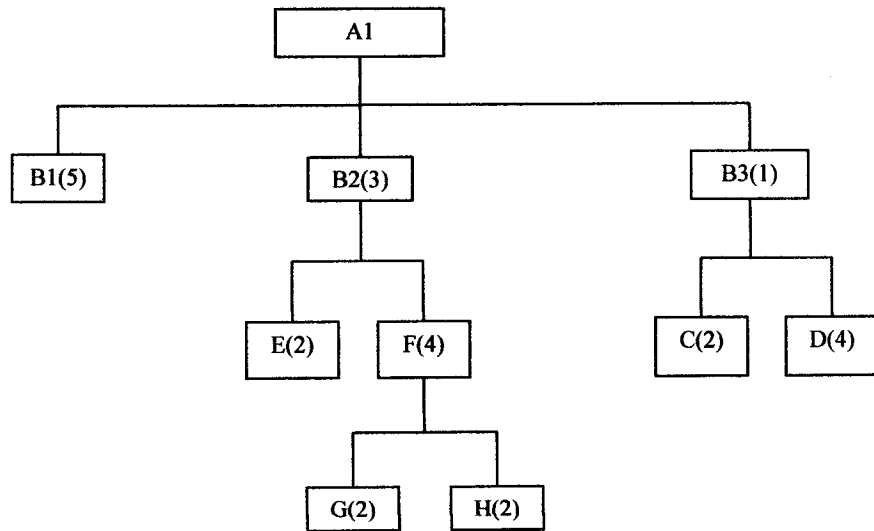
- S7 (a) Syarikat Faster Ride menggunakan 50,000 roda setahun untuk siri popular kereta kawalannya. Syarikat menghasilkan roda ini sendiri iaitu pada kadar 1,000 sehari. Kereta kawalan ini dipasang secara berterusan dalam setahun. Kos membawa ialah RM1 per roda per tahun. Kos setup untuk pengeluaran roda ialah RM50. Syarikat beroperasi 240 hari setahun. Tentukan:
- Saiz aliran optimum
 - Jumlah kos minimum tahunan bagi kos membawa dan setup.
 - Kitaran masa bagi saiz aliran optimum.

$$EOQ_{\text{product}} = \sqrt{\frac{2DC_o}{(1-(d/p))C_h}} \quad TC = \frac{D}{Q}S + \left(\frac{Q}{2}\right)\frac{(p-d)}{p}H$$

(8 Markah)

- (b) **RAJAH S7** menunjukkan struktur produk bagi sebuah syarikat pengeluaran. Maklumat permintaan pelanggan dan status inventori bagi setiap item adalah ditunjukkan dalam **JADUAL S7(b)(i)** dan **JADUAL S7(b)(ii)**.

Sediakan 'material requirement planning' (MRP) bagi item G dengan FOQ=300 dan stok keselamatan=90. Isikan maklumat berkaitan dalam **JADUAL S7(b)(iii)** dan sertakannya sekali dengan skrip jawapan anda.



RAJAH S7

(12 Markah)

SOALAN DI DALAM BAHASA INGGERIS

Q1 (a) What is the definition of 'quality'?

(2 Marks)

(b) Describe briefly the concept of:

(i) Inspection

(ii) Quality Control

(iii) Quality Assurance

(iv) Total Quality Management

(4 Marks)

(c) Construct a Pareto Chart using data as shown in **TABLE Q1(c)**. This data indicate type of product defects.

(4 Marks)

(d) The data in **TABLE Q1(d)(i)** are X-bar and R values for 12 samples of size $n = 5$. They were taken from bearings assembly process. The measurements are made on the inside diameter of the bearing.

(i) Set up the X-bar and R charts on this process. Refer **TABLE Q1(d)(ii)** to answer the question.

(ii) Does the process seem to be in control? Please state the reasons either yes or not for your answer.

(10 Marks)

Q2 (a) Company ABC produces car accessories for domestic market. Demand data for a certain interior car accessories by customer is shown in **TABLE Q2(a)**. Forecasting is an essential tool of anticipating for future demand so that the company can always ready its resources to fulfill the customers demand. Please assist this company to forecast the demand for month of October using the methods described by (i)-(iv).

- (i) Naïve method.
- (ii) 4-period simple moving average.
- (iii) 3-period weighted moving average with weightage value of 0.5, 0.3 and 0.2 (highest value for the most recent period).
- (iv) Simple exponential smoothing with $\alpha = 0.3$. Assume the forecast for month of July is 20.
- (v) Using regression technique, forecast the demand for month of December.

$$b = \frac{n \sum xy - \sum x \sum y}{n \sum x^2 - (\sum x)^2} \quad a = \frac{\sum y - b \sum x}{n}$$

(15 Marks)

- (b) A manufacturer of compressors for certain refrigerators has a group of unique compressors awaiting the last two processing operations before the compressors are sent to the customers. Operation 1 must be performed before operation 2, and the jobs have different time requirements for each operation. The hours required are shown in **TABLE Q2(b)**.

Use Johnson's Rule to determine the optimal sequence. Compute the total completion time and idle time if applicable.

(5 Marks)

- Q3** (a) A work study was conducted for a process which involved 6 work elements consecutively. Data from snap back stop watch in minutes for manual and automatic assembly process is shown in **TABLE Q3**. The allowances are 5% for fatigue, 6% for delay, and 7% for personal relief. The worker's salary is RM2000 per month.

- (i) Compute the standard time for the whole assembly process.
- (ii) If the demand is 10,000 unit per month, estimate the number of operators required for the assembly process. The company is operating 20 days per month and a single 8 hour shift per day.
- (iii) If the company willing to employ 50 workers, compute the over time cost per day for each worker for the production of 10,000 units per month. Assume only 80% workers are available for over time and the over time pay rate is 2.0 times of the normal wage.

(10 Marks)

(b) Briefly explain the following terminology related to ergonomic:

- (i) Anthropometrics
- (ii) Biomechanics
- (iii) Work physiology

(6 Marks)

(c) Assume that you are engineer assigned to design and fabricate an ergonomic chair. What would be the critical parameters need to be taken into account in order to realise your product?

(4 Marks)

Q4 (a) List down four (4) techniques available to evaluate location alternatives.

(4 Marks)

(b) Briefly describe concept of location breakeven analysis with appropriate example for evaluating optimal location.

(6 Marks)

(c) Amir Khan, an independent washing machine repairman, is considering purchasing a house in Batu Pahat, Johore that he will use as a base of operations for his repair business. Amir primary sources of business are 10 laundry shops located throughout the Batu Pahat area. He has overlaid a grid on a map of the city and determined the following locations for these clients as well as the expected number of calls per month he receives. Refer **TABLE Q4**.

Find the optimal location of his house to minimise the weighted sum of the rectilinear to the 10 customers. Compute also cost of transportation for optimum location if the cost is RM2.00/distance.

(10 Marks)

- Q5 (a)** A company owner is considering to construct a new factory either in city C or city D. The existing factories currently in city A and city B only. The existing factories and the new factory (total of three factories) need to supply stock to five existing warehouses as shown in **TABLE Q5(a)**.

Using transportation method, determine the best location for the new factory so that the minimum total cost can be achieved.

(10 Marks)

- (b) TABLE Q5(b)(i)** indicate five jobs to be processed at ABC Sdn. Bhd. Processing times and due dates are given in the table. Determine the sequence of processing according to:

- (i) FCFS – First Come, First Served
- (ii) DDATE – Earlier Due Date
- (iii) SPT – Shortest Processing Time

Arrange your final answer as in **TABLE Q5(b)(ii)**. Each answer must be support by related calculation.

(10 Marks)

- Q6 (a)** Explain briefly the concept of Just-in-Time (JIT) and list down two (2) purpose of Just-in-Time (JIT) implementation in lean production.

(4 Marks)

- (b)** Differentiate between qualitative and quantitative methods in forecasting approaches.

(6 Marks)

- (c)** List down five (5) benefits Six Sigma implementation in manufacturing industry.

(5 Marks)

- (d) Refer to **FIGURE Q6** and solve following question. If there are 2 units of B, 1 unit of F, and 3 units of G in inventory, how many units of G and D must be purchased to produce 10 units of product A?

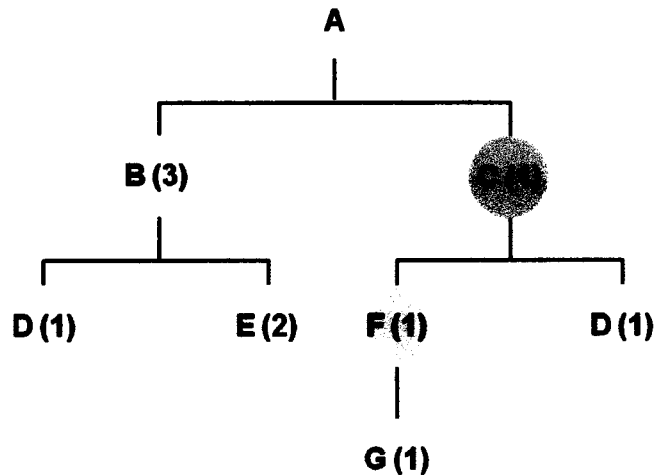


FIGURE Q6

(5 Marks)

- Q7** (a) Faster Ride company uses 50,000 wheels per year for its popular control car series. The firm makes its own wheels, which it can produce at a rate of 1,000 per day. The control cars are assembled uniformly over the entire year. Carrying cost is RM1 per wheel a year. Setup cost for a production run of wheels is RM50. The firm operates 240 days per year. Determine the:
- Optimal run size.
 - Minimum total annual cost for carrying and setup.
 - Cycle time for the optimal run size.

$$EOQ_{\text{product}} = \sqrt{\frac{2DC_o}{(1-(d/p))C_h}} \quad TC = \frac{D}{Q}S + \left(\frac{Q}{2}\right)\frac{(p-d)}{p}H$$

(8 Marks)

- (b) **FIGURE 7** shows a product structure for a manufacturing company. Data of customer demands and inventory status for all items are shown in **TABLE Q7(b)(i)** and **TABLE Q7(b)(ii)**.

Prepare a material requirement planning (MRP) for item G with FOQ=300 and safety stock=90. Fill in related information in **TABLE Q7(b)(iii)** and attach it along with your answer script.

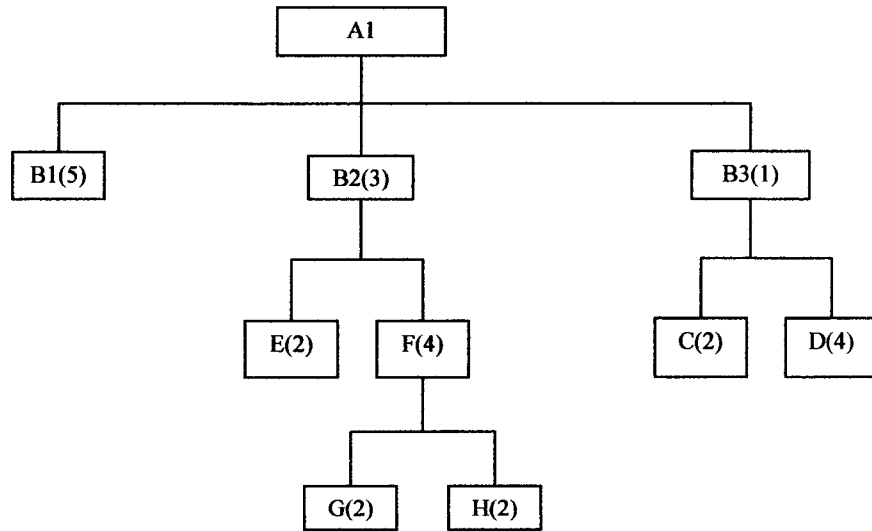


FIGURE Q7

(12 Marks)

- END OF QUESTION -

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SEMESTER / SESI : SEM 2 / 2012/2013
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KURSUS : KEJURUTERAAN INDUSTRI DAN
COURSE **PENGURUSAN KUALITI**

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JADUAL S1(c) / TABLE Q1(c) : Type of Product Defects

Defect	Operator	No. of Defects	Defect	Operator	No. of Defects
Bent Valve Stems	10	48	Oversized Stems	10	0
	20	0		20	0
	30	0		30	30
	40	0		40	0
	50	0		50	0
	60	0		60	0
	70	0		70	0
	80	0		80	0
	90	0		90	0
Short Overall Length	10	0	Bad Grind	10	0
	20	76		20	0
	30	0		30	0
	40	0		40	21
	50	0		50	0
	60	0		60	25
	70	0		70	0
	80	0		80	0
	90	0		90	28
Undersized Stems	10	0	Undersized Grooves	10	0
	20	0		20	0
	30	179		30	0
	40	27		40	100
	50	0		50	250
	60	4		60	75
	70	0		70	100
	80	0		80	200
	90	0		90	0

PEPERIKSAAAN AKHIR

FINAL EXAMINATION

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JADUAL S1(d)(i) / TABLE Q1(d)(i): Sampling data of inspection

Sample Number	X-bar	Range
1	345	3
2	342	4
3	316	2
4	386	9
5	350	5
6	341	6
7	326	4
8	338	3
9	348	2
10	336	5
11	319	3
12	386	6

JADUAL S1(d)(ii) / TABLE Q1(d)(ii)

Factors for Computing Central Lines and 3 σ Control Limits for \bar{X} , s and R Charts.

OBSERVATIONS IN SAMPLE, n	CHART FOR AVERAGES			CHART FOR STANDARD DEVIATIONS				CHART FOR RANGES						
	FACTORS FOR CONTROL LIMITS			FACTOR FOR CENTRAL LINE	FACTORS FOR CONTROL LIMITS				FACTOR FOR CENTRAL LINE	FACTORS FOR CONTROL LIMITS				
	A	A ₂	A ₃	c ₄	B ₃	B ₄	B ₅	B ₆	d ₂	d ₁	D ₁	D ₂	D ₃	D ₄
2	2.121	1.880	2.659	0.7979	0	3.267	0	2.606	1.128	0.853	0	3.686	0	3.267
3	1.732	1.023	1.954	0.8862	0	2.568	0	2.276	1.693	0.888	0	4.358	0	2.574
4	1.500	0.729	1.628	0.9213	0	2.266	0	2.088	2.059	0.880	0	4.698	0	2.282
5	1.342	0.577	1.427	0.9400	0	2.089	0	1.964	2.326	0.864	0	4.918	0	2.114
6	1.225	0.483	1.287	0.9515	0.030	1.970	0.029	1.874	2.534	0.848	0	5.078	0	2.004
7	1.134	0.419	1.182	0.9594	0.118	1.882	0.113	1.806	2.704	0.833	0.204	5.204	0.076	1.924
8	1.061	0.373	1.099	0.9650	0.185	1.815	0.179	1.751	2.847	0.820	0.388	5.306	0.136	1.864
9	1.000	0.337	1.032	0.9693	0.239	1.761	0.232	1.707	2.970	0.808	0.547	5.393	0.184	1.816
10	0.949	0.308	0.975	0.9727	0.284	1.716	0.276	1.669	3.078	0.797	0.687	5.469	0.223	1.777
11	0.905	0.285	0.927	0.9754	0.321	1.679	0.313	1.637	3.173	0.787	0.811	5.535	0.256	1.744
12	0.866	0.266	0.886	0.9776	0.354	1.646	0.346	1.610	3.258	0.778	0.922	5.594	0.283	1.717
13	0.832	0.249	0.850	0.9794	0.382	1.618	0.374	1.585	3.336	0.770	1.025	5.647	0.307	1.693
14	0.802	0.235	0.817	0.9810	0.406	1.594	0.399	1.563	3.407	0.763	1.118	5.696	0.328	1.672
15	0.775	0.223	0.789	0.9823	0.428	1.572	0.421	1.544	3.472	0.756	1.203	5.741	0.347	1.653
16	0.750	0.212	0.763	0.9835	0.448	1.552	0.440	1.526	3.532	0.750	1.282	5.782	0.363	1.637
17	0.728	0.203	0.739	0.9845	0.466	1.534	0.458	1.511	3.588	0.744	1.356	5.820	0.378	1.622
18	0.707	0.194	0.718	0.9854	0.482	1.518	0.475	1.496	3.640	0.739	1.424	5.856	0.391	1.608
19	0.688	0.187	0.698	0.9862	0.497	1.503	0.490	1.483	3.689	0.734	1.487	5.891	0.403	1.597
20	0.671	0.180	0.680	0.9869	0.510	1.490	0.504	1.470	3.735	0.729	1.549	5.921	0.415	1.585

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KURSUS : KEJURUTERAAN INDUSTRI DAN
COURSE PENGURUSAN KUALITI

KOD KURSUS : DAJ21203
COURSE CODE

JADUAL S2(a) / TABLE Q2(a): Demand data

Month	Demand
Jan	17
Feb	19
Mar	18
April	15
May	20
June	18
July	22
Aug	20
Sept	23

JADUAL S2(b) / TABLE Q2(b): Operation time for different jobs

	Job									
	1	2	3	4	5	6	7	8	9	10
Operation 1	1	5	8	3	9	4	7	2	4	9
Operation 2	8	3	1	2	8	6	7	2	4	1

JADUAL S3 / TABLE Q3: Data of work study

Work Elements	Method of Assembly	Rating	Cycle Time (minutes)				
			1	2	3	4	5
A	Manual	90%	5	4.3	4.5	4.8	4.6
B	Manual	85%	12.3	13.4	10.0	14.5	13.0
C	Automatic		4	4	4	4	4
D	Manual	110%	8.9	7.7	9.0	9.3	8.6
E	Manual	115%	15.8	14.6	17.3	18.0	16.7
F	Automatic		6	6	6	6	6

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COURSE **PENGURUSAN KUALITI**

KOD KURSUS : DAJ21203
COURSE CODE

JADUAL S4 / TABLE Q4: Customers locations at Batu Pahat

Client	Grid Location	Expected Calls per Month
1	(5, 8)	2
2	(10, 3)	1
3	(14, 14)	1
4	(2, 2)	3
5	(1, 17)	1
6	(18, 25)	1/2
7	(14, 3)	1/4
8	(25, 4)	4
9	(35, 1)	3
10	(16, 21)	1/6

JADUAL S5(a) / TABLE Q5(a): Total cost from plant to each warehouse (RM/unit)

From \ To		Warehouse					Capacity
		V	W	X	Y	Z	
Plant	A (existing)	15	5	6	3	8	15,000
	B (existing)	2	7	4	10	5	15,000
	C	3	6	7	8	9	10,000
	D	3	4	9	5	10	10,000
	Demand	5,000	7,000	13,000	8,000	7,000	

**PEPERIKSAAAN AKHIR
FINAL EXAMINATION**

SEMESTER / SESI : SEM 2 / 2012/2013
SEMESTER / SESSION

PROGRAM : 1 DAJ
PROGRAMME

KURSUS : KEJURUTERAAN INDUSTRI DAN
COURSE PENGURUSAN KUALITI

KOD KURSUS : DAJ21203
COURSE CODE

JADUAL S5(b)(i) / TABLE Q5(b)(i): Job sequence for ABC Sdn.Bhd.

Job	Job work (processing) time (Days)	Job Due Date
A	5	7
B	1	5
C	7	17
D	2	14
E	8	22

JADUAL S5(b)(ii) / TABLE Q5(b)(ii): Comparison sequencing data for ABC Sdn.Bhd.

Rule	Average Completion Time	Average Tardiness	No. of Jobs Tardy	Maximum Tardiness
FCFS				
DDATE				
SPT				

JADUAL S7(b)(i)/ TABLE Q7(b)(i): Master production schedule for A1

Week	4	5	6	7	8	9
Demand			76	87		115

JADUAL S7(b)(ii)/ TABLE Q7(b)(ii): Inventory status

Item	Rule	Lead Time (week)	On-hand inventory	Item	Rule	Lead Time (week)	On-hand inventory
B1	FOQ=50	2	30	E	FOQ=50	1	0
B2	POQ (P=2)	1	30	F	L4L	1	0
B3	FOQ=50	1	44	G	FOQ=300 safety stock = 90	1	150
C	FOQ=70	3	10	H	FOQ=100	4	7
D	FOQ=50	2	11	A1	L4L	1	0

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JADUAL S7(b)(iii)/ TABLE Q7(b)(iii): MRP Table

Item:	Lot Size:							
	Lead Time:							
	Week							
Gross Requirements								
Scheduled Receipts								
Projected-on-hand inventory								
Planned Receipts								
Planned Order Releases								

Item:	Lot Size:							
	Lead Time:							
	Week							
Gross Requirements								
Scheduled Receipts								
Projected-on-hand inventory								
Planned Receipts								
Planned Order Releases								

Item:	Lot Size:							
	Lead Time:							
	Week							
Gross Requirements								
Scheduled Receipts								
Projected-on-hand inventory								
Planned Receipts								
Planned Order Releases								

Item:	Lot Size:							
	Lead Time:							
	Week							
Gross Requirements								
Scheduled Receipts								
Projected-on-hand inventory								
Planned Receipts								
Planned Order Releases								