UNIVERSITI TEKNOLOGI MALAYSIA

Sekolah Pendidikan Profesional dan Pendidikan Berterusan (SPACE)

FINAL EXAMINATION / *PEPERIKSAAN AKHIR*

SEMESTER II – SESSION 2021/ 2022 / *SEMESTER II – SESI 2021/2022*

COURSE CODE *KOD KURSUS*	:DDWG2223
COURSE NAME *NAMA KURSUS*	: INTRODUCTION TO OPERATION MANAGEMENT *: PENGENALAN KEPADA PENGURUSAN OPERASI*
YEAR / PROGRAMME *TAHUN / PROGRAM*	: 2 DDWG
DURATION *TEMPOH*	: 3 HOURS (INCLUDING SUBMISSION HOUR) – REFER ATTACHMENT 1 *3 JAM (TERMASUK MASA PENGHANTARAN) – RUJUK LAMPIRAN 1*
DATE *TARIKH*	: JUNE/JULY 2022 *JUN/JULAI 2022*

INSTRUCTION / *ARAHAN:*

1. Answer **ALL** questions and write your answers on the answer sheet.
   *Jawab **SEMUA** soalan dan tulis jawapan anda pada kertas jawapan.*

2. Write your name, matric no., identity card no., course code, course name, section no. and lecturer's name on the first page (in the upper left corner) and every page thereafter on the answer sheet.
   Tulis nama anda, no. matrik,no.kad pengenalan, kod kursus, nama kursus, no. seksyen dan nama pensyarah pada muka surat pertama (penjuru kiri atas) kertas jawapan dan pada setiap muka surat jawapan.

3. Each answer sheet must have a page number written at the bottom right corner.
   Setiap helai kertas jawapan mesti ditulis nombor muka surat pada bahagian bawah penjuru kanan.

4. Answers should be handwritten, neat and clear.
   Jawapan hendaklah ditulis tangan, kemas dan jelas menggunakan huruf cerai.

WARNING / *AMARAN*

Students caught copying / cheating during the examination will be liable for disciplinary actions and the faculty may recommend the student to be expelled from sitting for exam.
Pelajar yang ditangkap meniru / menipu semasa peperiksaan akan dikenakan tindakan disiplin dan pihak fakulti boleh mengesyorkan pelajar diusir dari menduduki peperiksaan.

This examination paper consists of **10** pages including the cover.
*Kertas soalan ini mengandungi **10** muka surat termasuk kulit hadapan.*

ONLINE EXAMINATION RULES AND REGULATIONS
PERATURAN PEPERIKSAAN SECARA DALAM TALIAN

1. Student must carefully listen and follow instructions provided by invigilator.
   Pelajar mesti mendengar dan mengikuti arahan yang diberikan oleh pengawas peperiksaan dengan teliti.

2. Student is allowed to start examination only after confirmation of invigilator if all needed conditions are implemented.
   Pelajar dibenarkan memulakan peperiksaan hanya setelah pengesahan pengawas peperiksaan sekiranya semua syarat yang diperlukan telah dilaksanakan.

3. During all examination session student has to ensure, that he is alone intheroom.
   Semasa semua sesi peperiksaan pelajar harus memastikan bahawa dia bersendirian didalam bilik.

4. During all examination session student is not allowed to use any other devices, applications except other sites permitted by course lecturer.
   Sepanjang sesi peperiksaan pelajar tidak dibenarkan menggunakan peranti dan aplikasi lain kecuali yang dibenarkan oleh pensyarah kursus.

5. After completing the exam student must inform invigilator via the set communication platform (eg.WhatsApp etc.) about completion of exam and after invigilator's confirmation leave examination session.
   Selepas peperiksaan selesai, pelajar mesti memaklumkan kepada pengawas peperiksaan melalui platform komunikasi yang ditetapkan (contoh: Whatsapp dan lain-lain) mengenai peperiksaan yang telah selesai dan meninggalkan sesi peperiksaan selepas mendapat pengesahan daripada pengawas peperiksaan.

6. Any technical issues in submitting answers online have to be informed to respective lecturer within the given 30 minutes. Request for re-examination or appeal will not be entertain if complains are not made by students to their lecturers within the given 30minutes.
   Sebarang masalah teknikal dalam menghantar jawapan secara dalam talian perlu dimaklumkan kepada pensyarah masing-masing dalam masa 30minit yang diberikan.Permintaan untuk pemeriksaan semula atau rayuan tidak akan dilayan sekiranya aduan tidak dibuat oleh pelajar kepada pensyarah mereka dalam masa 30minit yang diberikan.

7. During online examination, the integrity and honesty of the student is also tested. At any circumstances student is not allowed to cheat during examination session. If any kind of cheating behaviour is observed, UTM have a right to follow related terms and provisions stated in the respective Academic Regulations and apply needed measures.
   Semasa peperiksaan dalam talian, integriti dan kejujuran pelajar juga diuji. Walau apa pun keadaan pelajar tidak dibenarkan menipu semasa sesi peperiksaan.Sekiranya terdapat sebarang salahlaku,UTM berhak untuk mengikuti terma yang dinyatakan dalam Peraturan Akademik.

Excerpts from online final exam guidelines

Petikan daripada panduan peperiksaan akhir dalam talian Universiti Teknologi Malaysia

SECTION A: ANSWER ALL THE QUESTIONS GIVEN. (10 MARKS)

[SEKSYEN A: JAWAB SEMUA SOALAN DIBERIKAN] [10 MARKAH]

The global supply chain currently thrown into chaos due to the Suez Canal incident. On 23 March 2021, the Suez Canal, one of the most heavily used shipping routes, was blocked by vast container ship which is the Ever Given. Affecting over 400 vessels scheduled to pass through the canal in the East-West and West-East directions. Such vessels experienced a dilemma of the use of routes and schedules. Other victims included vessels that were scheduled to arrive at/pass through the canal, shippers, consignees, ship operators, ship owners, and container terminals. According to a Lloyd's List estimate, the waiting costs caused by the incident amounted to $9.6bn per day, with westbound traffic costing $5.1billion a day and eastbound around $4.5billion. It is also a crucial channel for natural gas, transporting cargo and oil.

The Ever Given incident – which now has developed into a financial dispute between the vessel's Japanese owners and the Suez Canal Authority – has had repercussions on the global supply chain and the maritime industry.

[Rantaian bekalan global kini dilanda huru-hara akibat insiden Terusan Suez. Pada 23 Mac 2021, Terusan Suez, salah satu laluan perkapalan yang paling banyak digunakan, telah disekat oleh kapal kontena yang besar iaitu Ever Given. Menjejaskan lebih 400 kapal yang dijadualkan melalui terusan di arah Timur-Barat dan Barat-Timur. Kapal sedemikian mengalami dilema penggunaan laluan dan jadual. Mangsa lain termasuk kapal yang dijadualkan tiba di/melalui terusan, pengirim, penerima, pengendali kapal, pemilik kapal, dan terminal kontena. Menurut anggaran Senarai Lloyd, kos menunggu yang disebabkan oleh insiden itu berjumlah $9.6 bilion sehari, dengan trafik ke arah barat menelan kos $5.1 bilion sehari dan ke arah timur sekitar $4.5 bilion. Laluan ini juga adalah laluan penting bagi penghantaran gas semulajadi, penghantaran kargo dan minyak.

Insiden Ever Given - yang kini telah berkembang menjadi pertikaian kewangan antara pemilik kapal Jepun dan Pihak Berkuasa Terusan Suez - telah memberi kesan kepada rantaian bekalan global dan industri maritim.]

a) Based on above incident, describe the impact of this incident towards global supply chain and world economy.

[Berdasarkan insiden diatas, terangkan kesan insiden ini kepada rantaian bekalan global dan ekonomi dunia.]

(4m)

b) In your opinion, what are the initiatives that can be taken to overcome this problem at 1(a) question?

[Pada pendapat anda, apakah initiatif yang dapat dilakukan untuk mengatasi masalah ini pada soalan 1(a)?

(6m)

SECTION B: ANSWER ALL THE QUESTIONS GIVEN. (50 MARKS)

[SEKSYEN B: JAWAB SEMUA SOALAN DIBERIKAN] [50 MARKAH]

Q1. Sandy Potters.Co spent over RM3000 on a new pottery oven last year in the belief that it would cut annual energy usage 15% over the old pottery oven. This pottery oven is an oven that turns "greenware" into finished pottery. Sandy is concerned that the new pottery oven requires extra labor hours for its operation. Sandy wants to check the energy savings of the new machine, and also to look over other measures of their productivity to see if the change really was beneficial. Data as below.

[Sandy Potters.Co telah membelanjakan lebih RM3000 pada ketuhar tembikar pada tahun lepas dengan kepercayaan bahawa ianya akan menjimatkan penggunaan tenaga sebanyak 15% berbanding ketuhar tembikar lama. Sandy bimbang jika ketuhar tembikar baru itu memerlukan jumlah jam buruh yang lebih untuk pengoperasiannya. Sandy ingin mengenalpasti penjimatan tenaga pada mesin baru, dan juga melihat produktivitinya jika perubahan tersebut benar-benar member manfaat. Data adalah seperti dibawah.]

	Year *[Tahun]* 2020	Year *[Tahun]* 2021
Production (finished units) *[Pengeluaran (unit siap)]*	4000	4000
Greenware (pounds) *[Tanah liat (pound)*	5000	5000
Labor (hours) *[Buruh (jam)]*	350	390
Capital (RM) *[Modal (RM)]*	15000	20000
Energy (kWh) *[Tenaga (kWh)]*	4000	2800

Were the modifications beneficial?

[Adakah perubahan ini bermanfaat?]

(10m)

Q2. A refrigerator manufacturer manager has three different mechanisms that can be installed. The different mechanisms have three different setup costs (overheads) and variable costs and, therefore, the profit from the refrigerator is dependent on the volume of sales. The anticipated payoffs are as follows.

[Pengurus pengeluar peti sejuk mempunyai tiga mekanisma berbeza yang boleh dipasang. Mekanisma yang berbeza mempunyai tiga kos persediaan (overhed) dan kos berubah yang berbeza dan, oleh itu, keuntungan daripada anak patung adalah bergantung kepada jumlah jualan. Ganjaran yang dijangkakan adalah seperti berikut.]

Decision	Light Demand *[Permintaan Sedikit]*	Moderate Demand *[Permintaan Sederhana]*	Heavy Demand *[Permintaan Banyak]*
Condensor action *[Tindakan kondensor]*	RM220,000	RM170,000	RM120,000
Evaporate action *[Tindakan penyejatan]*	RM350,000	RM320,000	RM500,000
Expansion valve action *[Tindakan injap pengembangan]*	-RM500,000	RM340,000	RM700,000
Probability *[Kebarangkalian]*	0.2	0.3	0.5

a) If the manager were an optimist, what decision would he choose?
[Jika pengurus seorang yang optimis, apakah keputusan yang akan dipilihnya]

(1m)

b) If he uses the maximin criterion, which decision will he choose?
[Jika dia menggunakan kriteria maximin, keputusan manakah yang akan dia pilih?]

(1m)

c) If he uses the equally likely criterion, which decision will he choose?
[Jika dia menggunakan kriteria yang sama kemungkinannya, keputusan manakah yang akan dia pilih?]

(1m)

d) Calculate Expected Monetary Value (EMV) for each decision. Which decision yields the highest EMV?
[Kira Nilai Kewangan Jangkaan (EMV) bagi setiap keputusan?. Keputusan manakah yang menghasilkan EMV yang paling tinggi?]

(4m)

e) What is the Expected Value of Perfect Information (EVPI)?
[Apakah Nilai Jangkaan Maklumat Sempurna (EVPI)?]

(3m)

Q3. The Donna Mosier Food Group owns factories in three towns (W, Y, and Z), which distribute to three retail food shops in three other cities (A, B, and C). The following table summarizes factory availabilities, projected store demands, and unit shipping costs:

Kumpulan Donna Mosier memiliki kilang makanan di tiga bandar (W, Y, dan Z), yang mengedarkan kepada tiga kedai makan di tiga bandar lain (A, B dan C). Jadual berikut meringkaskan kos ketersediaan kilang, unjuran permintaan kedai dan kos penghantaran unit:

From *[Daripada]*	To *[Kepada]*			Supply *[Pembekalan]*
	Food Store A *[Kedai Makan A]*	Food Store B *[Kedai Makan B]*	Food Store C *[Kedai Makan C]*	
W	$6	$18	$8	100
Y	$17	$13	$19	60
Z	$20	$10	$24	40
Demand *[Permintaan]*	50	80	70	

Find an initial solution to the following transportation problem.
[Cari penyelesaian awal kepada masalah pengangkutan berikut.]

a) Use the northwest-corner method.
[Menggunakan kaedah pepenjuru barat laut.]

(4m)

b) Use the intuitive lowest-cost approach.
[Menggunakan pendekatan intuitif kos terendah.]

(4m)

c) Which method is the best? Give reason for your answer.
[Kaedah mana yang terbaik? Berikan sebab untuk jawapan anda.]

(2m)

Q4. Students are asked to develop a flowchart for a car service centre. The process must start once the customers enters the service centre until their received their serviced car.

[Pelajar diminta untuk membina carta alir untuk pusat servis kereta. Proses tersebut haruslan dimulakan dari pelanggan masuk ke pusat servis tersebut sehingga pelanggan menerima kenderaan yang telah diservis.]

(10m)

Q5. The following is a study on the work measurement for report preparation activities in a telecommunications company. Based on the observations of table 1 and taking into account personal factors (7%), fatigue (5%) and delay (3%), calculate:

[Berikut adalah kajian terhadap pengukuran kerja bagi aktiviti penyediaan laporan di sebuah syarikat telekomunikasi. Berdasarkan pemerhatian jadual 1 dan mengambil kira faktor personal (7%), keletihan (5%) dan delay (3%), kirakan:]

Element *[Elemen]*	*Observed time (minutes)* *[Masa diperhatikan (minit)]*					Performance rating *[Kadar prestasi]*
Prepare daily reports *[Sediakan laporan harian]*	35	40	33	42	39	120%
Photocopy results *[Fotostat keputusan]*	12	10	36[a]	15	13	110%
Label and package reports *[Label dan pakej keputusan]*	3	3	5	5	4	90%
Distribute reports *[Edarkan keputusan]*	15	18	21	17	45[b]	85%

[a] Photocopying machine broken *[Mesin fotostat rosak]/*

[b] Power outage *[Gangguan Kuasa]*

a) Average time for each element
[Masa purata setiap elemen]

(4m)

a) Normal time for each element
[Masa normal setiap elemen]

(4m)

b) Standard time
[Masa piawai]

(2m)

-END OF QUESTIONS-

-[SOALAN TAMAT]-