UNIVERSITY OF JOHANNESBURG

FACULTY OF ENGINEERING AND BUILT ENVIRONMENT
DEPARTMENT OF QUALITY AND OPERATIONS MANAGEMENT
JUNE 2016 MAIN EXAMINATION

PROGRAMME	:	DIPLOMA OPERATIONS MANAGEMENT MANAGEMENT SERVICES NATIONAL DIPLOMA MANAGEMENT TRANSPORTATION
SUBJECT	:	OPERATIONS MANAGEMENT I A
CODE	:	OPM11A1/BPJ11A1
DATE	:	11 JUNE 2016
DURATION	:	3 HOURS
TIME	:	(12:30 – 15:30)
TOTAL MARKS	:	100
WEIGHTS	:	50

EXAMINER(S)	:	MR S. MUKWAKUNGU
(EXTERNAL) MODERATOR	:	MR S. MOKOELE (UNISA)
NUMBER OF PAGES	:	13 PAGES AND SCANNER SHEET

INSTRUCTIONS TO CANDIDATES:

- You will only submit your answer sheet together with the scanner sheet
- Answer ALL questions
- Answer **SECTION A** in the scanner sheet provided, and **SECTION B** in the answer sheet.
- This is a closed book assessment.
- Leave margins and spaces between the questions.
- Number your answers clearly.
- Write neatly and legibly
- The general University of Johannesburg policies, procedures and rules pertaining to written assessments apply to this assessment.

SECTION A – MULTIPLE CHOICE QUESTIONS (USE SCANNER SHEET) **25 MARKS**

CASE STUDY 1 – PRODUCTIVITY AT SIMBA CHIPS **30 MARKS**

You are a student registered for Operations Management at the University of Johannesburg. As part of your curriculum, you have been required to conduct an in-service training at any company where you will put in practice the theoretical knowledge you have acquired this past semester. After searching and applying at various companies, you manage to obtain a positive feedback from Simba Chips. The company is a popular potato chip manufacturer that has been producing its products in South Africa since 1956, when it was established by the Greyvensteyn family. Since then the company grew to be a very successful organisation, which is now wholly owned by PepsiCo, and is the local producer of many of that company's Frito-Lay brands. The company runs its operations in Kempton Park where all its brands are produced.

You are meeting for an interview with Mr Thembiso Vilakazi, the Operations Manager at the plant. The purpose of the interview is to ensure that you are the right candidate for the job, considering that there are 35 other graduates who are also going to be interviewed. You have been informed that the meeting is also an assessment of your understanding of certain critical areas the company has placed priority on in the search for the right candidate. These areas are:

- Understanding of operations management as an organisation function and productivity
- Operations strategies
- Forecasting
- Design of goods and services
- Process strategies

From: Vikazi, Thembiso
Sent: 25 May 2016 11:13 AM
To: UJ Student, You
Subject: RE: Enquiry Regarding the Meeting
Hello UJ Student

Thanks for the enquiry, I really appreciate it. It shows commitment and a drive to succeed.
Regarding the format of the interview, please be advised that it will a short assessment on what you know about operations management. Therefore, please come prepared as the assessment will start at 08h30 to end at 11h30.

Kind regards,

www.simba.co.za

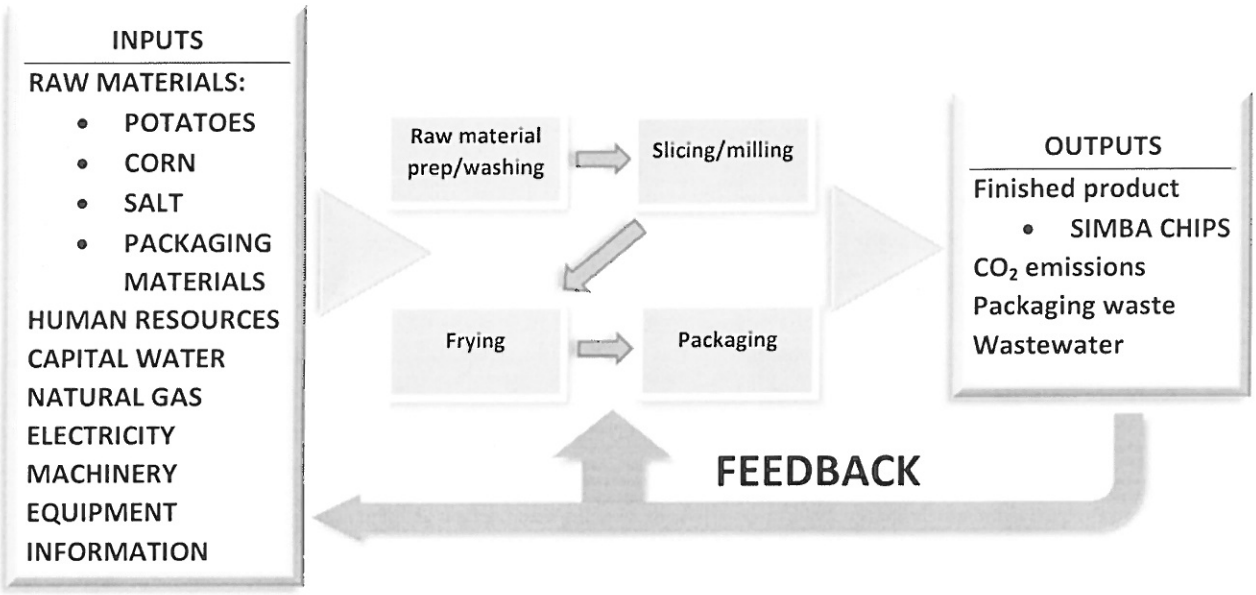
Mr T. Vilakazi
Operations Manager
SIMBACHIPS

For the purpose of the interview, Mr Vilakazi in a previous e-mail suggested the following:

At the meeting you were given a case study specially prepared by Mr Vilakazi for you to do.

OPERATIONS MANAGEMENT AND PRODUCTIVITY

Our company, Simba Chips, is a very successful company due to the empowerment of our employees and the value we attribute to our customers. When it comes to empowerment, we make sure that all our employees understand that information is the most important asset in our organisation. This also applies to you. Below is information regarding our production process for Simba Chips:



The above is a general representation of our production process implemented on 3 lines. These lines operate on a 24-hour shift (Mondays to Thursdays), and 16-hour shift (Fridays to Sundays) to produce 150 g packets of chips. In 2014, each line was staffed and had a weekly production level as follow:

- Line 1 had 7 operators (Mondays to Thursdays) and 5 operators (Fridays to Sundays), and its production levels were as follow:
  - Mondays to Thursdays, the line production level was constant at 1560000 packets and Fridays to Sundays, 1075000 packets.
- Line 2 had 9 operators (Mondays to Thursdays) and 5 operators (Fridays to Sundays), and its production levels were as follow:
  - Mondays to Thursdays, the line production level was constant at 1940000 packets and Fridays to Sundays, 1200000 packets.
- Line 3 had 5 operators (Mondays to Thursdays) and 2 operators (Fridays to Sundays), with a constant production level as follow:
  - Mondays to Thursdays, the line production level was constant at 1067500 packets and Fridays to Sundays, 900000 packets.

It is important to indicate that each employee, back in 2014 was paid at a rate of R16 per hour, on Mondays to Thursdays. But on Fridays to Sundays, an employee was paid the normal rate plus one third of that normal rate. Water and electricity were paid at R0.45 per kilolitre and R0.95 per kilowatt. The table below shows a summary of a weekly usage of water and electricity for each production line in 2014:

	Water (Kilolitre)	Electricity (kW)
Line 1	1525	6750
Line 2	2015	9015
Line 3	1015	4550

Aggregated information regarding weekly raw material usage for all was as follow, in 2014:

Potatoes	2500 tonnes	@ R27.16 per tonne
Corn	5650 tonnes	@ R15.96 per tonne
Salt	526 kg	@ R7.50 per kg

The company's Chief Operations Officer, Miss Matshidiso Morero, while on a trip in the United States of America, visited Frito-Lay's production plant where she learned about a new technology using bio-energy in order to heat up the fryers. She made a proposal to the board of directors at Simba Chips that the technology if implemented in South Africa will improve the productivity of the company's plant by an average of 15% for its single factor productivity and 8% increase in multifactor productivity.

Below is all you need to know regarding the production as well as resources usage for each of the three lines for the year 2015 after implementation of the new technology.

The three lines still operated on a 24-hour shift (Mondays to Thursdays), and 16-hour shift (Fridays to Sundays) to produce 150 g packets of chips. In 2015, the number of staff allocated to each line remained exactly the same as in 2014, with only the cost of labour increasing by R2 on top of the cost per labour hour incurred in 2014. However, production per line changed:

- Line 1
  - Mondays to Thursdays, the line production level was constant at 1570000 packets and Fridays to Sundays, 1200000 packets.
- Line 2
  - Mondays to Thursdays, the line production level was constant at 2000000 packets and Fridays to Sundays, 1010000 packets.
- Line 3
  - Mondays to Thursdays, the line production level was constant at 1090000 packets and Fridays to Sundays, 955000 packets.

In 2015, water and electricity observed an increase in cost per kilolitre and kilowatt respectively. Water and electricity, both increased by R0.20 per kilolitre and per kilowatt. The table below shows a summary of a weekly usage of water and electricity for each production line in 2015:

	Water (Kilolitre)	**Electricity (kW)**
Line 1	1315	6900
Line 2	1825	10000
Line 3	925	6025

Aggregated information regarding weekly raw material usage for all was as follow, in 2015:

Potatoes	3150 tonnes	@ R22.10 per tonne
Corn	5925 tonnes	@ R16.50 per tonne
Salt	575 kg	@ R8.00 per kg

With the information provided to you by Mr Vilakazi, you are required to provide a detailed productivity report for each resource used to produce the chips in 2014 as well as 2015. You are expected to provide single factor productivity and multifactor productivity for both 2014 and 2015. Included in your report, you must indicate whether the change in technology implemented by the company's COO yielded the expected result of an average increase in productivity of 15%.

USE THE INFORMATION PROVIDED IN THE EARLIER CASE STUDY AND ANSWER QUESTIONS 1 TO 60 (USE 2 DECIMAL PLACES WHERE NECESSARY FOR THESE CALCULATIONS)

1) The weekly outputs for line 1, line 2, and line 3 in 2014 are respectively:
   A. 2635000, 1967500 and 3140000 packets
   B. 1967500, 2635000 and 3140000 packets
   C. 2635000, 3140000 and 1967500 packets
   D. 1560000, 1940000 and 1067500 packets
   E. Not enough information to calculate the productivity

2) The overall weekly production of the plant in 2014 was:
   A. Approximately 7 million packets
   B. 7730000 packets
   C. 7742500 packets
   D. 7077250 packets
   E. None of the above

3) The total weekly number of labour hours for **LINE 1, LINE 2 & LINE 3** in 2014 are respectively:
   A. 672 hours, 1104 hours, & 576 hours
   B. 1104 hours, 912 hours, & 240 hours
   C. 864 hours, 1065 hours, & 576 hours
   D. 480 hours, 1104 hours, & 912 hours
   E. None of the above

4) The total weekly number of labour hours for **THE PLANT** in 2014 is:
   A. 2672 hours
   B. 2104 hours
   C. 2864 hours
   D. 2592 hours
   E. None of the above

5) The weekly cost of labour for **LINE 1, LINE 2 & LINE 3** in 2014 are respectively:
   A. R10752.00, R18943.20 & R10000.00
   B. R13820.40, R18764.00 & R9700.00
   C. R9864.00, R18943.00 & R9737.33
   D. R15871.20, R18943.20 & R9727.68
   E. None of the above

6) The weekly cost of labour **AT THE PLANT** in 2014 is:
   A. R44542.60
   B. R44542.30
   C. R44542.18
   D. R44542.08
   E. None of the above

7) The weekly costs of water and electricity at the plant for 2014 are respectively:
   A. R19299.00 & R2050.75
   B. R2050.00 & 19300
   C. R2049.75 & R19299.25
   D. R2104.55 & R19299.25
   E. None of the above

8) The weekly cost of materials in 2014 is:
   A. R162009.00
   B. R162020.00
   C. R162019.00
   D. R162000.00
   E. None of the above

9) The weekly cost of inputs in 2014 is:
   A. R237010.33
   B. R227910.00
   C. R227910.09
   D. R227910.08
   E. None of the above

10) The plant labour productivity in 2014 is:
   A. 2900.29 packets per labour hour
   B. 2980.08 packets per labour hour
   C. 2987.08 packets per labour hour
   D. 2987.09 packets per labour hour
   E. None of the above

11) The plant water productivity in 2014 is:
   A. 1699.78 packets per kilolitre of water
   B. 1799.78 packets per kilolitre of water
   C. 1899.78 packets per kilolitre of water
   D. 1699.77 packets per kilolitre of water
   E. None of the above

12) The plant electricity productivity in 2014 is:
   A. 382.12 packets per kilowatt
   B. 383.12 packets per kilowatt
   C. 381.12 packets per kilowatt
   D. 380.12 packets per kilowatt
   E. None of the above

13) The plant multifactor productivity in 2014 is:
   A. 30.97 packets per Rand of Input
   B. 33.97 packets per Rand of Input
   C. 36.97 packets per Rand of Input
   D. 32.97 packets per Rand of Input
   E. 33.95 packets per Rand of Input

14) The weekly outputs for line 1, line 2, and line 3 in 2015 are respectively:
   A. 2675000, 3010000 and 2040000 packets
   B. 1967500, 2635000 and 3140000 packets
   C. 2635000, 3140000 and 1967500 packets
   D. 2770000, 3010000 and 2045000 packets
   E. Not enough information to calculate the productivity

15) The overall weekly production of the plant in 2015 was:
   A. Approximately 7 million packets
   B. 7825000 packets
   C. 7742500 packets
   D. 7077250 packets
   E. None of the above

16) The total weekly number of labour hours for **LINE 1, LINE 2 & LINE 3** in 2015 are respectively:
   A. 672 hours, 1104 hours, & 576 hours
   B. 1104 hours, 912 hours, & 240 hours
   C. 864 hours, 1065 hours, & 576 hours
   D. 480 hours, 1104 hours, & 912 hours
   E. The same as in 2015

17) The total weekly number of labour hours for **THE PLANT** in 2015 is:
   A. 2672 hours
   B. 2104 hours
   C. 2864 hours
   D. 2592 hours
   E. None of the above

18) The weekly cost of labour for **LINE 1, LINE 2 & LINE 3** in 2015 are respectively:
   A. R17856.00, R18943.20 & R10000.00
   B. R13820.40, R21312.00 & R9700.00
   C. R9864.00, R18943.00 & R10944
   D. R15871.20, R18943.20 & R9727.68
   E. None of the above

19) The weekly cost of labour **AT THE PLANT** in 2015 is:
   A. R54542.60
   B. R50542.30
   C. R50122.00
   D. R44542.08
   E. None of the above

20) The weekly costs of water and electricity at the plant for 2015 are respectively:
   A. R19299.00 & R2050.75
   B. R2050.00 & R19300
   C. R2049.75 & R19299.25
   D. R2104.55 & R19299.25
   E. None of the above

21) The weekly cost of materials in 2015 is:
   A. R172909.00
   B. R171977.00
   C. R171978.00
   D. R171977.50
   E. None of the above

22) The weekly cost of inputs in 2015 is:
   A. R251110.00
   B. R251195.00
   C. R251095.50
   D. R227910.58
   E. None of the above

23) The plant labour productivity in 2015 is:
   A. 3018.99 packets per labour hour
   B. 2980.08 packets per labour hour
   C. 2987.08 packets per labour hour
   D. 3018.90 packets per labour hour
   E. None of the above

24) The plant water productivity in 2015 is:
   A. 1999.78 packets per kilolitre of water
   B. 1999.78 packets per kilolitre of water
   C. 1929.98 packets per kilolitre of water
   D. 1924.97 packets per kilolitre of water
   E. None of the above

25) The plant electricity productivity in 2015 is:
   A. 342.32 packets per kilowatt
   B. 343.32 packets per kilowatt
   C. 341.32 packets per kilowatt
   D. 340.12 packets per kilowatt
   E. None of the above

26) The plant multifactor productivity in 2015 is:
   A. 31.17 packets per Rand of Input
   B. 33.16 packets per Rand of Input
   C. 31.97 packets per Rand of Input
   D. 31.16 packets per Rand of Input
   E. 33.95 packets per Rand of Input

27) The percentage change in labour productivity from 2014 to 2015 is:
   A. 2.07% B. 10.07% C. -10.7% D. 1.07% E. Not listed

28) The percentage change in water productivity from 2014 to 2015 is:
   A. 13.27% B. 13.25% C. 13.33% D. 13.05% E. Not listed

29) The percentage change in electricity productivity from 2014 to 2015 is:
   A. 10.44% B. 9.44% C. -10.44% D. -10.45% E. Not listed

30) The percentage change in multi factor productivity from 2014 to 2015 is:
   A. -8.20% B. -8.36% C. -8.27% D. -8.26% E. 8.26

CASE STUDY 2 – DEMAND FORECAST AT ESKOM **30 MARKS**

Miss Caroline Manhire is the National Operations and Production Manager at Eskom. She is struggling with the current Eskom problems, minimizing rolling blackout (load shedding). One of her most challenging task is to manage supply to meet the demand of electricity on a daily basis. The reason for the challenge is the fact that the national power grid (An interconnected network for delivering electricity from suppliers to consumers. It consists of generating stations that produce electrical power, high-voltage transmission lines that carry power from distant sources to demand centres, and distribution lines that connect individual customers) must remain stable – in fact not collapse. In case of power grid collapse, the whole country will plunge in a total blackout (NO ELECTRICITY) for at least two weeks.

To avoid a total collapse of the national power grid, demand must always be equal to supply. Miss Manhire's job is to make sure that there is appropriate supply of electricity nationally from 18 out of the 27 power plants (With 9 power plants out because of emergency maintenance as well as planned maintenance programme). This is very challenging and it requires Miss Manhire to constantly monitor the national demand of electricity. However monitoring this demand is not the only challenge; she must also make sure that her demand forecast is always accurate so that she can be able to supply electricity appropriately.

Her team of engineers as well as risk managers have collected data for the past 10 weeks from Monday to Sunday. "*The way my team and I are looking at the data to generate a forecast is quite different from the conventional way*" says Manhire. She explains further by saying that "*it is believed that electricity consumption on a daily basis is not driven by the same factor every day, but if enough data is collected, one can forecast the demand of a particular day based on past data related to electricity demand of that particular day. For instance, to forecast electricity for Monday of particular week using a 3-week moving average, we will not use past data from Sunday, Saturday and Friday, but instead we shall consider data from past three Mondays for our calculations*".

The actual national daily demand in *Megawatts* for the past 10 weeks is contained in the table below:

Week 1	*Mon*	22	*Tue*	25	*Wed*	25	*Thu*	23	*Fri*	26	*Sat*	24	*Sun*	23
Week 2	*Mon*	21	*Tue*	24	*Wed*	24	*Thu*	24	*Fri*	25	*Sat*	26	*Sun*	24
Week 3	*Mon*	23	*Tue*	23	*Wed*	23	*Thu*	25	*Fri*	26	*Sat*	22	*Sun*	21
Week 4	*Mon*	20	*Tue*	27	*Wed*	27	*Thu*	24	*Fri*	25	*Sat*	23	*Sun*	22
Week 5	*Mon*	22	*Tue*	26	*Wed*	27	*Thu*	23	*Fri*	28	*Sat*	24	*Sun*	25
Week 6	*Mon*	23	*Tue*	22	*Wed*	25	*Thu*	22	*Fri*	25	*Sat*	21	*Sun*	24
Week 7	*Mon*	19	*Tue*	28	*Wed*	28	*Thu*	25	*Fri*	27	*Sat*	26	*Sun*	23
Week 8	*Mon*	21	*Tue*	23	*Wed*	25	*Thu*	24	*Fri*	26	*Sat*	25	*Sun*	22
Week 9	*Mon*	23	*Tue*	24	*Wed*	24	*Thu*	23	*Fri*	27	*Sat*	27	*Sun*	26
Week 10	*Mon*	25	*Tue*	25	*Wed*	26	*Thu*	25	*Fri*	29	*Sat*	28	*Sun*	29
Week 11	*Mon*	26	*Tue*	27	*Wed*	27	*Thu*	27	*Fri*	29	*Sat*	31	*Sun*	28
Week 12	*Mon*	29	*Tue*	29	*Wed*	28	*Thu*	29	*Fri*	29	*Sat*	32	*Sun*	32

Miss Manhire has requested that you focused on data for Monday and Wednesday ONLY (Shaded in the table). She wants you to forecast the national electricity demand for Monday and Wednesday starting from **week 4 to week 12** using the following techniques:

- 3-week weighted moving average with the following weights: 0.25, 0.35 and 0.45
- Exponential smoothing with a smoothing constant $\alpha = 0.6$ and **initial forecasts in week 4 of 21 MW for both Monday and Wednesday**.

Miss Manhire is expecting you to provide her with a measure of forecast accuracy which will allow you to recommend which forecasting technique is the best. She has advised you to use the MAD.

USE THE INFORMATION PROVIDED IN THE ABOVE CASE STUDY AND ANSWER QUESTIONS 31 TO 60 (NO DECIMAL PLACE FOR THESE CALCULATIONS).

31) The 3-week weighted moving average electricity demand forecast values for Monday and Wednesday in **week 4** are respectively:
A) 24 & 22 B) 22 & 22 C) 22 & 24 D) 24 & 25 E) Not listed

32) The 3-week weighted moving average electricity demand forecast values for Monday and Wednesday in **week 5** are respectively:
A) 21 & 22 B) 22 & 22 C) 22 & 24 D) 21 & 25 E) Not listed

33) The 3-week weighted moving average electricity demand forecast values for Monday and Wednesday in **week 6** are respectively:
A) 21 & 22 B) 22 & 22 C) 22 & 26 D) 21 & 25 E) Not listed

34) The 3-week weighted moving average electricity demand forecast values for Monday and Wednesday in **week 7** are respectively:
A) 22 & 22 B) 26 & 22 C) 22 & 24 D) 22 & 26 E) Not listed

35) The 3-week weighted moving average electricity demand forecast values for Monday and Wednesday in **week 8** are respectively:
A) 21 & 22 B) 21 & 26 C) 21 & 27 D) 21 & 25 E) Not listed

36) The 3-week weighted moving average electricity demand forecast values for Monday and Wednesday in **week 9** are respectively:
A) 21 & 22 B) 21 & 26 C) 21 & 27 D) 21 & 25 E) Not listed

37) The 3-week weighted moving average electricity demand forecast values for Monday and Wednesday in **week 10** are respectively:
A) 21 & 22 B) 21 & 26 C) 21 & 27 D) 21 & 25 E) Not listed

38) The 3-week weighted moving average electricity demand forecast values for Monday and Wednesday in **week 11** are respectively:
A) 23 & 22 B) 21 & 25 C) 25 & 23 D) 21 & 25 E) Not listed

39) The 3-week weighted moving average electricity demand forecast values for Monday and Wednesday in **week 12** are respectively:
A) 21 & 22 B) 25 & 26 C) 25 & 27 D) 21 & 25 E) Not listed

40) The forecasted values of electricity demand for Monday and Wednesday in **week 5**, using exponential smoothing with $\alpha = 0.6$, are respectively:
A) 24 & 22 B) 22 & 22 C) 22 & 24 D) 24 & 25 E) Not listed

41) The forecasted values of electricity demand for Monday and Wednesday in **week 6**, using exponential smoothing with α = 0.6, are respectively:

A) 21 & 22 B) 22 & 22 C) 22 & 24 D) 21 & 25 E) Not listed

42) The forecasted values of electricity demand for Monday and Wednesday in **week 7**, using exponential smoothing with α = 0.6, are respectively:

A) 21 & 22 B) 22 & 25 C) 22 & 24 D) 21 & 25 E) Not listed

43) The forecasted values of electricity demand for Monday and Wednesday in **week 8**, using exponential smoothing with α = 0.6, are respectively:

A) 21 & 27 B) 27 & 20 C) 22 & 24 D) 20 & 25 E) Not listed

44) The forecasted values of electricity demand for Monday and Wednesday in **week 9**, using exponential smoothing with α = 0.6, are respectively:

A) 21 & 26 B) 22 & 22 C) 22 & 24 D) 21 & 25 E) Not listed

45) The forecasted values of electricity demand for Monday and Wednesday in **week 10**, using exponential smoothing with α = 0.6, are respectively:

A) 21 & 26 B) 21 & 25 C) 22 & 24 D) 21 & 25 E) Not listed

46) The forecasted values of electricity demand for Monday and Wednesday in **week 11**, using exponential smoothing with α = 0.6, are respectively:

A) 24 & 24 B) 25 & 25 C) 24 & 25 D) 21 & 25 E) Not listed

47) The forecasted values of electricity demand for Monday and Wednesday in **week 12**, using exponential smoothing with α = 0.6, are respectively:

A) 21 & 22 B) 26 & 25 C) 22 & 24 D) 25 & 26 E) Not listed

48) The absolute error in forecast for the weighted moving average method for Monday and Wednesday in **week 4** are respectively:

A) 2 & 3 B) 3 & 2 C) 1 & 2 D) 2 & 2 E) Not listed

49) The absolute error in forecast for the weighted moving average method for Monday and Wednesday in **week 5** are respectively:

A) 2 & 3 B) 3 & 2 C) 1 & 2 D) 2 & 2 E) Not listed

50) The absolute error in forecast for the weighted moving average method for Monday and Wednesday in **week 6** are respectively:

A) 2 & 3 B) 3 & 2 C) 1 & 1 D) 2 & 2 E) Not listed

51) The absolute error in forecast for the weighted moving average method for Monday and Wednesday in **week 7** are respectively:

A) 2 & 3 B) 3 & 2 C) 1 & 2 D) 2 & 2 E) Not listed

52) The absolute error in forecast for the weighted moving average method for Monday and Wednesday in **week 8** are respectively:

A) 2 & 3 B) 3 & 2 C) 0 & 2 D) 2 & 2 E) Not listed

53) The absolute error in forecast for the weighted moving average method for Monday and Wednesday in **week 9** are respectively:

A) 2 & 3 B) 3 & 2 C) 2 & 2 D) 2 & 2 E) Not listed

54) The absolute error in forecast for the exponential smoothing method for Monday and Wednesday in **week 4** are respectively:

A) 1 & 3 B) 3 & 6 C) 6 & 1 D) 1 & 6 E) Not listed

55) The absolute error in forecast for the exponential smoothing method for Monday and Wednesday in **week 5** are respectively:

A) 1 & 2 B) 3 & 2 C) 2 & 1 D) 1 & 6 E) Not listed

56) The absolute error in forecast for the exponential smoothing method for Monday and Wednesday in **week 6** are respectively:

A) 1 & 3 B) 3 & 2 C) 1 & 1 D) 2 & 1 E) Not listed

57) The absolute error in forecast for the exponential smoothing method for Monday and Wednesday in **week 7** are respectively:

A) 1 & 3 B) 3 & 6 C) 3 & 3 D) 1 & 6 E) Not listed

58) The absolute error in forecast for the exponential smoothing method for Monday and Wednesday in **week 8** are respectively:

A) 1 & 3 B) 1 & 2 C) 2 & 1 D) 1 & 6 E) Not listed

59) The absolute error in forecast for the exponential smoothing method for Monday and Wednesday in **week 9** are respectively:

A) 2 & 2 B) 3 & 2 C) 2 & 1 D) 1 & 6 E) Not listed

60) When comparing the two forecasting techniques, weighted moving average and exponential smoothing, based on their MAD, what recommendations can you make?

A) Miss Manhire should use the exponential smoothing because it has a higher MAD value compared to weighted moving average

B) The forecasting technique with the lower MAD value should be recommended for future use, and in this case it should be the weighted moving average

C) The best technique that should be used in the future is the weighted moving average because its MAD value for both Monday and Tuesday are lower than the exponential smoothing

D) The best technique that should be used in the future is the exponential smoothing because its MAD value for both Monday and Tuesday are lower than the weighted moving average

E) None of the above

SECTION B – DISCUSSION QUESTIONS **40 MARKS**

QUESTION 1 **5**

Briefly provide the specific reasons as to why we should study operations management?

QUESTION 2 **8**

Identify and explain the four basic global operations strategies as per your learning material.

QUESTION 3 **7**

Using a diagram, provide the strategy development process that an organisation may implement.

QUESTION 4 **10**

4.1 Differentiate the following terms:

- Core competencies (2)
- Competitive advantage (2)

4.2 Explain how the above terms are related (1)

4.3 What are the factors affecting an organisational mission (5)

QUESTION 5 **10**

5.1 Define quality function deployment (QFD) (3)

5.2 Provide the steps for building QFD's house of quality (7)

END OF ASSESSMENT – GOOD LUCK ☺

TOTAL MARKS **100**