INTI International University & Colleges

FINAL
Examination Paper

(COVER PAGE)

Session	:	**January 2017**
Programme	:	Diploma In Business Management (DBM)
Course	:	**WBUS1105: Business Analytics**
Date of Examination	:	March 5, 2017 (Sunday)
Time	:	2:00 pm – 4:00 pm Reading Time : Nil
Duration	:	2Hours

Special Instructions :

Section A: Answer **ALL** Multiple Choice questions in the **OMR** sheet provided.

Section B: Answer **TWO (2)** out of **THREE (3)** question.

IMPORTANT NOTE : THIS PAPER SHOULD NOT BE TAKEN OUT OF THE EXAMINATION HALL

Material permitted	:	Non-programmable Calculator
Materials provided	:	Formula Booklet 2, OMR Sheets, Graph Paper
Examiner(s)	:	**Ms Saemila Devi Paranirubasingam,** Ms Angeline Tan, Ms Teng Mei Tuan
Moderator	:	Mr Foo Kai Pin

*This paper consists of **10** printed pages, including the cover page*

DIPLOMA IN BUSINESS MANAGEMENT PROGRAMME (DBM)
WBUS1105: BUSINESS ANALYTICS
FINAL EXAMINATION: JANUARY 2017 SESSION

Section A (50 marks)
Instructions: This section consists of **TWENTY FIVE (25)** multiple choice questions. Answer all questions in the **OMR** sheet provided.

1. Which of the following statements are **TRUE** about probability?

   A. Probabilities must be negative.
   B. Probabilities must be greater than 1.
   C. The sum of all probabilities for a random variable must be equal to 1.
   D. All of these options are true.

2. The most frequently occurring value of a data set is called the

   A. range
   B. mode
   C. mean
   D. median

3. If A and B are mutually exclusive events with $P(A) = 0.30$ and $P(B) = 0.40$, then the probability that either A or B occur is:

   A. 0.10
   B. 0.12
   C. 0.70
   D. None of these options

4. A tabular summary of a set of data showing the frequency of the total number of items in several classes is a

   A. frequency distribution.
   B. relative frequency distribution.
   C. frequency.
   D. cumulative frequency distribution.

5. Provide a written description of the complement of the given event.
"When several textbooks are edited, none of them are found to be free of errors."

A. At most one of the textbooks is free of errors.
B. At least one of the textbooks is free of errors.
C. One of the textbooks is free of errors.
D. None of the textbooks is free of errors.

6. In a throw of a coin, what is the probability of getting a head?

A. 1
B. 2
C. ½
D. 0

7. Which of the following is NOT an example of a discrete random variable?

A. The number of days it rains in a month in New York.
B. The number of stocks a person owns.
C. The number of persons allergic to penicillin.
D. The time spent by a physician with a patient.

8. The variance of a sample of 100 observations equals 64. The standard deviation of the sample equals

A. 8
B. 10
C. 6400
D. 4096

9. A car agency has found daily demand to be as shown in the table.

Number of customers	7	8	9	10	11
Probability	0.10	0.20	0.40	0.20	0.10

Find the expected number of customers.

A. 12
B. 2
C. 10
D. 9

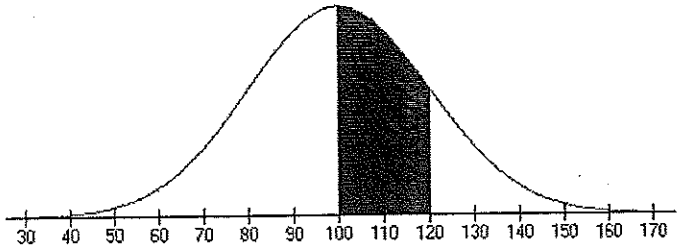
10. One reason for standardizing random variables is to measure variables with:

A. Different means and standard deviations on a non-standard scale.
B. Different means and standard deviations on a single scale.
C. Dissimilar means and standard deviations in like terms.
D. Similar means and standard deviations on two scales.

11. Which one of the following random variables would be normally distributed?

A. The number of times a die is rolled before a six is observed.
B. The weight of a student in kilograms.
C. The number of people in the queue waiting to be served at a bank.
D. The number of accidents that occur at an intersection in a 1-week period.

12. If X is normally distributed random variable with mean 100 and standard deviation 20, and Z is the standard normal random variable, then the interval shaded in the diagram below can be written as:



A. $P(0 < Z < 1)$
B. $P(Z > 100)$
C. $P(Z < 120)$
D. $P(100 < Z < 120)$

13. $P(Z < -1.983)$, where Z is a standard normal random variable is closest to:

A. 0.0237
B. 0.9763
C. 0.4763
D. 0.0559

14. The marks achieved by Bernard in Mathematics, English and Finance, together with the mean and the standard deviation for each subject, are given in the following table:

Subject	Mark	Mean (μ)	Standard deviation (σ)
Mathematics	60	52	10
English	70	70	5
Finance	65	60	3

Which of the following statements is correct?

A. Bernard's best subject was English, followed by Finance and then Mathematics.
B. Bernard's best subject was Mathematics, followed by Finance and then English.
C. Bernard's best subject was Finance, followed by Mathematics and then English.
D. Bernard's best subject was English, followed by Mathematics and then Finance.

15. Sample is a subset of

A. data.
B. group.
C. population.
D. distribution.

16. As a general rule, you cannot expect to exactly determine the sampling distribution of a statistic. Why?

A. Many populations are too small.
B. Many populations are too large.
C. Many populations are not normal.
D. Many populations are not uniform.

17. The theorem that states that the sampling distribution of the sample mean $\bar{X}$ is approximately normal when the sample size n is reasonably large is known as the:

A. Central tendency theorem
B. Simple random sample theorem
C. Point estimate theorem
D. Central limit theorem

18. Standard deviation of sampling distribution of any statistic is called

A. sampling error
B. non-sampling error
C. standard deviation
D. standard error

19. The value of alpha (α) for a 98% confidence interval would be:

A. $\alpha = 0.20$
B. $\alpha = 0.05$
C. $\alpha = 0.02$
D. $\alpha = 0.10$

20. The mean annual income for adult women in one city is $28,520 and the standard deviation of the incomes is $5100. The distribution of incomes is skewed to the right. The samples size is 71. Identify the distribution of the sample mean and calculate its mean and standard deviation.

A. Normal, mean=$28,520, standard deviation = $72.
B. Normal, mean = $28,520, standard deviation = $605.
C. Approximately normal, mean = $28520, standard deviation = $5100.
D. Approximately normal, mean = $28,520, standard deviation = $605.

21. What does it mean when you calculate a 95% confidence interval?

A. The process you used will capture the true parameter 95% of the time in the long run.
B. You can be "95% confident" that your interval will include the population parameter
C. You can be "5% confident" that your interval will not include the population parameter.
D. All of the above statements are true.

22. A researcher wishes to estimate the mean resting heart rate for long-distance runners. A random sample of 12 long-distance runners yields the following heart rates, in beats per minute.

79 76 58 72 62 60 79 58 79 63 68 60

Obtain a point estimate of the mean resting heart rate for all long distance runners.

A. 67.8 beats per minute
B. 66.2 beats per minute
C. 69.6 beats per minute
D. 64.6 beats per minute

23. The sample statistic used to estimate a population parameter is a(n):

A. estimator
B. parameter
C. random variable
D. qualitative variable

24. A college statistics professor has office hours from 9 am to 10.30am daily. A sample of waiting times to see the professor (in minutes) is 10, 12, 20, 15, 17, 10, 30, 28, 35, 28, 19, 27, 25, 22, 33, 37, 14, 21, 20, 23. Assuming population standard deviation is 7.84 minutes; construct 99% confidence interval for the population mean.

A. -3.5 to 3.5 minutes
B. 19.5 to 35.1 minutes
C. 17.8 to 26.8 minutes
D. -7.7 to 7.8 minutes

25. A savings and loan association needs information concerning the checking account balances of its local customers. A random sample of 14 accounts was checked and yielded a mean balance of $664.14 and a population standard deviation of $297.29. Find a 90% confidence interval for the true mean checking account balance for local customers.

A. $533.44 to $794.84
B. $455.65 to $794.84
C. $492.52 to $835.76
D. $533.44 to $834.57

SECTION B (50 marks)
Instructions: This section consists of **THREE (3)** questions. Answer any **TWO (2)** questions in the answer booklet provided. All questions carry equal marks.

Question 1

(a) In a small town with three schools, 1000 students were asked if they had a cell phone. The results of the survey are shown below:

	Students who have a cell phone	Students who do not have a cell phone
School A	265	106
School B	296	71
School C	212	50

A student is selected at random from one of these schools.

(i) Calculate the probability that this student has a cell phone.

(3 marks)

(ii) Given that this student is not from school B, calculate the probability that he/she has a cell phone.

(4 marks)

(b) The number of complaints received per day by a departmental store has a discrete probability distribution as shown:

x	0	1	2	3
$P(X = x)$	0.2	0.4	w	0.1

Find

(i) the value of w,

(3 marks)

(ii) $E(X)$.

(4 marks)

(c) The table shows the weekly wages in RM of each of 100 factory workers.

Wage (RM)	Number of workers
$200 \leq x \leq 250$	10
$250 \leq x \leq 300$	16
$300 \leq x \leq 350$	40
$350 \leq x \leq 400$	26
$400 \leq x \leq 450$	8

On separate graph papers,

(i) Construct a histogram to illustrate this information. (6 marks)

(ii) Construct a cumulative frequency curve for this distribution. (5 marks)

Question 2

(a) A group of people played a game. The table below shows the frequency distribution of their scores

Score	66	67	68	69	70	71	72	73
Frequency	2	5	10	12	9	6	4	2

(i) Find the median score. (2 marks)

(ii) What was the most frequent score? (2 marks)

(iii) Find the mean score. (4 marks)

(iv) Calculate the standard deviation. (5 marks)

(b) The mass of a mango taken from Bernard's estate is known to be normally distributed with mean 820g and standard deviation 100g.

(i) Find the probability that a mango chosen at random will have a mass

(a) of at least 700g, (4 marks)

(b) of at most 800g. (4 marks)

(ii) In a basket which contains 200 mangoes from Joshua's estate, how many mangoes are expected to have a mass of at least 650g?

(4 marks)

Question 3

(a) A researcher wishes to estimate the number of days it takes a car dealer to sell a car. A sample of 50 cars had a mean time on the dealer's showroom of 54 days. Assume the population standard deviation to be 6 days. Determine

(i) the point estimate of the population mean.

(1 mark)

(ii) the 95% confidence interval of the population mean.

(5 marks)

(b) A study is conducted upon 8 worms caught in a garden. Their lengths, in cm, are recorded as shown below:

9.9 9.5 11.2 10.7 10.9 11.0 9.8 10.6

(i) Calculate the sample mean of the lengths of the worms.

(3 mark)

(ii) Assuming the population standard deviation is known to be 0.8cm. Calculate a 99% symmetrical confidence interval for the population mean.

(6 marks)

(c) A bag has 25 cards. The cards are numbered from 1 to 25 respectively. If a card is chosen at random, find the probability of obtaining

(i) an odd number

(2 marks)

(ii) a card with number lesser than 9

(2 marks)

(iii) an even number greater than 7

(2 marks)

(iv) a card with number "15" or "20"

(2 marks)

(v) a card with number "30"

(2 marks)

-THE END-