UTM
UNIVERSITI TEKNOLOGI MALAYSIA

SAMPLE BRIDGING EXEMPTION TEST
SEMESTER - , SESSION 20--/20--

COURSE	:	BASIC MATHEMATICS
PROGRAMME	:	BRIDGING UTM
DURATION	:	2 HOURS
DATE	:	-

INSTRUCTIONS TO CANDIDATE:

1. Answer all the questions.
2. All answers must be written in the answer booklet provided. Use a new page for each question.
3. The full marks for each question or section are shown in the bracket at the end of the question.
4. All steps must be shown clearly.
5. Only non-programmable and non-graphing scientific calculators can be used.
6. Answers may be given in the form of π, e, surd, fractions, or up to four significant figures, where appropriate, unless stated otherwise in the question.
7. You are not permitted to take the exam paper and the answer booklet(s) out of the exam hall.

WARNING!

Students caught copying/cheating during the examination will be liable for disciplinary actions and SPACE may recommend the student to be expelled from the study.

This examination question consists of ( ) printed pages only including this page

PART A (10 MARKS)

Answer all questions. Choose the right answer and write it on your answer booklet.
*Time suggested for this part is **30 minutes**.*

1. Evaluate $\left(\frac{3}{2}\right)^2 + 6\frac{2}{5} - \frac{7}{8} \times 2\frac{3}{5}$.

   A. $\frac{1}{5}$ B. $6\frac{3}{8}$ C. $2\frac{31}{50}$ D. $6\frac{29}{40}$

2. Mildred's salary has increased from RM24,600 to RM25,338. How many percentages has her salary increased?

   A. 3% B. 0.003% C. 15% D. 7%

3. The moon is 405,696 km from the Earth. Express the moon-Earth distance in standard form.

   A. 4.06×10^{-5} B. 4.06×10^{5} C. 4.05×10^{-5} D. 4.04×10^{5}

4. If $f(x) = -x^4 + 5x^3$, find $f(-3) - 7f(-2)$.

   A. 280 B. –180 C. $\frac{28}{875}$ D. 176

5. Expand $4(x^2y + 7y) - 5y(3x^2 - y) - 10y$ and simplify if possible.

   A. $-11x^2y + 5y^2 + 18y$
   B. $4x^2y + 11y - 8yx^2 - 16y$
   C. $4x^2y + 18y - 15yx^2 + 5y^2$
   D. $4x^2y - 5y(3x^2 - y) - 3y$

6. Solve the following equation simultaneously.

$$2x + 3y = 16$$
$$5x - 4y = -6$$

   A. $x = -1, y = 5$ B. $x = -1, y = -4$
   C. $x = 2, y = 4$ D. $x = 4, y = 2$

7. Given matrix $A=\begin{bmatrix} k+1 & -1 & 4 \\ 1 & 0 & 2 \\ -2 & 1 & k+2 \end{bmatrix}$, where k is a constant. If $|A|=7$, find the value of k?

A. $k=1$ B. $k=-3$ C. $k=2$ D. $k=-1$

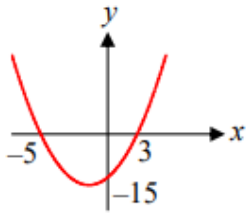
8. If $3x^2-9x+50=a(x+b)^2+c$, find a, b and c.

A. $a=3,\ b=-\frac{1}{3},\ c=\frac{125}{12}$ B. $a=3,\ b=-\frac{3}{2},\ c=\frac{173}{4}$

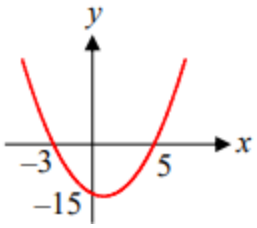
C. $a=-3,\ b=\frac{5}{6},\ c=\frac{10}{12}$ D. $a=3,\ b=-\frac{5}{6},\ c=-\frac{173}{12}$

9. Which of the following graphs represents $y=(x+3)(x-5)$?

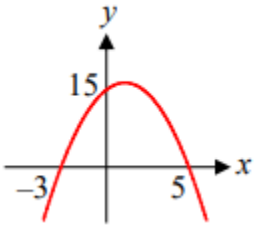
A.



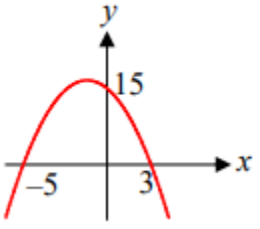
B.



C.



D.



10. Table 1 shows a set of data

Marks	20	40	60	80	100
Frequency	7	9	$3x$	$6+x$	10

Table 1

Given mean of the data is 62.5. Find the value of x.

A. 3 B. 4 C. 8 D. 10

END OF QUESTIONS PART A

PART B (40 MARKS)

*Answer all questions. Show all your works clearly. Time suggested for this part is **2 hours.***

1. Given $m\begin{pmatrix} -6 & n \\ 5 & -2 \end{pmatrix}\begin{pmatrix} 2 & 4 \\ -5 & -6 \end{pmatrix}=\begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$, find the value of *m* and *n*.

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(3 marks)

2. Write the following simultaneous linear equations as matrix equation. Hence, find the value of *x* and *y*.

$$2x+4y=-6$$
$$-5x-6y=3.$$

(3 marks)

3. Given the equation of the straight line is $5x-3y+15=0$.

   i) State the gradient.

   (2 marks)

   ii) Find the y – intercept.

   (1 mark)

   iii) Find the equation of straight line passes through the points (-3,9) where the line is parallel to the straight line $5x-3y+15=0$

   (3 marks)

4. Diagram 1 shows an irregular polygon *ABCDEFGH*. *ABC* is a straight line.

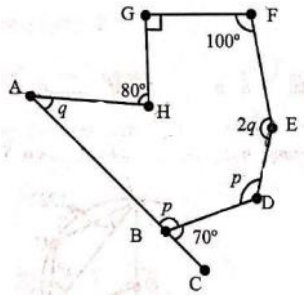

Diagram 1

Find the value of $p-q$.

(4 marks)

5. Diagram 2 shows the straight lines *KL*, *LM*, *MN* and *NK*, drawn on a Cartesian plane. The straight line *LM* is parallel to the *y* – axis.

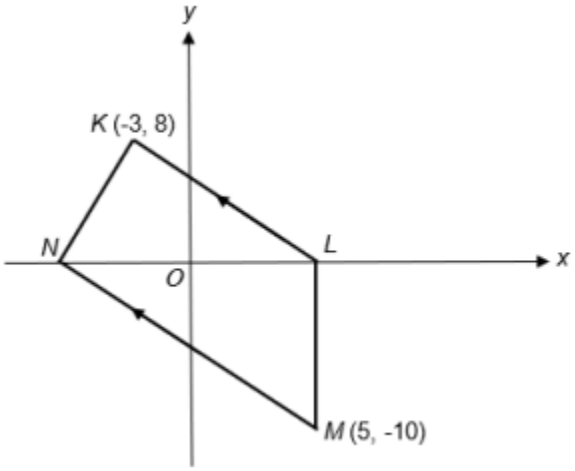

Diagram 2

Find,

i) distance of *LM*,

(2 marks)

ii) the equation of the straight-line *NM*.

(3 marks)

6. In Diagram 3, QRT is a straight line.

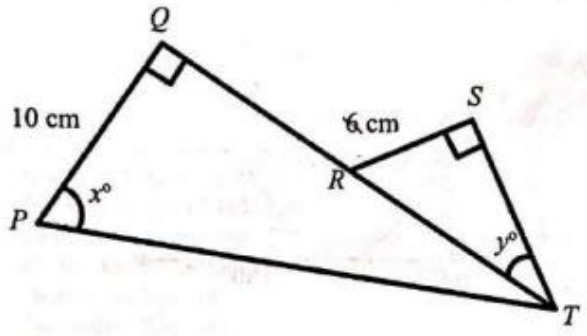

Diagram 3

Given $\cos x^\circ = \frac{5}{13}$ and $\tan y^\circ = \frac{3}{4}$. Calculate the length of QR, in cm.

(4 marks)

7. Find the values of *x* when $3\sin x - 2 = 5\sin x - 1$ for $0^\circ \le x \le 360^\circ$.

(4 marks)

8. In a survey, the ages of visitor visiting the museum during school holiday taken by a sample of 62 visitors is given in the frequency table below:

Categories	Frequency
10-19	4
20-29	m
30-39	18
40-49	14
50-59	10
60-69	11

i) Find the value of m.

(2 marks)

ii) By constructing frequency table, compute the mean and variance of the data set.

(6 marks)

iii) Calculate the percentage number of visitors that the ages of visitors are more than the class mode.

(3 marks)

END OF QUESTIONS PART B