

FINAL EXAMINATION
JULY 2021

COURSE TITLE	BASIC MATHEMATICS
COURSE CODE	FMAT0114
DATE/DAY	21 OCTOBER 2021 / THURSDAY
TIME/DURATION	09:00 AM - 10:30 AM / 1.5 Hours

INSTRUCTIONS TO CANDIDATES :

1. Please read the instruction under each section carefully.
2. Candidates are reminded not to bring into examination hall/room any form of written materials or electronic gadget except for stationery that is permitted by the Invigilator.
3. Students who are caught breaching the Examination Rules and Regulation will be charged with an academic dishonesty and if found guilty of the offence, the maximum penalty is expulsion from the University.

(This Question Paper consists of **3** Printed Pages including front page)

There are SIX (6) questions in this paper. Answer ALL questions in the answer booklet. (100 Marks)

1. Ela Frozen Food sells three types of marinated protein which are salmon, lamb and chicken. Upon three transactions on a particular day, transaction 1 recorded a sales revenue of RM220 from selling 6 packs of salmon, 4 packs of lamb and 3 packs of chicken. Transaction 2 recorded a sales revenue of RM 190 from selling 3 packs of salmon, 3 packs of lamb and 7 packs of chicken. Meanwhile, transaction 3 recorded a sales revenue of RM 90 from selling 1 pack of salmon and 3 packs of lamb.

Based on the information above, a system of equation can be written as follows:

$$6x + 4y + 3z = 220$$

$$3x + 3y + 7z = 190$$

$$x + 3y = 90$$

Where,

x = price of a pack of marinated salmon

y = price of a pack of marinated lamb

z = price of a pack of marinated chicken

Calculate the price per pack for each type of protein by using matrix operation. [20 marks]

2. Given that $f(x) = (x - 1)^2$ and $g(x) = 2x + 1$, find

a) $f(-2) - g(4)$ (5 marks)

b) $f^{-1}(x)$ (5 marks)

c) $h(x)$ if $h[g(x)] = 4x^2 + 8x + 6$ (10 marks)

[20 marks]

3. Express the following improper fraction as partial fractions

$$\frac{6x^3 + 5x^2 - 7}{3x^2 - 2x - 1}$$

[20 marks]

4. Ishaq is helping his father to replace a light bulb in the dining area. He puts up a ladder against the wall that is 9 feet tall. The angle of the ladder that is now inclined to the wall is 60 degrees. What is the distance (in feet) from the wall and the bottom of the ladder?

[10 marks]

5. A heavy truck has 0.86m diameter tire. Suppose that it has rotated 120 000 times in 5 hours journey from Kuala Lumpur to Nibong Tebal. Based on the information,

a) how many kilometres has the truck travelled? (8 marks)

b) what is the linear speed of the truck? (8 marks)

[16 marks]

6. Evaluate the following limits

a) $\lim_{(x,y) \rightarrow (-2,3)} (x^2 - 2xy + 2y^2 - 20x + 5y - 4)$ (7 marks)

b) $\lim_{x \rightarrow (4)} (x^3 - 8x + 3)$ (7 marks)

[14 marks]

*** END OF QUESTION PAPER ***