**Topic: Matrix Algebra and Operations**

Time: 45 mins Marks: /45 marks

**Calculator Assumed**



**Question One: [1, 1, 1, 1, 1, 1, 1, 1: 8 marks]**

Use your calculator to perform the following calculations. If any of the following cannot be evaluated clearly, state this and provide an explanation as to why.

|  |  |
| --- | --- |
| a) D + E  b) A + C  c) A C  d) A D B | e)  f)  g)  h) |
|  |  |

**Question Two: [2, 2, 2: 6 marks]**

A 3x4 matrix **C** is determined by

Where and

a) Determine matrix **C.**

b) Explain clearly why does not exist.

c) Calculate C 2 3 + C 3 4

**Question Three: [6 marks]**

By equating corresponding elements, find the numbers *m*, *n* and *a*, if where:

and Show full working.

**Question Four: [2, 2: 4 marks]**

a) If , determine the value of *x*

b) If determine matrix **M**

**Question Five: [6 marks]**

Matrices **A**, **B** and **C** are:

Find scalars *p*, *q* andMatrix***R*** such that:

Show working to justify your solution.

**Question Six: [2, 2: 4 marks]**

Charlene was calculating with matrices. She got the following answers incorrect. Explain what she did wrong and write the correct solution.

a)

b)

**Question Seven: [2, 2, 2: 6 marks]**

Are the following statements true or false? Explain your answer.

a) If and then

b) If and D then

c) If and then

**Question Eight: [5 marks]**

If , and then prove the distributive law,

**Matrix Algebra and Operations SOLUTIONS**

Time: 45 mins Marks: /45 marks

**Calculator Assumed**



**Question One: [1, 1, 1, 1, 1, 1, 1, 1: 8 marks]**

Use your calculator to perform the following calculations. If any of the following cannot be evaluated clearly, state this and provide an explanation as to why.

|  |  |
| --- | --- |
| a) D + E  b) A + C  Cannot add. Matrices A and C are different sizes and can only add matrices of the same size.  c) A C  Dimensions do not allow for multiplication. The number of columns in A does not equal the number of rows in C.  d) A D B | e)  f)  g)  h) |
|  |  |

**Question Two: [2, 2, 2: 6 marks]**

A 3x4 matrix **C** is determined by

Where and

a) Determine matrix **C.**



b) Explain clearly why B2 does not exist.

B2 = B x B, but matrix B does not have the same number of rows and columns and therefore it cannot be multiplied by itself.

c) Calculate C 2 3+C 3 4

C 2 3 = 2

C 3 4 = 23

C 2 3 + C 3 4 = 25

**Question Three: [6 marks]**

By equating corresponding elements, find the numbers *m*, *n* and *a*, if where:

and Show full working.







**Question Four: [2, 2: 4 marks]**

a) If , determine the value of *x*

x = 3

b) If determine matrix **M**





**Question Five: [6 marks]**

Matrices **A**, **B** and **C** are:

Find scalars *p*, *q* andMatrix***R*** such that:

Show working to justify your solution.







**Question Six: [2, 2: 4 marks]**

Charlene was calculating with matrices. She got the following answers incorrect. Explain what she did wrong and write the correct solution.

a) She squared each element

b) She only multiplied corresponding elements



**Question Seven: [2, 2, 2: 6 marks]**

Are the following statements true or false? Explain your answer.

a) If and then



False AB is not possible.

b) If and D then



 False

c) If and then

False

**Question Eight: [5 marks]**

If , and then prove the distributive law,





