

2021 VCE Further Mathematics 1 (NHT) examination report

Specific information

This report provides sample answers or an indication of what answers may have included. Unless otherwise stated, these are not intended to be exemplary or complete responses.

The tables below indicate the correct answer for each question.

Section A – Core

Data analysis

Question	Answer
1	B
2	C
3	C
4	D
5	B
6	E
7	C
8	A
9	E
10	B
11	A
12	B
13	E
14	D
15	D
16	B

Question 4

To calculate the mean score for the whole class the total scores for the 15 girls and total score for the 10 boys need to be determined.

$$\text{Total (Girls)} = 28.5 \times 15 = 427.5, \text{ Total (Boys)} = 25.5 \times 10 = 255, \text{ Total (Girls + Boys)} = 682.5$$

$$\text{The mean for the entire group} = \frac{682.5}{15+10} = 27.3 \text{ (option D)}$$

Question 8

The percentage of people who have high blood pressure and are in the 70–79 years age group.

$$\frac{37}{180} = 21\% \text{ (option A)}$$

Question 9

The percentage of the people in the 60-69 years age group who have normal blood pressure.

$$\frac{42}{80} = 53\% \text{ (option E)}$$

Recursion and financial modelling

Question	Answer
17	A
18	
19	D
20	D
21	B
22	C
23	C
24	B

Question 18

As a result of psychometric analysis, the question was invalidated.

Question 23

The annual interest rate is 6.35%. The effective interest rate is $\left(\left(1 + \frac{6.35}{100} \right)^4 - 1 \right) = 6.50\%$ (option C).

Section 2 – Modules

Module 1 – Matrices

Question	Answer
1	E
2	B
3	D
4	C
5	C
6	C
7	D
8	A

Question 3

The given matrix equation has solutions $x = \frac{17}{5}$ and $y = \frac{7}{10}$

The simultaneous equations representing this matrix equation are:

$$4x + 2y = 15$$

$$2x - 4y = 4$$

Option A

$$2y - 4x = 15$$

$$4y + 2x = 4$$

Option B

$$2y - 4x = 4$$

$$4y + 2x = 15$$

Option C

$$2y + 4x = -4$$

$$-4y + 2y = -15$$

Option D

$$4x + 2y = 15 \quad 4x + 2y = 15$$

$$8x - 16y = 16 \quad = \quad 2x - 4y = 4 \quad (\text{correct option})$$

Option E

$$-4x + 2y = 15$$

$$2x + 4y = 4$$

Question 5

$$G = 36$$

$$0.52 \times 36 + 0.24 \times W = 36, W = 72 \text{ (option C)}$$

Module 2 – Networks and decision mathematics

Question	Answer
1	D
2	B
3	E
4	A
5	C
6	B
7	D
8	B

Question 8

The Holiday Fun network has a minimum completion time of 28 hours and critical path ADGKL.

The Sunny Life network has a minimum completion time of 27 hours and a critical path AEIJL or BGKL.

Sunny Life has a completion time one hour less than the Holiday Fun caravan (option B).

Module 3 – Geometry and measurement

Question	Answer
1	D
2	D
3	B
4	A
5	B
6	A
7	D
8	E

Module 4 – Graphs and relations

Question	Answer
1	C
2	D
3	B
4	E
5	D
6	B
7	D
8	C

Question 7

From 0 to p minutes the tank is being emptied at a rate of 50 litres/min. Therefore $p = 16$

From p to 29 minutes the tank is being emptied at a rate of $\frac{400}{29-16} = 31$ litres/min (option D)

Question 8

Point R is the intersection of $y = 8 - x$ and $y = 6 - \frac{x}{3}$

The gradient, m , of the objective function must be between $-1 < m < -\frac{1}{3}$ (option C).