QUALIFICATION: Bachelor of Technology: Geo-Information Technology, Bachelor of Human Resources Management, Bachelor of Marketing, Bachelor of Transport Management, Bachelor of Business Administration, Bachelor of Agricultural Management, Bachelor of Horticulture

QUALIFICATION CODE: 07BGIT,07BHRM,07BMAR,07BBAD,27BAGR,07BTRM,07BHOR

NQF LEVEL: 5

COURSE NAME: INTRODUCTION TO MATHEMATICS (BUSINESS AND MANAGEMENT)

COURSE CODE: ITM111S

DATE: 02 October 2021

PAPER: THEORY

DURATION: 2 HOURS

MARKS: 50

TEST 1 MEMORANDUM

EXAMINER: Ms A. SAKARIA, Mr B. OBABUEKI

MODERATOR: Mr G. TAPEDZESA

PERMISSIBLE MATERIALS

1. Non-programmable calculator without a cover.

THIS MEMORANDUM CONSISTS OF 3 PAGES (Including this front page)
QUESTION 1 [24 MARKS]

1.1 C ✓ ✓ ✓
1.2 D ✓ ✓ ✓
1.3 C ✓ ✓ ✓
1.4 A ✓ ✓ ✓ but consider B since there is B at option A
1.5 D ✓ ✓ ✓
1.6 C ✓ ✓ ✓
1.7 B ✓ ✓ ✓
1.8 B ✓ ✓ ✓

QUESTION 2 [26 MARKS]

2.1.1 \[2 \log_{5} 10 - \log_{5} 4\]
\[= \log_{5} 10^2 ✓ - \log_{5} 4\]
\[= \log_{5} \frac{100}{4} ✓\]
\[= \log_{5} 5^2 ✓\]
\[= 2 ✓\]

2.1.2 \[\log_{5} 32 - \log_{2} 4^5 + \log_{5} \sqrt{625}\]
\[= \log_{5} 2^5 - \log_{2} (2^2)^5 + \log_{5} (5^4)^{\frac{1}{2}}\]
\[= \frac{5}{3} - 10 + 2 \✓ ✓ ✓ ✓
\[= \frac{19}{3} \]

2.2.1 \[(x^2 + y)(y-x) \✓ ✓ ✓\]
\[= x^2y - x^3 + y^2 - xy\]

\[4 - (x-1)^2\]

2.2.2 \[= 4 - (x^2 - 2x + 1) \✓ ✓ ✓\]
\[= -x^2 + 2x + 3\]
2.3.1 \(2ab^2 - abd - 2bc + cd\)

\[= ab(2b - d) \checkmark - c(2b - d) \checkmark\]

\[= (ab - c)(2b - d) \checkmark\]

2.3.2 \(3y^2 - 48\)

\[= 3(y^2 - 16) \checkmark\]

\[= 3(y + 4)(y - 4) \checkmark \checkmark\]

2.4 Let \(x\) be the 1st number and \(x + 2\) be the 2nd. \(\checkmark\)

\[x \times (x + 2) = 143 \checkmark\]

\[x^2 + 2x - 143 = 0\]

\[(x - 11)(x + 13) = 0 \checkmark\]

\[x = 11 \text{ (consider) and } x = -13\]

\[\therefore \text{ the odd numbers are 11} \checkmark \text{ and } 13 \checkmark\]

**END OF TEST MEMO**