Sri Lanka Institute of Information Technology

B.Sc. Degree
in
Information Technology

Mid Examination
Year 1, Semester 1 (2017)
June Intake

Mathematics for Information Technology (N109)

Duration: 1 Hour

Instructions to Candidates:

- This is a closed book examination.
- This paper contains 4 questions on 1 page without the cover page.
- Answer all questions in the WORKBOOK provided.
- Read all questions before answering.
- The total marks obtainable for this examination is 30.

1) Specify the domain of the given functions. (3 x 2 marks)

i) $f(x) = \sqrt{x^2 + 5}$

ii) $f(x) = \frac{1}{\sqrt[3]{x+2}}$

iii) $f(x) = \frac{x+2}{x^2+5x+6}$

2) Solve the given equations for x. (4 x 2 marks)

i) $4^{x-3} = 9$

ii) $2e^x = 10$

iii) $log_7 3 + log_7 x = log_7 21$

iv) $2log_4 x - log_4 (x - 1) = 1$

3) Differentiate the following functions. (3 x 2 marks)

i) $y = \frac{(x+2)^2}{x^2+5x+6}$

ii) $y = e^{(3x+2)}.\sqrt{x^2 - 2}$

iii) $y = \ln(\frac{x^2+5}{3x})$

4) Use calculus to sketch the graph of $f(x) = -\frac{x^3}{3} + x^2$. (10 marks)
Find the **relative extrema** and **inflection points** if any.

End of the Question Paper.