

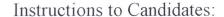
Sri Lanka Institute of Information Technology

B.Sc. Degree in Information Technology

Mid Examination Year 1, Semester 1 (2018) June Intake

Mathematics for Information Technology (IT1105)

Duration: 1 Hour





- ♦ 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.

a) Specify the domain of the given functions. i) $f(x) = \frac{1}{\sqrt{4+x}}$

$$i) f(x) = \frac{1}{\sqrt{4+x}}$$

ii)
$$f(x) = \frac{\sqrt[3]{x-6}}{(x^2-4x-5)}$$

(2 x 2.5 marks)

ii)
$$f(x) = \frac{\sqrt{x-6}}{(x^2-4x-5)}$$

b) Solve the given equations for x.

i)
$$ln(2x - 5) = ln(11)$$

ii)
$$5 + e^{(x+1)} = 20$$

iii)
$$4^{(x-3)} = \frac{1}{16}$$

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

v)
$$4\ln(2x+3) = 11$$

c) Differentiate the following functions.

$$i) \quad y = \ln \sqrt{\frac{x^2 - 2x}{5x}}$$

ii)
$$y = 5xe^{\sqrt{4x^2}} + 5$$

Use calculus to sketch the graph of $f(x) = \frac{x^4}{4} - x^2 + 1$ Find the relative extrema and inflection points if any.



End of the Question Paper.