

The Open University of Sri Lanka
 Department of Mathematics
 B. Sc/ B. Ed Degree Programme
 No Book Test - 2019/ 2020
 Pure Mathematics- Level 03



PEU3301 - Foundations of Mathematics

Duration: One Hour

Date: 01 - 08 - 2020

Time: 2.30 p.m. - 3.30 p.m.

ANSWER All Questions

Total Marks = 100

- Q1) Find $\gcd(252, 336)$ and $\text{lcm}(252, 336)$. 20 marks
- Q2) Show that the interval $(2020, +\infty)$ is not bounded above. 10 marks
- Q3) Prove that the set given by the interval $(0, 2020]$ does not have a minimum. 10 marks
- Q4) Let $A = \{x \in \mathbb{R} : x^2 - 3x + 2 < 0\}$.
- (a) Sketch A on the number line. 10 marks
- (b) Prove that both $\sup A$ and $\inf A$ exist. 10 marks
- (c) Find $\sup A$ and $\inf A$. 10 marks
- (d) Prove your answers. 15 marks
- Q5) Show that the number $\frac{1}{\sqrt{2}+\sqrt{5}}$ is algebraic. 15 marks

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