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**Presidency University**

**Bengaluru**

**Ph. D Course Work End Term Examinations – JAN-FEB 2025**

**Date**: 04-02-2025

**Time**: 9.30 am to 12.30 pm

**Max Marks**: 100

**Weightage**: 50%

**Semester**:

**Course Code**: CSE907

**Course Name**: 5G Network Technology

**School:** SOCSE

 **Instructions:**

1. *Read the all questions carefully and answer accordingly.*
2. *Do not write any matter on the question paper other than roll number.*

**PART A**

**Answer all the Questions. Each question carries 10 marks. (6Qx 10M= 60M)**

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| **1.** | Explain the key features of the 5G Core Network  |
| **2.** | Explain the concept of Non-Orthogonal Multiple Access (NOMA) and how it differs from Orthogonal Multiple Access (OMA).  |
| **3.** | Explain the concept of Radio Access Network (RAN). |
| **4.** | Explain the concept of Massive MIMO. Discuss its advantages and challenges in the 5G wireless networks.  |
| **5.** | Explain the key components of a 5G channel model for Vehicle-to-Everything (V2X) communication. |
| **6.** | Explain the concept of millimetre-wave (mm Wave) frequencies and their role in 5G networks.  |

**PART B**

**Answer all the Questions. Each question carries 20 marks. (2Qx 20M= 40M)**

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| **7.** | Explain the concept of Orthogonal Frequency Division Multiple Access (OFDMA) and how it differs from other multiple access techniques like TDMA and CDMA.  |
| **8.** | Discuss the difference between a small cell and a macro cell in the context of RAN. What are the benefits of using small cells in 5G networks?  |