

**Duration: 3hrs**

**[Max Marks:80]**

- N.B. : (1) Question No 1 is Compulsory.  
(2) Attempt any three questions out of the remaining five.  
(3) All questions carry equal marks.  
(4) Assume suitable data, if required, and state it clearly.

- 1 Attempt any FOUR [20]  
a What is carrier aggregation ? Differentiate between 4G and 5G Carrier aggregation.  
b Define different performance metrics used in 5G system.  
c How cognitive radio helps to mitigate interference in macro or femto heterogeneous networks.  
d State different types of transceivers used in Mm-Wave. Explain any One.  
e What is AR in 5G.
- 2 a Explain power domain noma and code domain NOMA. [10]  
b Explain fundamentals of game theory. [10]
- 3 a Explain filtered-OFDM and filter bank multicarrier [10]  
b Explain different benefits of NOMA which can improve wireless communication. [10]
- 4 a How channel modelling is different in Mm-Wave? [10]  
b Discuss different use cases of 5G. [10]
- 5 a Draw and explain 5G network architecture [10]  
b What is precoding in 5G wireless communication. [10]
- 6 a What are the different advance applications in 5G. Explain Tactile Internet. [10]  
b Explain code domain and power domain NOMA. [10]
-