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P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

Eighth Semester, B.E. - Electronics and Communication Engineering

Semester End Examination; Aug. / Sep. - 2020

Advanced Wireless Technologies

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4/9/2020

Time: 3 hrs

Max. Marks: 100

Note: i) Answer **TWO** full questions, selecting **ONE** full question from **UNIT - I** and **UNIT - II**.

ii) Answer any **THREE** full questions, choosing from **UNIT - III, UNIT - IV** and **UNIT - V**.

UNIT - I

- 1 a. With the help of a neat diagram, describe the architecture of the core network of UMTS and GSM. 8
- b. What is LTE? Explain the architectural evolution of UMTS and GSM to LTE, with the help of suitable diagram. 8
- c. What is VoLTE? Describe. 4

OR

- 2 a. Discuss over the roaming architecture of Evolved packet core. 6
- b. Explain the protocol architecture of LTE, and write a note on user plane protocols and signaling protocols with respect to LTE communication protocols. 10
- c. Write a note on 3GPP specification for LTE. 4

UNIT - II

- 3 a. What are the key elements include in the target setting for LTE feasibility study work? 8
- b. Compare the single carrier and multi carrier transmission techniques. 8
- c. List important features of OFDMA in LTE. 4

OR

- 4 a. Explain the working of OFDMA transmitter and receiver, with suitable diagrams. 10
- b. Explain how resource allocation and mapping is carried out in SC-FDMA system? 6
- c. Describe the operation of multi-user MIMO principle with single transmission antenna devices. 4

UNIT - III

- 5 a. What are the expected features of 5G mobile communication leading toward the 4th stage of industrial revolution? 6
- b. Which are the economic sectors in India, where 5G plays a very important role? And how? 14
- 6 a. Describe the scope of ITU-R, 3GPP and IEEE in 5G standardization activities. 6
- b. List all the key performance indicators in 5G and explain all of them. 10
- c. Explain the importance of 5G in an application of autonomous vehicle control. 4

UNIT - IV

- 7 a. Explain the NFV framework and SDN architecture used in 5G system architecture. 10
- b. What are the high-level requirements of 5G architecture? Explain. 10

- 8 a. Write a note on 5G spectrum challenges. 6
- b. Explain the spectrum usage or sharing mechanism in 5G system. 8
- c. Explain how Geo-Location Database (GLDB) support dynamic vertical spectrum sharing in 5G communication system. 6

UNIT - V

- 9 a. What do you mean by Machine-Type Communication (MTC)? Explain MTC through the application of connected cars. 10
- b. 5G is guaranteed to be a ultra-reliable low-latency communication system. Justify the statement considering reliable low-latency and D-2-D communication features. 10
- 10 a. Discuss over all the challenges of D-2-D communications, which can be overcome through future 5G communication systems? 10
- b. Explain the network-assisted multi-hop D-2-D communication system, with suitable network diagram. 10

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Murli Krishna
4/9/2020
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