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**PRESIDENCY UNIVERSITY
BENGALURU**

SCHOOL OF ENGINEERING

TEST - 1

Even Semester: 2018-19

Course Code: ECE 311

Course Name: Wireless Communication and Networks

Programme & Sem: B.Tech (VI & VIII) Sem

Date: 06 March 2019

Time: 1 Hour

Max Marks: 40

Weightage: 20%

Instructions:

- (i) *Read Questions carefully*
- (ii) *All questions are compulsory*

Part A

Answer **all** the Questions. **Each** question carries **five** marks. (4Qx5M=20)

1. Identify the transmission mode in each case and define them:(a)WhatsApp video call between two friends (b)Army men using walkie-talkie (c)Listening to 98.1 Radio Mirchi in car.
2. Describe the limitations of wireless Networks.
3. Explain the impact of cluster size 'N' on channel capacity 'C' with and without interference in the system.
4. Read the analogy carefully. In a university, in each classroom, faculty controls 60 students, the head of the department monitors the faculties and they work as a team in department, the dean of university constantly monitors departmental heads and also acts as medium for communication between other universities and schools. If each classroom is considered to be a cell, identify how each component mentioned above is analogous to cellular system and describe their function in cellular system.

Part B

Answer **both** the Questions. **Each** question carries **four** marks. (2Qx4M=8)

5. List the features of wired and wireless networks in a table.
6. On 15th August, the Government of India sent text to all the citizens, "Wishing everyone Happy 71st Independence Day. JAI HIND" Identify the wireless system used. Draw and explain its architecture.

Part C

Answer **both** the Questions. **Each** question carries **six** marks.

(2Qx6M=12)

7. Batman has i-phone cell, he wants to call Joker on his one-plus cell. Explain how this call is established?
8. In a densely populated area like Koramangala, a large cell provides coverage over an area of 160 km^2 and supports 45 voice channels. If this larger cell is divided in to 7 smaller cells, where each cell supports 30% of total available channels. Compute the total capacity of the system, coverage area of each cell and frequency reuse factor for the area covered by large cell.

Part C

Answer **both** the Questions. **Each** question carries **six** marks.

(2Qx6M=12)

6. (a) List the main features of FHSS.
(b) In AMPS, spectrum provided to operators is 15MHz for total no. of 428 channels and each channel between them is 35 KHz. Calculate Bandwidth allocated to guard band.
7. Joey is a big foodie. He is in India and travels places to discover different tastes of India. While travelling from Bangalore to Goa, he had to pass through an area with a cluster of 12 cells to reach border of Goa. Find co-channel reuse ratio and use this value to estimate SIR at the cell boundary. Assume path loss exponent to be 4.



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**PRESIDENCY UNIVERSITY
BENGALURU**

SCHOOL OF ENGINEERING

END TERM FINAL EXAMINATION

Even Semester: 2018-19

Date: 23 May 2019

Course Code: ECE 311

Time: 3 Hours

Course Name: Wireless Communication and Networks

Max Marks: 80

Program & Sem: B Tech & VI & VIII Sem

Weightage: 40%

Instructions:

- (i) **Answer all questions**
- (ii) **Read questions carefully**

Part A

Answer **all** the Questions. **Each** question carries **one** mark.

(20Qx1M=20M)

1. I. In which multiple access technique, the frequency spectrum is divided among users.
a. FDMA b. TDMA c. CDMA d. SDMA
- II. Specification of a wireless LAN standards
a. 802.11 b. 802.3 c. 802.3u d. 802.3z
- III. Which are the different transmission modes available in wireless systems?
a. Simplex b. Half Duplex c. Full Duplex d. All the three
- IV. Simulcasting is commonly used in which communication system?
a. Cordless system b. Paging c. Cellular System d. All the three
- V. To identify a mobile equipment, which number is used?
a. IMEI b. IMSI c. PIN d. None of These
- VI. Co-Channel Cells share _____ set of frequencies.
a. Same b. Different c. Orthogonal d. Similar
- VII. In a densely populated area, which type of cell enhancement technique is needed?
a. Splitting b. Sectoring c. Repeater d. Microzone cell
- VIII. In which multiple access technique, the time is divided among users?
a. FDMA b. TDMA c. CDMA d. SDMA
- IX. The different types of handoffs are:
a. Soft b. Hard c. Softer d. All the three
- X. Broadcasting is an example of which transmission mode?
a. Simplex b. Half Duplex c. Full Duplex d. None of These
- XI. Use of guard band can reduce which type channel Interference?
a. ACI b. CCI c. SCI d. All
- XII. A base station sends signal to mobile equipment using _____ channel.
a. Forward b. Reverse c. Straight d. All
- XIII. The message sent in paging system is called?
a. Page b. MSG c. message d. SDMA
- XIV. Shape of a cell in cellular system for maximum radio coverage?
a. Circle b. Square c. Hexagon d. Pentagon

- XV. Handheld walkie-talkies are example for _____ transmission mode.
a. Simplex b. Half Duplex c. Full Duplex d. None of These
- XVI. In which cell capacity enhancement technique, omni directional antennas are replaced by sectored antennas.
a. Splitting b. Sectoring c. Repeater d. Microzone cell
- XVII. In TDMA _____ is introduced to avoid interference.
a. Guard Period b. Guard Band c. Space d. All
- XVIII. Multiple users access the same channel air in wireless communication using _____ technique.
a. Multiplexing b. Multiple Access c. Queue d. None of These
- XIX. Splitting cells _____ channel capacity in a cellular system.
a. degrades b. Improves c. has no effect d. None of These
- XX. One way communication is only possible in _____ transmission mode.
a. Simplex b. Halfduplex c. Fullduplex d. All

Part B

Answer **all** the Questions. **Each** question carries **five** marks. (4Qx5M=20M)

2. Explain call establishment in a cellular communication system with necessary steps.
3. Define handoff. Explain the process with the help of a neat diagram.
4. List any five features of Bluetooth.
5. Differentiate adhoc mode from the infrastructure mode of WLAN.

Part C

Answer **all** the Questions. **Each** question carries **ten** marks. (4Qx10M=40M)

6. Name any 2G standard and explain the architecture of the standard with the help of a neat diagram.
7. Draw the OSI model of a network device and give the function of each layer.
8. Compare the major features of 1G, 2G, 3G and 4G standards.
9. Explain the architecture of GPRS with necessary diagrams.