

AMIETE – ET/CS (Current & New Scheme)

Time: 3 Hours

DECEMBER 2018

Max. Marks: 100

PLEASE WRITE YOUR ROLL NO. AT THE SPACE PROVIDED ON EACH PAGE IMMEDIATELY AFTER RECEIVING THE QUESTION PAPER.

NOTE: There are 9 Questions in all.

- Question 1 is compulsory and carries 20 marks. Answer to Q.1 must be written in the space provided for it in the answer book supplied and nowhere else.
- The answer sheet for the Q.1 will be collected by the invigilator after 45 minutes of the commencement of the examination.
- Out of the remaining EIGHT Questions answer any FIVE Questions. Each question carries 16 marks.
- Any required data not explicitly given, may be suitably assumed and stated.

Q.1 Choose the correct or the best alternative in the following: (2×10)

- a. In CDMA _____ is assigned by the BS to each user and these distinct codes are used for different users.
- | | |
|-------------------|-----------------------|
| (A) A frequency | (B) A time slot |
| (C) A unique code | (D) A Space time code |
- b. The statement “Radio path between transmitter and receiver is obstructed by a surface with sharp irregular edges” describes
- | | |
|----------------|-----------------|
| (A) Reflection | (B) Diffraction |
| (C) Scattering | (D) Refraction |
- c. Block codes used for forward error correction systems are most cyclic codes wherein encoding or decoding is performed with a/an
- | | |
|-----------------|--------------------|
| (A) Flip flop | (B) Adder |
| (C) Sub tractor | (D) Shift register |
- d. A cell has 100 Mobile stations operating with 30 requests /calls generated during an hour. The average call holding time is 6 minutes. The offered traffic load in Erlang is ,
- | | |
|-------|-------|
| (A) 4 | (B) 3 |
| (C) 5 | (D) 6 |
- e. The coherent bandwidth is a _____ measure of the range of frequencies over which a channel can be considered flat.
- | | |
|-----------------|-----------------|
| (A) Statistical | (B) Empirical |
| (C) Fundamental | (D) Geometrical |
- f. In SDMA the Omni directional Communication space is divided into _____ sectors.
- | | |
|-------------------------|--------------------------|
| (A) Hexagonally divided | (B) Triangularly formed |
| (C) Spatially separable | (D) dynamically allotted |

Code: AE76/AE127/AC127

Subject: WIRELESS AND MOBILE COMMUNICATIONS

- g. In reuse partitioning based allocation strategy the inner zone would require lesser power to attain the desired CIR/SIR. This technique can be used to improve
 (A) Reuse ratio (B) Co channel interference
 (C) Spectral Efficiency (D) Doppler spread
- h. Make before break” is the characteristic of
 (A) Hard handoff (B) Soft handoff
 (C) Dynamic handoff (D) Smooth handoff
- i. The type of handoff from one satellite to another satellite under the control of BS is known as
 (A) Intra satellite handoff (B) BS handoff
 (C) Inter system Handoff (D) Inter satellite handoff
- j. The DSDV routing protocol is based on the _____ routing algorithm.
 (A) Bellman Ford (B) Temporally ordered
 (C) Gateway Switch (D) Dynamic Source

**Answer any FIVE Questions out of EIGHT Questions.
 Each question carries 16 marks.**

- Q.2** a. Differentiate between Adhoc & Sensor networks and cellular networks. (8)
 b. Explain central limit theorem and its importance. (8)
- Q.3** a. Explain Doppler effect and delay spread. (8)
 b. Explain the turbo code encoder and decoder. (8)
- Q.4** a. Prove that $N = i^2 + j^2 + ij$ in GSM technology. (8)
 b. How does slotted ALOHA improve the throughput as compared to pure ALOHA? (8)
- Q.5** a. What is difference between guard band and guard time and why are they important in cellular systems? (8)
 b. Explain Reuse Partitioning and overlapped cells based channel allocation. (8)
- Q.6** a. What is meant by registration and roaming support in cellular communication? (8)
 b. Explain Bellcore PCS reference architecture. (8)
- Q.7** a. With example explain route discovery in AODV Protocol. (8)
 b. Explain hierarchical clustering EM WSN with suitable example. (8)
- Q.8** a. Explain the broadcast channels used in GSM. (8)
 b. How global positioning system works? (8)
- Q.9** a. Differentiate between UWB and spread spectrum techniques. (8)
 b. Explain IEEE 802.15.1 in Detail. (8)