SEM VII (OLD) - EXTC

FUND. OF MICROWAVE

MAY '16

QP Code : 29920

(3 Hours) **[Total Marks : 100**

N.B. : (1) Question **No.1** is compulsory.
(2) Answer any **four** out of remaining **six** questions.
(3) Illustrate answers with sketches.
(4) Use of smith chart is compulsory.

1. (a) Explain amplification process in TWT. 5
(b) Differentiate between waveguides and transmission lines. 5
(c) With a neat diagram explain the working of a PIN diode. 5
(d) List out different characteristics of microwaves. 5

2. (a) Mention different types of electron flow. Explain Brillouin flow and derive an expression for Brillouin magnetic field Br. 10
(b) Describe operation of O-type and M-type devices in brief. 10

3. (a) Describe the mechanism of velocity modulation in a two cavity klystron and hence obtain an expression for the bunched beam current. Also find out condition for maximum power output. 10
(b) Explain the procedure of measurement of dielectric constant at microwave frequency. 10

4. (a) What are the steps to solve a double stub matching problem? 10
(b) Using the multiple reflection viewpoint explain the principle of working of a quartor wave transformer. 10

5. (a) Describe different modes of oscillation of Gunn Diode. 10
(b) Explain the working of a negative resistance parametric amplifier. 10

6. (a) With neat diagrams explain the working of a Guun Diode. 10
(b) Explain the working of magic Tee. Design a circulator using Magic Tees. 10

7. Write short notes on the following:
(a) Hybrid junctions 5
(b) Power dividers 5
(c) Microwave filters 5
(d) Compare klystron with magnetron. 5

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B.E / SEM VII (OLD) / EXTC

MOBILE COMM. SYS MAY 16.

QP Code : 29859

(3 Hours) **[Total Marks : 100**

NB: 1. Question no. 1 is compulsory.

2. Attempt any four out of remaining six.

3. Assume suitable data if required.

Q.1 Attempt any four. (20)
(a) Explain hard handoff in mobile cellular system.
(b) Explain IS95 features and services.
(c) Differentiate between WCDMA and CDMA 2000.
(d) Explain factors influencing small scale fading.
(e) Explain cell splitting in mobile cellular system

Q.2(a) With neat diagram explain reverse link traffic channel in IS-95. (10)
(b) Explain RAKE receiver in detail. (10)

Q.3(a) Compare SDMA, TDMA, FDMA and CDMA. (10)
(b) Explain with neat diagram HSCSD network architecture. (10)

Q.4(a) Explain IMT 2000 indetail. (10)
(b) With neat diagram explain GPRS architecture. (10)

Q.5(a) Explain power control in 3G system. (10)
(b) Explain Path Loss model. (10)

Q.6(a) Give 3G – CDMA evolutionary path. (05)
(b) What is Grade of Service, Erlang B and Erlang C system explain. (05)
(c) Explain security algorithm in GSM. (10)

Q7(a) Consider that a geographical service area of a cellular system is 420 sq km, a total of 1001 radio channels are available for handling traffic. Suppose the area of a cell is 12sq km. (10)
(1) How many times would the cluster of size 7 have to be replicated in order to cover the entire service area? Calculate the number of channels per cell and the system capacity.
(2) If the cluster size is decreased from 7 to 4 then does it result into increase in System capacity.
(b) Explain GSM architecture, and function of each block. (10)

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MAY '16.

QP Code : 29786

(3 Hours) **[Total Marks : 100**

N.B 1.Question No. 1 is compulsory.

2.Attempt **any four** questions out of the remaining **six** questions

1 a What are the various models used for data compression ? 05

b What are active and passive attacks? 05

c What is Biometric authentication? Explain with examples. 05

d What is the need for data compression? 05

2 a A source emits letter from an alphabet A={ a1 , a2 , a3 , a4, a5 } with probabilities P(a1) = 0.15, P(a2) = 0.04, P(a3) = 0.26, P(a4) = 0.05 and P(a5)=0.50. 10

a) Calculate the entropy of this source

b) Find the Huffman code for this source.

c) Find the average length of the code in and its redundancy

b Explain the working of DES. 10

3 a Show the difference in the encoding procedure of LZ78 and LZW with an example. 10

b How are keys distributed in conventional encryption systems? 10

4 a Discuss the various lossless techniques for image compression. 10

b Explain Chinese Remainder Theorem with an example. 10

5 a How is motion compensation used in video compression? 10

b What are the various aspects of Firewall design? 10

6 a Discuss the differences in compression schemes of JPEG and JPEG 2000. 10

b What are digital signatures and how are they implemented ? 10

7. Write notes on[Any TWO] 20

a Elliptic Curve Cryptography

b MPEG Audio System

c ADPCM Encoder and Decoder

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