



Reg. No. :

Name :

**VIII Semester B.Tech. (Reg./Sup./Imp.) including Part Time
Degree Examination, April 2011
(2007 Admn.)
ELECTRONICS AND COMMUNICATION
PT 2K6/2K6 EC 801 : Radar and Navigation**

Time: 3 Hours

Max. Marks : 100

I. Answer **all** the questions :

- 1) Explain the basic principles of a radar system. List the application of Radars.
- 2) How does integration of radar pulses improve the detection performance of a radar ? Explain.
- 3) What do you understand by Doppler effect ? Derive an expression for relative velocity of a moving target.
- 4) Write a note on automatic detection and track (ADT).
- 5) Explain the role of atmospheric refraction and diffraction on propagation of radar signals.
- 6) With neat diagrams explain the display systems used in Radar.
- 7) Explain the four methods of navigation.
- 8) Explain the three segments of the GPS system. (8×5=40)

II. Answer **any one** full question :

- 1) Draw a neat block diagram of conventional pulse radar with a superheterodyne receiver. Explain the each block in detail.

OR

- 2) Derive an expression for maximum range of radar and discuss the different factors that determine the performance of the radar. (1×15=15)

P.T.O.

III. Answer **any one** full question :

- 1) With necessary diagrams and equations explain
 - a) The working principle of MTI Radar
 - b) Butterfly effect
 - c) Delay line canceller
 - d) Coherent MTI Radar with power amplifier transmitter.

OR

- 2) With block diagrams explain
 - a) Digital MTI Doppler signal processor
 - b) Moving Target Detector (MTD). (1×15=15)

IV. Answer **any one** full question :

- 1) a) With relevant mathematical expressions explain the working of matched filter receiver.
b) Discuss the different detection criteria used in Radar receiver.

OR

- 2) a) Discuss the component parts of Radar signal management.
b) With a neat diagram explain the working of coaxial magnetron used in Radar transmitter. (1×15=15)

V. 1) With diagrams, discuss the different methods of radio direction finding.

OR

- 2) a) With diagrams explain LORAN-A system.
b) With a neat block diagram explain the doppler navigation system. (1×15=15)
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M 18992

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VIII Semester B.Tech. (Reg./Sup./Imp.) Including Part Time
Degree Examination, April 2011
(2007 Admn.)

ELECTRONICS AND COMMUNICATION
PT2K6/2K6 EC 802 : Optical Communication

Time: 3 Hours

Max. Marks : 100

Instruction : Q. I is compulsory.

- I. A) Mention the benefits and disadvantages of fiber optic communication system. 5
B) Explain the different types of attenuation mechanism in single and multimode optical fibers. 5
C) Explain the basic principle of operation of LED. 5
D) With suitable diagram, explain how avalanche photodiode can be used a photodetector. 5
E) Write a note on fiber dispersion. 5
F) Bring out the difference between Homodyne and heterodyne systems. 5
G) Write a note on optical CDMA. 5
H) Explain the principle of operation of optical amplifiers. 5
- II. A) Derive the solution to the Maxwell's equations in circularly symmetric step indexed optical fiber. 15
- OR
- B) i) Explain the different types of fiber based on Refractive index and the number of mode. 10
ii) Write a note on polarisation maintaining fiber. 5

P.T.O.



- III. A) i) Explain structure of LASER diode. Compare the optical performance of LASER with LED. **10**
ii) Define responsivity and sensitivity of a photodetector. **5**
OR
- B) i) Compare the performance of PIN and Avalanche photodiode. **5**
ii) Explain the working of distributed feedback lasers. **10**
- IV. A) i) Write a note on noise incoherent systems. **5**
ii) Explain the working principle of intensity modulated direct detection systems. **10**
OR
- B) i) What is ISI ? Explain its causes and its effect on system performance. **10**
ii) Write a note on nonlinear effects in optical fiber. **5**
- V. A) i) Explain the different types of optical multiplexing methods. **10**
ii) Write a note on amplifier noise. **5**
OR
- B) i) Explain how the light is amplified in semiconductor optical amplifier. **5**
ii) Write a note on SONET/SDH. **10**
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M 19048

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**VIII Semester B.Tech. (Reg./Sup./Imp.) including Part Time
Degree Examination, April 2011
ELECTRONICS AND COMMUNICATION
PT 2K6/2K6 EC 803 : Computer Communication and Networking
(2007 Admn.)**

Time: 3 Hours

Max. Marks: 100

- I. 1) Explain with neat diagram the TCP/IP reference model. 5
- 2) Compare DQDB and frame relay services. 5
- 3) Describe a SONET system with neat block diagram of its path. 5
- 4) List and explain the service primitives of a transport layer. 5
- 5) If customers arrive at a fast food restaurant at a rate of 5 per min and wait to receive their order for an average of 5 min. customers eat in the restaurant with probability 0.5 and carry out parcel with probability 0.5. A meal requires an average of 20 min. What is the average number of customers in the restaurant ? 5
- 6) Discuss the types of priority queueing. 5
- 7) List (8-10) quality of services parameters offered by ATM networks. 5
- 8) Discuss ICMP protocol. 5
- II. A) 1) Discuss in detail different ways of detecting or correcting the transmission errors. 10
- 2) Explain the FDDI frame format. 5
- OR
- B) 1) Discuss the standard IEEE 802.6. 7
- 2) Determine the checksum and transmitted code for the message polynomial $x^9 + x^7 + x^6 + x^4 + x^3 + x + 1$ if the $g(x) = x^4 + x + 1$. 3
- 3) Explain the Go back n retransmission strategy with sketches and examples. 5

P.T.O.



- III. A) 1) Explain the operation of 3-way hand shaking with reference to transport layer. How does it prevent old duplicate connection initiation from causing confusions ? Show it diagrammatically. 9
2) Discuss TCP congestion control. 6
OR
- B) 1) Explain TCP header, with neat sketch. 10
2) Discuss routing optimization in datagram networks. 5
- IV. A) 1) Explain the formulation of discrete Markov chain for the M/M/1 system. 5
2) Derive an expression for the average number of customers in Queue and in the system. 10
OR
- B) 1) What is P.K. formula ? Discuss its significance. Also derive it 12
2) Discuss different types of delays a packet suffers on a link. 3
- V. A) 1) For hierarchical routing with 4800 routers, what region and cluster sizes should be chosen to minimize the size of the routing table for three level hierarchy. 4
2) Give the comparison between IPV4 and IPV6. 5
3) Explain with neat sketches statistical multiplexing. 6
OR
- B) 1) Discuss the ATM header structure in detail. 8
2) Discuss in detail the MAC protocols that are used in WSN networks. 7
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M 18993

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VIII Semester B.Tech. (Reg./Supple./Imp.) including Part-Time Degree
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Electronics and Communication

PT 2K6/2K6 EC 804 : WIRELESS MOBILE COMMUNICATION

Time: 3 Hours

Max. Marks : 100

Instruction : Answer all the questions.

1. a) Explain some 3G standards which are used. 5
 - b) Explain EDGE. What is the type of modulation used in EDGE ? 5
 - c) Explain what is frequency reuse. Why is frequency reuse used in GSM and IS-95 technology ? 5
 - d) Explain what is cell splitting. How can the capacity be improved with cell splitting ? 5
 - e) Explain coherence time and coherence B.W. 5
 - f) Explain different types of small scale fading. 5
 - g) Explain Gold sequence. 5
 - h) Explain how power control is done in CDMA system. 5
 2. A) Explain different standards used in 1G, 2G, 3G technology. Explain each system with example. 15
- OR
- B) Compare the architecture of GSM and GPRS. Draw the architecture of each one. 15

P.T.O.



3. A) Explain how capacity and coverage can be increased in cellular system. Explain all the available methods. 15
- OR
- B) Explain why handover is required. Explain soft and hard handover. In which one we use soft and hard handover. 15
4. A) Explain impulse response of a multipath channel. Explain different types of small scale fading. 15
- OR
- B) Explain free space propagation model, ground reflection model. 15
5. A) Explain with block diagram RAKE receiver. Explain in detail each block. 15
- OR
- B) Explain how PN-sequence are generated. Explain maximum length sequence and gold sequence. 15
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M 18995

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Electronics and Communication

PT 2K6/2K6 EC 805(C) : COMMUNICATION SWITCHING SYSTEM

Time: 3 Hours

Max. Marks: 100

Answer **all** questions. **5** marks **each** :

1. Explain distributed stored program control with the help of a neat diagram.
2. Find an expression for blocking probability of a two-stage TS switch.
3. Explain with a neat block diagram a three stage STS switch.
4. Explain with a neat block diagram a two-stage ST switch.
5. Write a note on GOS and blocking probability.
6. Write B-D equations and explain all the terms in these equations.
7. Explain the basic scheme for CCS signalling with a neat diagram.
8. Explain the typical CCS signalling message formats with diagrams.

Answer the following **15** marks questions.

1. A) Explain the basic time division space switching with a neat diagram of a output controlled time division space switch.

OR

1. B) Explain the principle of time slot interchange with a neat diagram.

P.T.O.



2. A) Describe the call processing structure of AT & T 5ESS switch with a neat diagram.

OR

2. B) Explain BD process. Derive steady state equations for BD process.

3. A) Derive the Poisson arrival process equation starting from BD process equations.

OR

3. B) Show that the blocking probability tends to zero assuming infinite sources in LCC model.

4. A) Explain the different types of inchannel signalling.

OR

4. B) Explain SS7 architecture along with its all formats of signalling units.