

**(DEC 411)**

B.Tech. DEGREE EXAMINATION, DECEMBER 2012.

(Examination at the end of Final Year)

Electronics and Communication Engineering

INDUSTRIAL MANAGEMENT

Time : Three hours

Maximum : 75 marks

Question No. 1 is compulsory and answer any FOUR from the remaining.

1. Write short notes :
    - (a) Business.
    - (b) Compound interest
    - (c) Types of depreciation.
    - (d) Value analysis.
    - (e) OC curve.
    - (f) Job design.
    - (g) Market Research.
    - (h) EPQ.
  2. Describe the principles of Scientific Management.
  3. Explain the salient features of private and public limited companies.
  4. What is depreciation? Explain any two common methods of depreciation.
  5. Describe the present worth and future worth methods of economic alternatives.
  6. Explain the functions of production planning control.
  7. What is materials management? Explain the ABC selective control technique.
  8. Explain the objectives and procurement methods of materials management.
  9. What is marketing management? Explain the functions of marketing.
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B.Tech. DEGREE EXAMINATION, DECEMBER 2012

(Examination at the end of Final Year)

Electronics and Communication Engineering

Paper II — SATELLITE COMMUNICATION

Time : Three hours

Maximum : 75 marks

Answer Question No.1 compulsorily. (15 marks)

Answer ONE Question from each Unit. ( $4 \times 15 = 60$ )

1. (a) State Kepler's three laws of planetary motion.
- (b) What is a slant range?
- (c) Why uplink and downlink frequencies are different in satellite communication?
- (d) What do apogee and perigee and line of nodes?
- (e) Define frequency reuse.
- (f) Compare TDMA and FDMA.
- (g) Define the term VSAT.

UNIT I

2. (a) Explain as to how the synchronous orbit of geostationary satellite is being determined?
- (b) A satellite is rotating in an elliptical orbit with a perigee of 1000 km and an apogee of 4,000 km. Calculate its orbital period.  
(Mean earth radius = 6379 km)

Or

- (c) Explain the orbital effects in satellite communication system performance.
- (d) Explain the location of satellite with respect to earth.

## UNIT II

3. (a) Explain in detail about the tracking, telemetry and command subsystem with neat block diagram.
- (b) Explain in detail about 6/4 GHz communication satellite subsystem.

Or

- (c) Compare FDMA and CDMA.
- (d) What is Doppler effect? Explain how it is useful for tracking.

## UNIT III

4. (a) Explain the operational characteristics and performance requirements of (VSAT's) mobile and transportable earth stations.
- (b) Explain the factors that influence the design of an earth station for satellite.

Or

- (c) Present the satellite link budget for a up and downlink and find out G/T ratio.
- (d) Derive Link power budget equation.

## UNIT IV

5. (a) Write short notes on slow frequency hopping.
- (b) Explain in detail about Practical Jammers.

Or

- (c) Explain how acquisition and tracking is done.
- (d) Write short notes on the following :
- (i) PN sequences.
  - (ii) DSSS with CBPSK.
  - (iii) Probability of error.
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**(DEC 413)**

B.Tech. DEGREE EXAMINATION, DECEMBER 2012

(Examination at the end of Final Year)

Electronics and Communication Engineering

Paper III — MICROWAVE ENGINEERING

Time : Three hours

Maximum : 75 marks

Answer Question No.1 compulsorily. (15 marks)  
Answer any ONE question from each Unit. (4 × 15 = 60)

1. (a) Define Velocity Modulation. (2)
- (b) Define Microwave Junction. (1)
- (c) Write applications of Directional Coupler. (2)
- (d) Define Microwave resonator. (2)
- (e) What is Tunneling effect in Tunnel diode? (2)
- (f) What is Isolator? (2)
- (g) Define gyrator. (2)
- (h) Define Ferrite devices. (2)

UNIT I

2. (a) Draw and explain of two-cavity Klystrun amplifier.
- (b) Explain Bunching process in a 2-cavity Klystrun amplifier.

Or

- (c) Draw and explain TWT tube and write applications of TWT tube.
- (d) Explain cylindrical magnetron.

## UNIT II

3. (a) Draw and explain E-plane Tee junction.
- (b) Draw and explain of Directional couplers.

Or

- (c) Draw and explain rectangular and cylindrical cavity resonators.
- (d) Draw and explain of Magic Tee.

## UNIT III

4. (a) Draw and explain in tail of IMPATT diode.
- (b) Draw and explain of Tunnel diode and draw V-I characteristics.

Or

- (c) Explain the construction and working of GUNN diode.
- (d) Explain in detail of crystal detectors.

## UNIT IV

5. (a) Explain impedance measurement by using Microwave bench setup.
- (b) Explain VSWR measurement by using microwave bench setup.

Or

- (c) Write a short note on :
    - (i) Microwave power measurement.
    - (ii) Scattering coefficient measurement.
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**(DEC 414)**

B.Tech. DEGREE EXAMINATION, DECEMBER 2012

(Examination at the end of Final Year)

Electronics and Communication Engg.

Paper IV — ANTENNAS AND PROPAGATION

Time : Three hours

Maximum : 75 marks

Answer Question No.1 compulsorily. (15 marks)  
Answer ONE question from each Unit. (4 × 15 = 60)

1. Write brief notes on :

- (a) Define Radiation Mechanism. (2)
- (b) Write applications of short antennas. (2)
- (c) What is smart antenna? (1)
- (d) Define radiation efficiency. (2)
- (e) What is Microstrip antenna? (2)
- (f) Define virtual height. (2)
- (g) Define an uniform linear array. (2)
- (h) Define isotropic radiator. (2)

UNIT I

2. (a) Explain power radiated by current element.  
(b) Explain and express radiation from Quarter wave Monopole.

Or

- (c) Explain the working of Travelling wave antenna.
- (d) Explain Basic principle of small circular loop antenna.

## UNIT II

3. (a) Explain Radiation density and Radiation intensity.  
(b) Explain Directive gain, power gain.

Or

- (c) Explain uniform linear array.  
(d) Explain principle of multiplication of patterns.

## UNIT III

4. (a) Draw and explain of yagi-uda antenna.  
(b) Draw and explain of log periodic antenna.

Or

- (c) Explain parabolic reflector antenna with neat diagrams.  
(d) Explain the principle of V and Rhombic antennas.

## UNIT IV

5. (a) Explain Ground-wave propagation.  
(b) Explain atmospheric effects in space-wave propagation.

Or

- (c) Write a short note on :  
(i) Duct propagation.  
(ii) Critical frequency.  
(iii) Skip distance.
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**(DEC 415)**

B.Tech. DEGREE EXAMINATION, DECEMBER 2012

(Examination at the end of Final Year)

Electronics and Communication Engg.

Paper V — VLSI DESIGN

Time : Three hours

Maximum : 75 marks

Answer Question No.1 compulsorily. (15 marks)  
Answer ONE question from each Unit. (4 × 15 = 60)  
All questions carry equal marks.

1. (a) Explain about Moore's law and its significance. (2)
- (b) Define Transconductance  $g_m$ . (2)
- (c) Distinguish the terms simulation and synthesis. (3)
- (d) Explain the need of scaling. List different scaling models. (2)
- (e) Define sheet resistance. (2)
- (f) What are full custom ASIC's? (2)
- (g) Give comparison between PLA's and PALS. (2)

UNIT I

2. (a) Explain basic electrical properties of BICMOS circuits.
- (b) Explain the steps of CMOS fabrication with the help of neat sketches.

Or

- (c) Find the figure of merits of CMOS transistors in terms of geographical parameters.
- (d) Draw the stick diagram and circuit diagram of a MOS and explain.



## UNIT II

3. (a) Explain in detail about wiring capacitance.
- (b) Write in detail about scaling factors for device parameters.

Or

- (c) Explain about various design rules information of layers.
- (d) Derive the sheet resistance  $R_s$  of MOS layers.

## UNIT III

4. (a) Design an ALU subsystem.
- (b) Differentiate switch logic and gate logic.

Or

- (c) Describe the design rules of multipliers.
- (d) Explain the architectural issues of a subsystem.

## UNIT IV

5. (a) Write explanatory notes on Gate array based ASICs.
- (b) Discuss about libraries and packages in VHDL.

Or

- (c) Distinguish CPLD's and FPGA's.
  - (d) Explain VLSI design flow with the help of block diagram.
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**(DEC 416 A)**

B.Tech. DEGREE EXAMINATION, DECEMBER 2012.

(Examination at the end of Final Year)

Electronics and Communication Engineering.

Paper VI — COMPUTER NETWORKS

Time : Three hours

Maximum : 75 marks

Answer Question No. 1 compulsorily. (15 × 1 = 15)

Answer ONE question from each unit. (4 × 15 = 60)

1. (a) Define Network.
- (b) Define Reference model.
- (c) Define Error.
- (d) Define protocol.
- (e) Define Blue tooth.
- (f) Define TCP.
- (g) Define Algorithm.
- (h) Define Flooding.
- (i) Define congestion.
- (j) Define QOS.
- (k) Define Routing.
- (l) Define DNS.
- (m) Define E-mail.
- (n) Define Threat.
- (o) Define UDP.

## UNIT I

2. (a) Explain OSI.  
(b) Discuss about Network software.
- Or
- (c) Explain about Transmission media.  
(d) Explain design issues in data link layer.

## UNIT II

3. (a) Explain about Multiple access protocols in Ethernet.  
(b) Explain about Data link layer switching.
- Or
- (c) Explain about Routing algorithms in network layer.  
(d) Discuss about Distance vector routing link.

## UNIT III

4. (a) Explain about congestion control algorithms.  
(b) Explain clearly network layer in internet.
- Or
- (c) Explain about Transport protocols.  
(d) Discuss about RTP.

## UNIT IV

5. (a) Explain clearly about Multimedia.  
(b) Discuss about symmetric key algorithms.
- Or
- (c) Write short notes about Digital signatures.  
(d) Discuss about Authentication protocols.
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**(DEC 416 B)**

B.Tech. DEGREE EXAMINATION, DECEMBER 2012

(Examination at the end of Final Year)

Electronics and Communication Engg.

Paper VI — SPEECH PROCESSING

Time : Three hours

Maximum : 75 marks

Answer Question No.1 compulsorily. (15 × 1 = 15)

Answer ONE question from each Unit. (4 × 15 = 60)

1. (a) Define Linguistic.
- (b) Define Phoneme.
- (c) What are the different category of speech sounds?
- (d) Define step size.
- (e) What is a pitch?
- (f) What is a vocoder?
- (g) What is sampling?
- (h) What is format?
- (i) What is speech communication?
- (j) Define Homomorphic vocoder.
- (k) What do you mean by speech synthesis?
- (l) Define auto correlation method.
- (m) Define mel-cepstrum.
- (n) Define Minimum distance classifier.
- (o) Define a Discrete-Time signal.

## UNIT I

2. (a) Explain the acoustics of speech production.  
(b) Explain the effect of losses in the vocal tract.

Or

3. Explain time-domain models for speech processing.

## UNIT II

4. (a) Explain the estimation of pitch by using comb filter.  
(b) Explain the concept of delta modulation.

Or

5. (a) Explain the spectral root Homomorphic Filtering.  
(b) Explain about DPCM.

## UNIT III

6. (a) Explain spectral root homomorphic filtering.  
(b) Explain the concept of short time energy.

Or

7. Explain the following :
  - (a) Short-time homomorphic analysis.
  - (b) Short-time speech analysis.

## UNIT IV

8. (a) Explain Sub-band coding.  
(b) Explain Auto correlation method.

Or

9. What are the spectral features of speaker recognition?

**(DEC 421)**

B.Tech. DEGREE EXAMINATION, DECEMBER 2012

(Examination at the end of Final Year)

Electronics and Communication Engineering

Paper VII — RADAR AND NAVIGATIONAL AIDS

Time : Three hours

Maximum : 75 marks

Answer Question No.1 compulsorily. (15 marks)

Answer ONE question from each Unit. (4 × 15 = 60)

1. Write briefly on :

- (a) Define Doppler effect. (2)
- (b) What is Altimeter? (2)
- (c) What is Delay line canceller? (2)
- (d) Define Noise Jamming. (2)
- (e) Define blind speed. (1)
- (f) What is conical scan? (2)
- (g) Write stealth applications. (2)
- (h) Write the applications of radar. (2)

UNIT I

2. (a) Draw and explain Pulse radar in detail.  
(b) Derive the radar range equation.

Or

- (c) Explain FMCW radar with neat block diagram.
- (d) Explain PRF and range ambiguities.

## UNIT II

3. (a) Draw and explain of MTI radar and write some applications of MTI radar.  
(b) Explain Doppler filter banks.

Or

- (c) Explain conical scan and mono pulse tracking.  
(d) Explain any one type of Tracking Radar system.

## UNIT III

4. (a) Draw and explain Super heterodyne receiver.  
(b) Explain Displays. Explain any one type of Display.

Or

- (c) Explain Electronic counter to Counter measurements.  
(d) Discuss the effect of Noise Jamming.

## UNIT IV

5. (a) Explain LORAN navigation system.  
(b) Explain automatic direction finder with neat diagram.

Or

- (c) Write a short notes on :  
(i) GPS  
(ii) TACAN
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**(DEC 422)**

B.Tech. DEGREE EXAMINATION, DECEMBER 2012.

(Examination at the end of Final Year)

Electronics and Communication Engineering

Paper VIII — OPTICAL COMMUNICATION

Time : Three hours

Maximum : 75 marks

Answer Question No. 1 compulsory. (15 marks)

Answer ONE question from each Unit. (4 × 15 = 60)

1. (a) What is meant by line width property of LASER? (3)
- (b) What is system risk time? (2)
- (c) What is meant by splicing? (2)
- (d) Define star couplers. (2)
- (e) Define Numerical Aperture. (2)
- (f) Differentiate between PIN and avalanche photo diodes. (2)
- (g) What is meant by direct intensity modulation? (2)

UNIT I

2. (a) Derive an expression for numerical aperture for graded index fiber.
- (b) Write advantages of optical fibers.

Or

3. (a) Write the applications of optical fiber.
- (b) Differentiate between single mode and multimode fibers.



## UNIT II

4. (a) Explain about splices used in optical communication.
- (b) Explain scattering and bending losses in fibers.

Or

5. (a) Differentiate between intermodal and intramodal dispersion.
- (b) Explain different connectors used in optical communication.

## UNIT III

6. (a) Describe the structural details and working of the Laser Diode. Mention any two advantages over normal LED.
- (b) Describe the working of an avalanche photodiode.

Or

7. (a) Explain the principle of photo detection.
- (b) Explain the operation of PIN photo diode.

## UNIT IV

8. (a) Explain the operation of optical receiver.
- (b) Explain direct intensity modulation.

Or

9. (a) Write about attenuation measurement in optical fiber.
  - (b) Write a short notes on the following :
    - (i) WDM
    - (ii) Dispersion losses.
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**(DEC 423)**

B.Tech. DEGREE EXAMINATION, DECEMBER 2012

(Examination at the end of Final Year)

Electronics and Communication Engineering

Paper IX — MOBILE AND CELLULAR COMMUNICATION (WAVES)

Time : Three hours

Maximum : 75 marks

Answer Question No.1 compulsorily. (15)

Answer ONE question from each Unit. (4 × 15 = 60)

1. (a) Define fading. (2)
- (b) What is an access channel. (3)
- (c) What is meant by multipath? (2)
- (d) Define system capacity. (2)
- (e) Define handoff. (2)
- (f) Give any two wireless standards. (2)
- (g) What are the advantages of fixed channel assignment? (2)

UNIT I

2. (a) Draw the schematic and present the working of a cellular system.
- (b) Explain different types of handoffs.

Or

3. (a) What are the differences between a landline based system and a mobile communication system.
- (b) Explain the concept of frequency reuse.

## UNIT II

4. (a) What is a multipath propagation and why is it important for mobile communication system?  
(b) What are the types of small scale fading? Explain each fading effects in detail.

Or

5. (a) What are the differences between linear and non-linear equalizers?  
(b) With a diagram explain the performance of RAKE receiver.

## UNIT III

6. (a) Explain IS-95 architecture.  
(b) Explain the procedure of call set up.

Or

7. (a) Explain the GSM system architecture and give its protocol specifications.  
(b) Explain Radio interface.

## UNIT IV

8. (a) Explain the architecture of GPRS.  
(b) Explain CDMA 2000 layering structure.

Or

9. (a) Explain W-CDMA.  
(b) Explain the WAP protocol.
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**(DEC 424 A)**

B.Tech. DEGREE EXAMINATION, DECEMBER 2012.

(Examination at the end of Final Year)

Electronics and Communication Engineering

Paper X — DIGITAL IMAGE PROCESSING

Time : Three hours

Maximum : 75 marks

Answer Question No. 1 compulsorily.  
Answer ONE question from each Unit.  
All questions carry equal marks.

1. (a) Define frame buffer. (2)
- (b) Explain about Segmentation of an Image. (2)
- (c) Write down the various 2D transformations. (2)
- (d) Explain error free compression. (2)
- (e) Explain about wiener filtering. (2)
- (f) What is Histogram? (2)
- (g) What is a wavelet? (3)

UNIT I

2. (a) Explain about Aliasing.
- (b) What are the advantages of colour images over monochrome images?

Or

3. (a) Explain the fundamental steps in digital Image processing with a neat diagram.

- (b) Distinguish between linear and non-linear operations.

## UNIT II

4. (a) Explain the operation of histogram equalization.  
(b) Explain about image compression models.

Or

5. (a) Explain enhancement using logic operations.  
(b) Discuss about DCT.

## UNIT III

6. (a) Explain various image compression models.  
(b) Explain in detail about error free coding.

Or

7. (a) Explain about compression ratio in DIP.  
(b) Explain about inverse filtering.

## UNIT IV

8. (a) Explain about detection of discontinuities.  
(b) Explain about region-oriented segmentation.

Or

9. (a) Explain about boundary and regional descriptors.  
(b) What is thresholding? Explain about global thresholding?
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**(DEC 424 B)**

B.Tech. DEGREE EXAMINATION, DECEMBER 2012

(Examination at the end of Final Year)

Electronics and Communication Engineering

Paper X — MICROCONTROLLERS AND EMBEDDED SYSTEMS

Time : Three hours

Maximum : 75 marks

Answer Question No.1 compulsorily. (15 marks)

Answer ONE question from each Unit. (4 × 15 = 60)

1. (a) Write the instruction format of IE and IP register of 8051. (2)
- (b) Write short note on OS security issues. (2)
- (c) What do you mean by tasks and tasks scheduling? (2)
- (d) Explain about smart card. (3)
- (e) Write different modes of operation of serial port. (2)
- (f) What is pipelined architecture? (2)
- (g) What is a semaphores? (2)

UNIT I

2. (a) Draw and explain Architecture of 8051 microcontroller.
- (b) Write the features of 8031 and compare with 8051.

Or

- (c) Explain memory organization of 8 bit microcontroller.
- (d) Discuss different addressing modes of 8051 microcontroller.

## UNIT II

3. (a) Explain serial communication using the I<sup>2</sup>C and USB bus.  
(b) Explain input and output device interfaces.

Or

- (c) Explain the following buses :  
(i) ISA (ii) PCI  
(d) Explain Timer/Counter function and its modes of operations.

## UNIT III

4. (a) Write the characteristics of Embedded system.  
(b) Write short note on Mutex and Mail Boxes.

Or

- (c) Explain Hard and Soft real time embedded system.  
(d) Explain about memory management of RTOS.

## UNIT IV

5. (a) Explain the interrupt service mechanism used in Embedded system.  
(b) Write the need of Device Drivers in Embedded system.

Or

- (c) Explain the working of a Automatic vending machine.  
(d) Short note on Adaptive cruise control system.
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