Code: 4G479

R-14

IV B.Tech. I Semester Regular Examinations Nov/Dec 2017
Computer Networks
(Electronics and Communication Engineering)

Max. Marks: 70   Time: 3 Hours

Answer all five units by choosing one question from each unit (5 x 14 = 70 Marks)

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UNIT–I

1. a) List the Communication Satellites .Explain them Briefly   8M
    b) Define Switching. Explain Circuit Switching with neat sketch   6M

OR

2. a) Define Computer Network. Explain Computer Network Applications   8M
    b) Explain TCP/IP Reference Model   6M

UNIT–II

3. a) Discuss about One bit sliding window protocol   10M
    b) List the Design issues of data link layer   4M

OR

4. Explain Binary Exponential Back off Algorithm with an example   14M

UNIT–III

5. a) Classify the Routing Algorithms. Describe in detail about Distance Vector with an example   8M
    b) Explain Optimality Principle with an example   6M

OR

6. a) Briefly Explain about Congestion Control Algorithms   10M
    b) Explain Network layer in the Internet   4M

UNIT–IV

7. a) Explain the IPV4 header format with neat sketch   10M
    b) Write short note on Elements of Transport Protocol   4M

OR

8. a) Classify the Internet Transport Protocols: Explain with UDP   8M
    b) Briefly Explain about TCP with an example   6M

UNIT–V

9. a) Write a short note on World Wide Web   7M
    b) Explain Domain Name System   7M

OR

10. a) Describe Public Key Algorithm with an example   10M
    b) Explain about Digital Signature   4M

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IV B.Tech. I Semester Regular Examinations Nov/Dec 2017
Digital Design Through Verilog HDL
(Electronics & Communication Engineering)

Max. Marks: 70   Time: 3 Hours
Answer all five units by choosing one question from each unit (5 x 14 = 70 Marks)
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UNIT-I

1.	a)	List out various levels of design description in Verilog HDL.	4M
	b)	Describe the need of test bench in Verilog HDL with an example.	10M

OR

2.	a)	Define Synthesis.	4M
	b)	Explain about Verilog data types with examples.	10M

UNIT-II

3.	a)	List out built in primitives available in Verilog HDL.	6M
	b)	Design 4X1 Multiplexer using gate level model	8M

OR

4.	a)	Describe the structure of Verilog module.	7M
	b)	Explain the delays with examples in Verilog HDL.	7M

UNIT-III

5.	a)	Explain the various operators used in Verilog HDL.	7M
	b)	Describe various continuous assignments with examples	7M

OR

6.	a)	Distinguish blocking and non-blocking assignments used in verilog HDL.	7M
	b)	Explain if and if else constructs.	7M

UNIT-IV

7.	a)	Distinguish Functions and Parameters	6M
	b)	Explain System tasks used in Verilog HDL.	8M

OR

8.	a)	Describe Compiler Directives used in Verilog HDL.	6M
	b)	Explain about parameters with examples.	8M

UNIT-V

9.	a)	Explain State Machine Charts.	7M
	b)	Realize the state diagram for a Dice Game.	7M

OR

10.	a)	Distinguish CPLD and FPGA.	7M
	b)	Design 1KB Static RAM Memory in Verilog HDL.	7M

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IV B.Tech. I Semester Regular Examinations Nov/Dec 2017
Electronic Measurements and Instrumentation
(Electronics & Communication Engineering)

Max. Marks: 70   Time: 3 Hours
Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)
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UNIT–I

1. a) What is precision and name the two characteristics of precision? Differentiate accuracy & precision.   7M

   b) A moving coil instrument gives a full scale deflection of 10mA when the potential difference across its terminals is 100 mV. Calculate:
      i) the series resistance for a full scale deflection corresponding to100 A.
      ii) the series resistance for a full scale deflection with 1000 V. Calculate the power dissipation in each case.   7M

OR

2. a) Explain the principle used in ohm meters with necessary diagrams.   7M

   b) Explain with the help of circuit diagram the construction and working of a series type ohm meter.   7M

UNIT–II

3. a) Draw the characteristics of a general pulse and explain the terminologies.   7M

   b) List the specifications of the pulse generator.   7M

OR

4. a) Explain the operation of harmonic distortion analyzer.   7M

   b) Draw and explain the operation of Function generator.   7M

UNIT–III

5. a) With a neat sketch Explain about Sampling Oscilloscope.   7M

   b) Describe the different types of Oscilloscope probes.   7M

OR

6. a) Explain about Digital Storage Oscilloscope in detail with relevant sketches.   7M

   b) What are the differences between dual trace and dual beam CRO's?   7M

UNIT–IV

7. a) Draw the circuit diagram of Schering bridge and derive conditions for balance?   7M

   b) The self capacitance of a coil is measured by using the Q –meter. The first measurement is at f_1 = 1MHz and C_1 = 500pf. The second measurement is at f_2 = 2MHz and C_2 =110pf. Find the distributed capacitance and also calculate the value of L.   7M

OR

8. a) Calculate the equivalent parallel resistance and capacitance that causes a Wien bridge to null with the given component values. R_1=2k ohms, C_1=0.1μF, R_2=10K ohms, R_4=20K ohms, =1KHz.   7M

   b) Explain the principle and operation of Kelvin bridge in detail using the necessary diagram.   7M

UNIT–V

9. a) Explain in detail about Strip chart recorders.   7M

   b) What are the functions of transducers?   7M

OR

10. What is a strain gauge? Explain about different types of strain gauges.   14M

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IV B.Tech. I Semester Regular Examinations Nov/Dec 2017
Embedded Systems
(Electronics and Communication Engineering)

Max. Marks: 70   Time: 3 Hours
Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)
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UNIT–I

1. a) Draw and explain the memory organization of 8051   8M
    b) Explain the data transfer and logical instructions with an example   6M

OR

2. a) Define interrupt? Explain timer flag INT, serial port INT, and external INT with example   6M
    b) Write a program for 8051 micro controller to display saver segment numbers   8M

UNIT–II

3. a) Explain the operation of Embedded system   7M
    b) Explain the application areas of an embedded system   7M

OR

4. a) What is an embedded system?   4M
    b) Explain the different development tools available for an embedded systems   10M

UNIT–III

5. a) Draw the major components of the embedded hardware system and explain   6M
    b) Draw the circuit diagram of clock circuitry and watchdog timer/reset circuitry   8M

OR

6. a) What are the services provided by an operating system   8M
    b) Write a short notes on communication interface and development of testing tools   6M

UNIT–IV

7. a) Write short notes on RS232/UART and USB   8M
    b) Discuss serial communication using I^2C and CAN tools   6M

OR

8. a) Discuss in detail about IEEE 802.11   6M
    b) Write a short notes on communication interface and infrared   8M

UNIT–V

9. a) Explain the architecture of Kernel   6M
    b) Write a short notes on ISR and semaphore   8M

OR

10. a) Explain the memory management system of maintaining RTOS   6M
    b) Explain the embedded operating systems and real time operating systems   8M

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IV B.Tech. I Semester Regular Examinations Nov/Dec 2017
Nano Electronics
(Electronics Communication Engineering)

Max. Marks: 70   Time: 3 Hours

Answer all five units by choosing one question from each unit (5 x 14 = 70 Marks)

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UNIT–I

1. a) What is nanomaterial? What are the classifications of nanomaterials based on number of dimensions? Explain them.   7M

   b) Explain the atom manipulation process using STM.   7M

OR

2. a) Write the different methods to grow nanotubes. Explain one of them.   7M

   b) Compare nanowire and nanotube. Write the different applications of nanotubes.   7M

UNIT–II

3. a) What is semiconductor heterostructure? Explain quantum well by considering a heterostructure.   7M

   b) Write different fabrication method of nanostructures. Explain self-assembly method.   7M

OR

4. a) Discuss about zero dimensional quantum structure and explain quantum confinement on it.   7M

   b) What is lithography? Explain photolithography.   7M

UNIT–III

5. a) What is short channel device? Write the benefits of short channel device.   4M

   b) Explain in brief, the different short channel effects in MOSFET.   10M

OR

6. a) Write three examples of mesoscopic system.   3M

   b) Discuss electron wave transistor with schematics.   11M

UNIT–IV

7. a) What is Esaki diode? Explain working principle and characteristics of it.   10M

   b) Write the advantages and disadvantages of Esaki diode.   4M

OR

8. a) Draw a typical logic circuit based on RTDs technology, explain it.   7M

   b) Explain memory applications of RTDs.   7M

UNIT–V

9. a) Discuss the limits of integrated electronics due to thermal particle motion.   7M

   b) What is Debye length? Write the expressions to calculate Debye length of a semiconductor.   7M

OR

10. a) Explain the properties of complex integrated systems.   7M

    b) Discuss hardware requirements of nanosystem.   7M

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IV B.Tech. I Semester Regular Examinations Nov/Dec 2017
Optical Communications
(Electronics and Communication Engineering)

Max. Marks: 70   Time: 3 Hours
Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)
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UNIT–I

1. a) Distinguish between optical fiber communication system and conventional communication system.   7M
    b) Explain about cylindrical fibers with neat diagrams.   7M

OR

2. a) With the help of electromagnetic spectrum, explain about the historical development of optical fiber communications.   7M
    b) A graded index fiber has a core with a parabolic refractive index profile which has a diameter of 50µm. The fiber has a NA of 0.2. Estimate the total number of guided modes propagating in the fiber when it is operating at a wavelength of 1µm.   7M

UNIT–II

3. a) Explain LED Structure with neat sketch.   7M
    b) With respect to LED, what is internal quantum efficiency and derive the expression for the lifetime reduction caused by interfacial recombination.   7M

OR

4. a) Establish the threshold gain condition for lasing to occur in a fabry-perot resonator based laser diode.   7M
    b) Write short notes on external quantum efficiency.   7M

UNIT–III

5. a) Derive the expressions for photo detector noise and detector response time.   7M
    b) Explain the principle behind the operation of an avalanche photo diode.   7M

OR

6. a) Draw the structures of PIN & APD photo detectors and explain their operation.   7M
    b) Calculate the maximum 3dB bandwidth of silicon PIN photo diode with 25 µm depletion layer width and with a carrier velocity of $3 \times 10^4 \, ms^{-1}$ 7M

UNIT–IV

7. a) How do you find whether an optical fiber link is limited by attenuation or by dispersion? Explain clearly.   7M
    b) Illustrate various types of misalignments resulting in losses while splicing and joining optical fibers.   7M

OR

8. a) Derive an expression for pulse spreading in a step index multi mode fiber due to intermodal dispersion   7M
    b) Write Lensing schemes for coupling improvements.   7M

UNIT–V

9. a) Explain the following in respect of digital link:
        (i) Point to point links. (ii) Power penalties.   7M
    b) Explain about analog links in optical communication.   7M

OR

10. a) What is WDM? Explain the features of WDM.   7M
    b) Write short notes on multi-channel frequency modulation.   7M

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IV B.Tech. I Semester Regular Examinations Nov/Dec 2017
Object Oriented Programming
(Electronics and Communication Engineering)

Max. Marks: 70   Time: 3 Hours
Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)
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UNIT–I

1. a) Discuss about various data types supported by Java.   7M

    b) Define class and object. With an example explain how constructors are defined in
       Java for a class.   7M

OR

2. a) Define array. Explain declaration and initialization of Multidimensional arrays with
       an example   7M

    b) Discuss the parameter passing methods with example in Java.   7M

UNIT–II

3. a) Illustrate the use of method overriding with an example.   7M

    b) Explain with suitable example, how super class variable can refer subclass
       objects?   7M

OR

4.   Define Package. Explain with an example how user defined packages are created
       and implemented.   14M

UNIT–III

5. a) What is an exception? Explain, with an example, how exceptions are handled in java.   7M

    b) Compare and contrast between multithreading and multitasking.   7M

OR

6. a) Illustrate the use of daemon threads with an example program.   7M

    b) Write a program to create a thread and print even numbers in one thread and odd
       numbers in another thread.   7M

UNIT–IV

7. a) What is Linked list? Write Java program to perform operations of Linked list. 9M

    b) Explain Queue with example.   5M

OR

8. a) Write an applet to create a login page.   7M

    b) Discuss about passing parameters to applets.   7M

UNIT–V

9. a) With an example explain about Event Listener.   7M

    b) Explain how tables are created using swings.   7M

OR

10. a) Write a Java program to handle mouse events.   8M

    b) Differentiate between J Applet, J Frame and J Component   6M

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IV B.Tech. I Semester Regular Examinations Nov/Dec 2017
Television Engineering
(Electronics Communication Engineering)

Max. Marks: 70　　　　　　　　　　　　　　　　　　　　　　　Time: 3 Hours
Answer all five units by choosing one question from each unit (5 x 14 = 70 Marks)
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UNIT-I

1. a) Draw the composite video signal and give the details of each portion?　　7M
   b) Explain how interlaced scanning takes place?　　7M

OR

2. a) Explain the process of sound and picture transmission in T.V.?　　7M
   b) Explain the channel bandwidth required for T.V. system with neat diagram?　　7M

UNIT-II

3. Explain in detail various types of T.V. camera tubes?　　14M

OR

4. State and briefly explain about characteristics of picture tube? Explain silicon diode array vidicon camera tube with neat diagram?　　14M

UNIT-III

5. a) Draw and explain PAL-D color receiver?　　7M
   b) What is raster circuit? Explain.　　7M

OR

6. a) Draw the block diagram of the sound section of a monochrome T.V. receiver and explain the functions performed by each block?　　7M
   b) Explain the block diagram of video amplifier in black and white receiver?　　7M

UNIT-IV

7. a) What is AGC? Explain in detail.　　7M
   b) Write a short notes on digital tuning techniques?　　7M

OR

8. a) What are the functions performed by a T.V receiver tuner?　　7M
   b) Explain the block diagram of digital F.M detector?　　7M

UNIT-V

9. Explain briefly the functions of various blocks of a PAL-D decoder and thus trace the path of Chroma signal from video detector to the input of matrixing circuit?　　14M

OR

10. Explain in detail about U&V demodulators with neat sketches?　　14M

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