

Hall Ticket Number :										
----------------------	--	--	--	--	--	--	--	--	--	--

R-15

Code: 5G472

IV B.Tech. I Semester Regular Examinations November 2018

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)

UNIT-I

1. a) Explain ISO/OSI reference model with neat diagram. 8M
- b) Explain Wireless Transmission in brief. 6M

OR

2. a) Explain with the neat diagram coaxial and fiber optics. 8M
- b) Explain the structure of Telephone System. 6M

UNIT-II

3. a) Discuss the framing technique used in HDLC. 8M
- b) The message 11001001 is to be transmitted using CRC error detection algorithm. Assuming the CRC polynomial to be x^3+1 , determine the message that should be transmitted. If the second left most bit is corrupted, show that is detected by the receiver. 6M

OR

4. a) Explain in detail about Ethernet. 6M
- b) With an example explain the sliding window protocols 8M

UNIT-III

5. Classify the routing algorithms. Describe in detail about flooding, and shortest path routing algorithms. 14M

OR

6. Explain sub netting with help of example. 14M

UNIT-IV

7. a) Explain the duties of transport layer. 6M
- b) Explain elements of transport protocol. 8M

OR

8. Explain TCP Header with neat diagram. 14M

UNIT-IV

9. Explain Email in detail. 14M

OR

10. Explain RSA Algorithm with the help of example. 14M

Hall Ticket Number :										
----------------------	--	--	--	--	--	--	--	--	--	--

R-15

Code: 5G374

IV B.Tech. I Semester Regular Examinations November 2018

Digital Design Through Verilog HDL
(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)

UNIT-I

1. a) List the data types used in Verilog and explain them with its syntax. 7M
- b) Discuss in detail the Memory declaration and its accessing in Verilog. 7M

OR

2. a) Explain about the identifiers and the case sensitivity in verilog. 7M
- b) Elaborate Functional verification and Write short notes on test benches. 7M

UNIT-II

3. a) Discuss about the instantiation and functional details of Tri-state gate primitives. 7M
- b) Design a half-adder module with time delay assignment through parameter declaration in Verilog. 7M

OR

4. a) Describe the Strengths and Contention resolution in Verilog. 7M
- b) Design CMOS switch with single control line and Write the code for the same. 7M

UNIT-III

5. a) Discuss about the continuous assignment to vectors and concatenation with example. 7M
- b) How are blocking assignments different from Non-blocking assignments? Explain with example. 7M

OR

6. a) Discuss about logical, relational and equality Operators used in Verilog. 7M
- b) Write a Verilog code for 3 to 8 decoder using data flow modeling. 7M

UNIT-IV

7. a) Write short notes on Function and tasks. 8M
- b) Design a FSM for a sequence detector which detects the sequence "101" in which overlapping is allowed and Write a verilog code for the same. 6M

OR

8. a) Write short notes on User defined primitives. 6M
- b) Explain the concept of File based tasks and functions in detail. 8M

UNIT-V

9. a) What is a linked state machine? Explain in detail. 7M
- b) Explain the usage of One hot state Assignment in FPGAs in detail. 7M

OR

10. a) Discuss in brief about UART design. 7M
- b) Describe the CPLD architecture of ALTERA Flex 10k series in detail. 7M

Code: 5G373

IV B.Tech. I Semester Regular Examinations November 2018

Digital Image Processing

(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)

UNIT-I

1. a) Explain about fundamental steps in digital image processing 8M
- b) Discuss about various relationships between pixels. 6M

OR

2. a) Explain 2-D DFT and brief out its properties. 7M
- b) Give a detailed notes on Hadamard Transform with necessary representation. 7M

UNIT-II

3. a) Explain about image enhancement by point processing techniques 7M
- b) Give the algorithm for histogram equalization 7M

OR

4. a) Distinguish between spatial domain and frequency domain enhancement techniques 7M
- b) Explain about ideal low pass filter in frequency domain. 7M

UNIT-III

5. a) What is meant by image degradation? Discuss about various possibilities for image degradation. 7M
- b) Explain about restoration filters used when the image degradation is due to noise. 7M

OR

6. a) Write brief notes on inverse filtering and What are the drawbacks of the method in the presence of noise. 7M
- b) Explain the image restoration using wiener filter and also write advantages and disadvantages of this method. 7M

UNIT-IV

7. a) Explain the concept of pseudo color image processing. 7M
- b) Explain the conversion between HIS to RGB 7M

OR

8. a) Explain about full color image processing 10M
- b) Explain about color slicing 4M

UNIT-V

9. a) Explain the basic formula for edge modeling and detection 7M
- b) Explain about region based segmentation 7M

OR

10. a) Explain the following terms
 - (i) Coding Redundancy
 - (ii) Psychovisual redundancy
 - (iii) Variable length Coding 7M
- b) Explain about lossless predictive coding 7M

Code: 5G372

IV B.Tech. I Semester Regular Examinations November 2018

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)

UNIT-I

1. a) What are the different types of data transfer instructions available in 8051? Relate the importance of addressing modes for programmers. 7M
- b) Write a program for 8051 microcontroller to display a message on LCD, "ALL THE BEST" when switch is pressed and "THANK YOU" when the switch is not pressed. Draw the neat interface diagram. 7M

OR

2. a) Why should a program be divided into functions (routines or modules) and each placed in different memory blocks or segments? 5M
- b) Draw and explain the external memory interfacing circuits in 8051. 9M

UNIT-II

3. a) Broadly explain the categories and application areas of an embedded system. 7M
- b) By considering any one embedded application explain its hardware and software blocks along with power features. 7M

OR

4. a) Define design metrics in embedded systems. 7M
- b) What are the challenges faced in designing an embedded system? Provide a detailed account. 7M

UNIT-III

5. a) Why are I/O instructions platform dependent? Define throughput of an I/O system. 7M
- b) What do you mean by a watchdog timer? Explain with its importance in embedded systems and its functions. 7M

OR

6. a) What are the services provided by an operating system? 7M
- b) Distinguish between application software and communication software. 7M

UNIT-IV

7. a) What do you mean by plug and play devices? 4M
- b) Compare and contrast the following:
UART, RS232C, USB, Bluetooth, CAN and PCI. 10M

OR

8. a) Compare the relative advantages and disadvantages of data transfer using serial and parallel ports/devices. 8M
- b) Explain use of each control bit of I²C bus protocol. 6M

UNIT-V

9. a) Distinguish memory management in general purpose kernel and real time kernel. 7M
- b) Explain the concept of priority inversion problem in embedded systems. 7M

OR

10. a) How does a data output get generated by a process get transferred to another using an IPC? 7M
- b) What is a mailbox? How do mailboxes pass messages during an IPC? 7M

--	--	--	--	--	--	--	--	--	--

Code: 5G375

IV B.Tech. I Semester Regular Examinations November 2018

Nano Electronics

(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)

UNIT-I

1. a) Write different types of microscope to study nanomaterial? Give a brief idea about different kinds of scanning microscope. 7M
- b) Explain the working of TEM with a neat sketch. 7M

OR

2. a) Explain the growth mechanism and diameter dependent properties of nanotubes. 7M
- b) Compare SWNT and MWNT. 7M

UNIT-II

3. a) What is heterostructure? Write a fabrication method of quantum dot. 7M
- b) Explain nanoimprint lithography. What is split gate technology? 7M

OR

4. a) What do you understand by the terms 'quantum dot' and 'nanoparticle'? 7M
- b) Explain a technique to fabricate quantum wires. 7M

UNIT-III

5. a) What are the advantages of QCA circuits? 7M
- b) Discuss the device applications of quantum dot arrays. 7M

OR

6. By using necessary schematic, explain the principle and operation of Electron Spin Transistor. 14M

UNIT-IV

7. a) Compare tunneling diode and resonant tunneling diode. Explain the operation of three terminal RTDs technology. 10M
- b) What do you understand intraband resonant tunneling? 4M

OR

8. a) What is Coulomb blockade? Explain the principal of SET and SET memory circuit design. 8M
- b) Compare FET and SET circuit design. 6M

UNIT-V

9. a) Explain different physical limits of integrated electronics. 7M
 - b) Discuss processing methods of complex integrated systems. 7M
- OR**
10. a) Discuss reliability issues of integrated electronics. 5M
 - b) Explain an application of Nano systems as information processing machines with necessary diagram. 9M

Code: 5G371

IV B.Tech. I Semester Regular Examinations November 2018

Optical Communication

(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)

UNIT-I

1. a) Write the historical development of optical fiber communication. 7M
- b) Discuss clearly the advantages of optical fiber communication 7M

OR

2. a) Write about Scattering losses in an optical fiber. 7M
- b) The relative refractive index difference between the core and the cladding index fiber is 0.7% when the refractive index at the core axis is 1.45. Estimate values for the numerical aperture of the fiber along the axis when the index profile is assumed to be triangle 7M

UNIT-II

3. a) Explain briefly about LED structures. 7M
- b) Derive the laser diode rate equation 7M

OR

4. a) Derive the expression for internal quantum efficiency of LED and also an expression for power generated internally in LED 7M
- b) Describe the Laser diode Modes and derive its threshold conditions 7M

UNIT-III

5. a) Explain p-i-n photo detector with neat sketch. 7M
- b) Explain how temperature effects on Avalanche gain in a p-i-n diode 7M

OR

6. a) Derive relation between signal to noise ratio of optical detector 7M
- b) Draw the structures of InGaAs APDs and compare the different photo diodes 7M

UNIT-IV

7. a) Describe lensing mechanisms to improve coupling efficiency between a source and a fiber. 7M
- b) Write short note on the following 7M
 - i) Chromatic dispersion
 - ii) Polarization mode dispersion

OR

8. a) Explain the principle of optical attenuation meter with a neat diagram 7M
- b) What do you mean by pulse broadening? Explain its effect on information carrying capacity of a fiber. 7M

UNIT-V

9. a) What are the principles of the WDM technique? 6M
- b) Explain considerations and component choice for optical system design 8M

OR

10. a) Discuss the Radio and RF fiber analog links 7M
- b) Compare the advantages and disadvantages of using WDM in an optical fiber communication system. 7M
