Hall Ticket Number :										

R-11

Code : 1G371

IV B.Tech. I Semester Supplementary Examinations May 2016

Optical Communications

(Electronics & Communication Engineering)

Max. Marks: 70 **Time: 03 Hours**

Answer *any five* questions
All Questions carry equal marks (14 Marks each)
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1. a) What are the major problems encountered in the early development of the optical communication for the practical use? Explain.
   b) Differentiate between step index and graded index fiber.

2. a) Explain about Modified Chemical Vapour Deposition Process.
   b) A graded index fiber with a parabolic refractive index profile core has a refractive index at the core axis of 1.5 and a relative index difference of 1%. Estimate the maximum possible core diameter which allows single-mode operation at a wavelength of 1.3 μm.

3. a) Give short notes on
      i) Fiber connectors
      ii) Optical isolators and circulators.
   b) Discuss about Inter model Dispersion in Optical fibers.

4. a) Explain in detail about single mode LASERs.
   b) Discuss LED Structures with neat sketches.

5. a) Explain in brief about various Fiber Splicing techniques.
   b) Discuss in brief about Fiber to Fiber Joints concept with required diagrams.

6. a) Discuss about Photo Detector response time.
   b) Give a comparative analysis of various Photodiodes.

7. Discuss in detail about Point-to-Point links in Digital transmission system.

8. a) Write short notes on Passive optical couplers.
   b) Write short notes on Tunable light Sources.

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Hall Ticket Number :										

Code : 1G372 **R-11**

IV B.Tech. I Semester Supplementary Examinations May 2016

Digital Signal Processing

(Common to EEE & ECE)

Max. Marks: 70 **Time: 03 Hours**

Answer *any five* questions

All Questions carry equal marks (14 Marks each)

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1. a) Investigate the causality and stability of the following systems.
i) $h(n)=(2)^n u(n-1)$; **ii)** $h(n)=(0.5)^{|n|}$ 6M

   b) Compute the convolution sum $y(n)=x(n)*h(n)$

   Where $x(n)=\left(\frac{1}{2}\right)^n u(n)$ and $h(n)=¢(n)-\frac{1}{2}¢(n-1)$. 8M

2. a) If $F[x(n)]=X(e^{jw})$ then, prove that $F[nx(n)]=j\frac{d}{dw}X(e^{jw})$. 7M

   b) The first five points of the 8-point DFT of real valued sequence are {0.25, 0.5-j0.5, 0, 0.5-j0.86, 0}. Find the remaining three points. 7M

3. a) Find the 8–point DFT of real sequence x(n)={1,1,1,1,0,0,0,0} by using DIF-FFT algorithm. 10M

   b) What is in-place algorithm and what is the advantage of this algorithm? 4M

4. a) Obtain the parallel realization for the transfer function H(z) given below

$$H(Z)=\frac{8z^3-4z^2+11z-2}{(z-\frac{1}{4})(z^2-z+\frac{1}{2})}.$$ 7M

   b) Realize the linear phase FIR filter having the following impulse response.

$$h(n)=¢(n)+\frac{1}{4}¢(n-1)-\frac{1}{8}¢(n-2)+\frac{1}{4}¢(n-3)+¢(n-4).$$ 7M

5. Given $H_a(s)=\frac{16(s+2)}{(s^2+2s+5)(s+3)}$. Find H(z) using impulse invariant transformation. Assume T=0.2 sec. 14M

6. A low pass filter has the desired frequency response

$$w_R(e^{jw})=H_d(w)=\begin{cases}e^{-j3w}, & 0<|w|<\frac{®}{2}\\ 0, & \frac{®}{2}<|w|<®\end{cases}.$$

   Determine h(n) based on frequency sampling technique. Take N=7. 14M

7. a) Show that the up-sampler and down-sampler satisfy the property of commutation if they are co-prime. 7M

   b) Explain the ploy phase decomposition of an IIR filter with example. 7M

8. Write short notes on spectral transformations. 14M

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Hall Ticket Number :										

R-11

Code : 1G373

IV B.Tech. I Semester Supplementary Examinations May 2016

Digital Design Through Verilog HDL

(Electronics & Communication Engineering)

Max. Marks: 70 **Time: 03 Hours**

Answer *any five* questions
All Questions carry equal marks (14 Marks each)

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1. a) Write about
   i) Concurrency
   ii) Simulation
   iii) Synthesis
   iv) Functional verification 8M
   b) Explain Module with suitable diagrams and examples 6M

2. Explain about various lexical tokens available in Verilog with suitable examples. 14M

3. Write Verilog code for a typical 4-to-16 decoder and also write the test bench program with neat diagrams, truth tables and simulation waveforms. 14M

4. a) Write Verilog code for 4bit by 4bit multiplier with neat block diagrams 10M
   b) Write various delays available in Verilog? 4M

5. Write Verilog code for CMOS Inverter and 2 – input CMOS NAND gate with neat circuit diagrams and also write the test bench program for it. 14M

6. a) Explain Moore machine FSM with neat block diagram. 6M
   b) Write Verilog code for Sequence generator using Moore machine FSM. 8M

7. a) Explain about FPGA with neat block diagrams 7M
   b) Explain about CPLD with neat block diagrams 7M

8. a) Design UART using Verilog HDL 8M
   b) Write about Static RAM. 6M

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Hall Ticket Number :										

R-11

Code : 1G376

IV B.Tech. I Semester Supplementary Examinations May 2016

Radar Engineering

(Electronics & Communication Engineering)

Max. Marks: 70 **Time: 03 Hours**

Answer *any five* questions

All Questions carry equal marks (14 Marks each)

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1. a) Explain how the radar is used to measure the range of a target? 7M
   b) Draw the block diagram of the pulse radar and explain the function of each block. 7M
2. a) Explain how signals are detected in the presence of noise and obtain the radar equation as a function of minimum detectable signal to noise ratio. 10M
   b) Describe the effect of pulse repetition frequency on the estimated unambiguous range of radar. 4M
3. a) With the help of a suitable block diagram, explain the operation of a CW Doppler radar in a sideband super heterodyne receiver. 5M
   b) Calculate the Doppler frequency of stationary CW radar transmitting at 6 MHz frequency when a moving target approaches the radar with a radial velocity of 100 Km/hour. 5M
   c) List the limitations of CW radar. 4M
4. a) List out the possible errors for measurement of altitudes accurately using a FM-CW altimeter. 7M
   b) Discuss the results of multiple frequency usage for operating FM-CW radar while mentioning the limitations of multiple frequency usage in CW radars. 7M
5. a) What is a delay line canceller? Illustrate the concept of blind speeds based on the frequency response of a single delay line canceller. 7M
   b) Discuss the factors limiting the performance of an MTI system. 7M
6. a) With the help of a suitable block diagram, sequential lobing type of tracking technique in a tracking radar system. 4M
   b) Compare and contrast conical scan and sequential lobing type tracking techniques. 4M
   c) Describe the process of acquiring a moving target prior to tracking it along with the patterns used for acquisition. 6M
7. a) Define noise figure and equivalent noise temperature of a radar receiver. 7M
   b) A radar receiver is connected to a 50 ohm resistance antenna that has an equivalent noise resistance of 30 ohms. Calculate the noise figure of the receiver and the equivalent noise temperature of the receiver. 7M
8. a) Describe briefly various visual displays to view radar echo signals in radar systems. 7M
   b) Explain and distinguish between the branch-type and balanced duplexers. 7M

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Hall Ticket Number :										

Code : 1G478 **R-11**

IV B.Tech. I Semester Supplementary Examinations May 2016

Computer Networks

(Electronics & Communication Engineering)

Max. Marks: 70 **Time: 03 Hours**

Answer *any five* questions

All Questions carry equal marks (14 Marks each)

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1. a) Distinguish between connection oriented and connection less services with an example 7M

   b) Explain the significations of VSAT and Iridium in satellite communication 7M

2. a) Explain one bit sliding window protocol for normal and abnormal cases 8M

   b) Hamming code is used for 16 bit message transmission. How many check bits are needed to ensure that the receiver can detect and correct single bit errors? Show the bit pattern transmitted in the message 1101001100110101. 6M

3. a) Describe the basic problems in wireless communication and explain MACA and MACAW 10M

   b) Draw the Manchester encoding for the bit stream: 0001110101. 4M

4. a) What is flooding? Describe Bellman-Ford routing algorithm with suitable network scenario example and routing table. 10M

   b) List the two major differences between the warning bit method and the RED method 4M

5. a) Distinguish RARP, BOOTP, and DHCP with respect to the internetwork 7M

   b) What is three bears problem? Explain the basic concept of CIDR 7M

6. a) What is Real-time Transport Protocol? Write the functionality and header structure of RTP 7M

   b) Write Nagle's algorithm and List the disadvantages of Nagle's algorithm when it uses on congested network 7M

7. a) What is the significance of the Domain Naming System? Write a short note on DNS Name Space 7M

   b) How does the user get the emails from the ISP's message transfer agent? 7M

8. a) Alice wants to communicate with Bob, using public-key cryptography. She establishes a connection to someone she hopes is Bob. She asks him for his public key and he sends it to her in plain text along with an X.509 certificate signed by the root CA. Alice already has the public key of the root CA. What steps does Alice carry out to verify that she is talking to Bob? Assume that Bob does not care who he is talking to 7M

   b) Differentiate Cipher feedback mode and Cipher Block Chaining Mode 7M

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