8E8021

Roll No. _____ [Total No. of Pages : 3

8E8021

B.Tech. VIII Semester (Main) Examination, April/May 2016

Electronics And Communication Engg.

8EC1A - IC Technology

Time : 3 Hours

Maximum Marks : 80
Min. Passing Marks : 24

Instructions to Candidates:

*Attempt any **five** questions, selecting one question from **each unit**. All questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.)*

Units of quantities used/calculated must be stated clearly.

Unit - I

1. a) Explain the various defects in crystal with appropriate equation and diagram **(6)**

   b) How EGS is obtained from MGS. Also draw the block diagram for the production of EGS, and also write its chemical reaction. **(6)**

   c) Find out the concentration of oxygen in crystal at a fraction solidified of 0.4 the oxygen concentration at the top of crystal i.e at X=0.05, $C_s=1.3x10^{18}$ atom/cm^3 segregation coefficient for oxygen to be 0.25 **(4)**

OR

1. a) Draw the block diagram of float zone growth technique and also show the four point probe technique for resistance measurment **(6)**

   b) What are the various steps for wafer preparation. Explain each term in detail **(6)**

   c) A boron doped crystal is measured at it's seed end with a four-point probe of spacing 1mm, resistance is 10Ω. What is the seed and doping and the expected reading at 0.95 fraction solified **(4)**

Unit - II

2. a) Derive fick's law with its proper analytical solution. Also write the boundary conditions for both cases. **(8)**

   b) An n+ diffusion is performed into a p-type silicon having a uniform dopant concentration of 5×10^{23} atom/m^3. If the dopant concentration in the gas above the wafer surface is maintained constant 5×10^{26} atom/m^3 and process time is 30min. Calculate the depth of n-type diffusion. The diffusion coefficient is 5×10^{-17} m^2/sec and erfc(2.3)=10^{-3} **(8)**

OR

2. a) Explain Deal-Groove model of oxidation with proper equation **(10)**

   b) -Discuss the various diffusion mechanism by which the impurities in silicon crystal **(6)**

Unit - III

3. a) What are various types of CVD reactors **(4)**

   b) What is autodoping and how can this be minimized **(5)**

   c) Explain chemical equilibrium and the law of Mass action **(7)**

OR

3. a) Assume that the gas AB is introduced into a CVD reactor and that the only chemical reaction that occurs in the chamber is $AB_{(g)} \rightleftharpoons A_{(g)} + B_{(g)}$. If the process is run at 1 atom (760 to rr) and a temp of 1000K and reaches chemical equilibrium. Calculate the partial pressure of each species? The equilibrium constant for this reaction is given by $K(T)=1.8\times10^{9}\, e^{-2eV/KT}$ **(7)**

   b) Discuss various CVD techniques for deposition of SiO_2. Also state the parameters on which SiO_2 deposition depends **(9)**

Unit - IV

4. a) Draw the flow chart for mask generation process. Explain each term with proper explanation **(5)**

   b) Distinguish between wet etching and dry etching. What is the role of a buffer in the contact of wet etching **(7)**

   c) Explain the working of positive photo resist and negative photo resist .Why positive photo resist gives high resolution **(4)**

OR

4. a) Given an account of reactive ion etching clearly stating the problems associated with it **(10)**

   b) Explain the projection printing with suitable diagram **(6)**

Unit - V

5. a) Write the fabrication process sequence for
   i) n-well CMOS process
   ii) Twin tub CMOS process
   b) What do you understand by bipolar IC technology? Give an comparison between bipolar and CMOS technology **(10)** **(6)**

OR

5. a) Write short note on any **two**
   i) LOCOS method
   ii) SOI techniques
   iii) Problem associated with metallization **(5×2=10)**
   b) Explain the working difference between CMOS and bipolar IC technology **(6)**

8E8022

Roll No. _____ [Total No. of Pages : 3

8E8022

B.Tech. VIII Semester (Main) Examination, April/May 2016

Electronics And Communication Engg.

8EC2A Radar & TV Engineering

Time : 3 Hours **Maximum Marks : 80**

Min. Passing Marks : 24

Instructions to Candidates:

*Attempt any **five** questions, selecting one question from **each unit**. All questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.)*

Units of quantities used/calculated must be stated clearly

Unit - I

1. a) Explain working of CW Radar and its applications in measurement of range with the help of block diagram **(8)**

   b) Calculate maximum unambiguous range for a frequency modulated radar which sweeps from 400Hz to 800Hz in 10 μs **(8)**

OR

1. a) How does the range is increased in LORAN system, Explain? Write its applications and merits over a simple radar system **(8)**

   b) A square direction finder frame aerial has sides 1m long and 20 turns. The RF resistance of winding is 10Ω and its inductance is 0.6 mH. It is tuned by a variable capacitor to be resonant with a wave. The electric field for which is 250 sin $\pi 5\times10^5$ $\mu v/m$. Calculate rms value of voltage developed across the capacitor when the direction of incoming wave is 60^0 with the plane of aerial **(8)**

Unit - II

2. a) Draw and explain the composite video signals at the end of odd fields and even fields **(8)**

   b) Describe construction of vidicon camera tube with the help of neat diagram and explain its working **(8)**

OR

2. a) Explain construction and working of monochrome picture tube **(8)**

   b) Describe principle of monochrome and colour TV system in terms of PAL, SECAM, NTSC **(8)**

Unit - III

3. a) Explain the TV channel side band spectrum and identify the position picture and sound carrier with neat diagram **(8)**

   b) How color difference voltages are produced? Also explain chrominance modulation process **(8)**

OR

3. a) With the help of diagram describe design parameters of yagi-uda antenna used in TV reception **(8)**

   b) Explain compatibility issues related to colour and monochrome TV system **(8)**

Unit - IV

4. a) Why there is a need of AFC in TV receiver? Explain with suitable block diagram **(8)**

   b) Write a short note on HDTV **(8)**

OR

4. a) What is general procedure of trouble shooting a monochrome TV receiver. Explain some common faults & their diagnosis **(8)**

   b) Explain how the frequency of blocking oscillator is controlled with the help of sync information **(8)**

Unit - V

5. a) Explain the concept of DTH television system. And elements associated with this system **(8)**

   b) Describe the functions of head end trunk line branch line and drop line in cable TV system **(8)**

OR

5. Write short notes on any two **(16)**

a) IPTV system

b) LED display & TV

c) DBS-TV.

d) 3D - TV

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8E8023

Roll No. _____ [Total No. of Pages : 2

8E8023

B.Tech. VIII Semester (Main) Examination, April/May 2016

Electronics and Communication Engg.

8EC3A MEMS and Nanotechnology

Common with 8EI4.2A

Time : 3 Hours **Maximum Marks : 80**

Min. Passing Marks : 24

Instructions to Candidates:

*Attempt any **five** questions, selecting one question from **each unit**. All questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.) Units of quantities used/calculated must be stated clearly.*

Unit - I

1. a) Give the difference between top down and bottom up approach in nanotechnology with suitable diagram **(8)**

   b) What do you mean by superconductor? Explain Massiner Effect in super conductor **(8)**

OR

1. a) What do you mean by single electron tunneling. Write its advantages on device scaling **(8)**

   b) Write short notes on Graphenes and CNT **(8)**

Unit - II

2. a) Discuss various CVD techniques for deposition of S_iO_2. Also state the parameter on which S_iO_2 deposition depends **(8)**

   b) What do you mean by optical lithography? Explain proximity printing and compare it with contact and projection printing **(8)**

OR

2. a) What do you mean by etching in device manufacturing process. Write prone and cones of wet and dry etching **(8)**

   b) What is gettering? Explain intrinsic gettering process. Write benefit and advantage of gettering **(8)**

Unit - III

3. Briefly explain the difference between reighley and Raman scattering. Which type of scattering results in a longer wavelength than the incident light, Reighley Raman stokes or Raman anti-stokes **(16)**

OR

3. a) What do you understand by dynamic light scattering(DLS) technique. Also write its application ? **(8)**

   b) Write the difference between SEM and TEM **(8)**

Unit - IV

4. a) Explain the concept of quantum mechanics of low dimensional structure **(8)**

   b) Write the difference between quantum dots, quantum wires and quantum wells ? **(8)**

OR

4. a) What do you mean by Nano biology **(8)**

   b) What are Nano medicines? What approach has been used for developing nano medicines **(8)**

Unit - V

5. a) Given the comparison between microelectronics and microsystems **(8)**

   b) Write about wire bonding and flip chip assembly process used in packaging of MEMS **(8)**

OR

5. a) What do you mean by active substrate materials **(8)**

   b) Explain about various type package used in MEMS technology **(8)**

8E8024

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8E8024

B.Tech. VIII Semester (Main) Examination,April/May 2016

Electronics And Communication Engg.

8EC4.1A Computer Networks

Common with 8EI4.3A

Time : 3 Hours

Maximum Marks : 80
Min. Passing Marks : 24

Instructions to Candidates:

*Attempt any **five** questions, selecting one question from **each unit**. All questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.)*

Units of quantities used/calculated must be stated clearly

Unit - I

1. a) Explain the concept of pure death and pure birth process by taking suitable example **(8)**

   b) Explain little's formula by taking suitable example **(8)**

OR

1. a) What are the characteristics properties of the Poisson input process? Discuss their limitations by giving examples from practical queueing systems **(8)**

   b) Suppose there are 2 types of customers arriving at the same server according to independent Poisson input processes. Show that the aggregated arrival process (of customers without regard of type) is a Poisson process **(8)**

Unit - II

2. a) Assume that in a stop and wait ARQ system, the bandwidth of the line is 1Mbps, and 1 bit takes 20ms to make a round trip. What is bandwidth delay product If the system data frames 1000 bits in length, what is the utilization percentage of the link? Also calculate the utilization percentage of the link, if we have a protocol that can send up to 15 frames before stopping and worrying about acknowledgments ? **(8)**

b) Explain the difference between packet switching and circuit switching networks by taking suitable example **(8)**

OR

2. a) Assume that source S and destination D are connected through two Intermediate routers labelled R. Determine how many times each packet has to visit the network layer and the data link layer during a transmission from S to D **(8)**

b) Explain the concept of virtual circuit network by taking suitable example **(8)**

Unit - III

3. a) A pure Aloha network transmit 200 bits frames on a shared channel of 200 kbps. What is the through put if the system (all stations together) produces

i) 1000 frames per seconds

ii) 500 frames per seconds

iii) 250 frames per seconds **(8)**

b) Explain the difference between Token Ring and token bus by taking suitable example **(8)**

OR

3. a) A network using CSMA/CD has a bandwidth of 10Mbps. If the maximum propagation time (including the delays in the devices and ignoring the time needed to send a jamming signal) is 25.6 μs ,calculate the minimum size of the frame ? **(8)**

b) Explain the concept of FDDI by taking suitable example **(8)**

Unit - IV

4. a) Explain IPV6 addressing by taking suitable example, also explain the concept of tunneling in detail **(8)**

b) A packet has arrived in which the offset value is 100, the value of HLEN is 5, and the value of the total length field is 100. Calculate the numbers of first byte and last byte, Also calculate when the total length field is not mentioned **(8)**

OR

4. a) Explain count to infinity problem by taking suitable example. Also explain distance vector routing algorithm in detail **(8)**

b) To provide more subnets, a class B address is assigned the subnet mask of 255.255.240.0. How many subnets, and how many host per subnet are possible **(8)**

Unit - V

5. a) Explain TCP frame format by taking suitable example **(8)**

   b) Explain domain name system by taking suitable example **(8)**

OR

5. Write short note on the following

   a) SMTP

   b) FTP

   c) WWW

   d) HTTP

(4×4=16)

8E8026

Roll No. _____ [Total No. of Pages : 2

8E8026

B.Tech. VIII Semester (Main) Examination, May 2016

Electronics And Communication Engg.

8EC4.3 Micro Controller and Embedded Systems

Time : 3 Hours **Maximum Marks : 80**

Min. Passing Marks : 24

Instructions to Candidates:

*Attempt any **five** questions, selecting one question from **each unit**. All questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.)*

Units of quantities used/calculated must be stated clearly

Unit - I

1. Draw and explain the functional block diagram of 8051 micro controller **(16)**

OR

1. a) Explain the pin diagram of 8051 micro controller **(10)**

   b) Explain the bit format of SCON and PCON registers of 8051 micro controller **(6)**

Unit - II

2. Explain the Jump and Call instruments of 8051 assembly language with examples **(16)**

OR

2. Explain the various addressing modes of 8051 micro controller **(16)**

Unit - III

3. Explain interrupt structure of 8051 in detail **(16)**

OR

3. Explain TMOD and TCON registers of 8051 micro controller **(16)**

Unit - IV

4. Compare serial I/O Interface and parallel I/O Interface with suitable example **(16)**

OR

4. Explain the interfacing of LCD display with 8051 micro controller **(16)**

Unit - V

5. What is scheduling? Explain Full Pre-emptive scheduling **(16)**

OR

5. a) What do you mean by real time operating system for system design? What is difference between Hard real time operating system and soft real time operating system **(8)**

   b) What do you mean by multi tasking system? Explain with suitable examples **(8)**

8E4088

Roll No. _____ [Total No. of Pages : 3]

8E4088

B.Tech. VIII Semester(Old/Back) Examination April/May - 2016

Electronics & Comm. Engg.

8EC1 (O) Computer Networks

Time : 3 Hours **Maximum Marks : 80**

Min. Passing Marks : 24

Instructions to Candidates:

*Attempt any **five** questions, selecting one question from **each unit**. All questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.)*

Unit - I

1. a) Assuming that customers arrive in a Poisson fashion to the counter of supermarket at an average rate of 15 per hour and the service by the clerk has an exponential distribution.

   Determine at what average rate must a clerk work in order ensure a probability of 0.90 that the customer will not wait longer than 12 minutes. **(8)**

   b) Explain mathematical model for M/M/m/m queues. **(8)**

OR

1. a) The capacity of communication line is 2000 bit/second. This line is used to transmit eight bit characters, so the maximum rate is 250 characters/second. The application calls for traffic from many devices to be sent on the line with a total volume of 12,000 characters/minute.

   Determine

   i) The line utilization **(3)**

   ii) The average number of characters waiting to be transmitted. **(3)**

   iii) The average transmission time (including queuing delay) per character. **(2)**

   b) Consider the M/M/1/K queuing system show that

$$L_a = L - (1 - P_0)$$

$$W_a = \frac{1}{\mu} L$$

$$W = \frac{1}{\mu}(L+1)$$

Where

L_a = Average number of customers in queue

L = Average number of customers in system

Wa = Average amount of time that a customer spends waiting in the queue.

W = Amount of time that a customer spends in system. **(2+3+3)**

Unit - II

2. a) A message is broken up into three pieces. Discuss the transmission of the packet using the datagram approach to packet switching. **(6)**

   b) A three stage switching structure is to accomodated N = 128 input and 128 output terminals. For 16 first stage and 16 last stage determine the number of cross points for non blocking. **(6)**

   c) What is the difference between network layer delivery and transport layer delivery. **(4)**

OR

2. a) A channel has a bit rate of 4 kbps and propogation delay of 20 msec. For what range of frame size does stop and wait gives an efficiency of at least 50 percent. **(8)**

   b) Describe the Go Back N protocol. **(8)**

Unit - III

3. a) Show that slotted ALOHA has a maximum throughput of twice the maximum throughput of pure ALOHA. **(8)**

   b) Briefly describe various CSMA protocols. **(8)**

OR

3. a) In a pure ALOHA system the packet arrival time from a poisson distribution having a rate of 10^3 packets/sec. If the bit rate is 10 mbps and there are 10,000 bits/packet, find

      i) Normalized throughput of the system

      ii) Number of bits per packet that will maximize the throughput. **(4+4)**

   b) Draw the diagram for IEEE 802.5 token ring priority scheme. Explain briefly the steps for working. **(8)**

Unit - IV

4. a) Explain with example how distance vector routing is used to route the packet and why count to infinity problem arises and how does to get solved. **(10)**

   b) A company is granted a site address 201.70.64.0. The company needs six subnets. Design the subnets. **(6)**

OR

4. a) Compare IPV_4 and IPV_6. **(5)**

   b) A class B network on internet has a subnet mask of 255.255.240.0. What will be the maximum number of hosts per subnet. **(5)**

   c) Write short note on network layer design issues. **(6)**

Unit - V

5. a) List the merits and demerits of frame relay with respect to X. 25. **(6)**

   b) With a suitable sketch explain ATM cell format for user network interface. **(4)**

   c) Compare the three B - ISDN access methods. **(6)**

OR

5. a) Explain ATM adaption layer in detail. **(8)**

   b) Write short notes on

      i) DTE - DCE interface

      ii) B - ISDN services. **(4+4)**

8E8046

Roll No. _____ [Total No. of Pages : 3

8E8046

B.Tech. VIII Semester (Main) Examination,April/May 2016

Electrical and Electronics Engineering

8EX4.3A VHDL

Common with 8EX4.2 & 8EC4.2

Time : 3 Hours **Maximum Marks : 80**

Min. Passing Marks : 24

Instructions to Candidates:

*Attempt any **five** questions, selecting one question from **each unit**. All questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly)*

Units of quantities used/calculated must be stated clearly.

Unit - I

1. a) Briefly explain history of hardware description languages and compare various hardware description languages **(8)**

   b) What is VHDL? Explain how variables, signals and constants are declared and used in VHDL **(8)**

OR

1. Explain the design flow of application specific integrated circuit(ASIC) and also discuss the role of following software tools:

   a) Simulation tool

   b) Synthesis tool

   c) Placement and routing tool **(16)**

Unit - II

2. a) Implement the function $F(W_1, W_2, W_3, W_4) = W_1W_2 + \bar{W}_1\bar{W}_2\bar{W}_4\bar{W}_5 + W_1W_3 + W_1W_4 + W_3W_4W_5$ by using 4 to 1 multiplexer and other gates. **(10)**

b) Write the VHDL code for a 16 to 1 multiplexer using 4 to 1 multiplexer with structural modeling style **(6)**

OR

2. a) Using a conditional signal assignment statement, write VHDL code for 8 to 3 encoder **(8)**

b) Write a VHDL code for a BCD to 7 segment decoder **(8)**

Unit - III

3. a) A universal shift register can shift in both the left to right and right to left directions. Write the VHDL code for universal shift register with n bits **(8)**

b) Write a VHDL code for JK flip-flop with synchronous reset **(8)**

OR

3. a) Write a VHDL code for 8 bit up counter **(8)**

b) Write structural VHDL description for n bit serial in serial out shift register **(8)**

Unit - IV

4. a) Derive the state diagram for an FSM that has an input W and output Z the machine has to generate Z=1 when the previous four values of W were 1001 or 1111 else O. Overlapping input patterns are not allowed. Write VHDL code for above FSM **(8)**

b) Explain vending machine with block and state diagrams **(8)**

OR

4. a) Explain moore type FSM for serial Adder and also write its VHDL code **(8)**

b) What are differences between mealy and moore type of FSM **(8)**

Unit - V

5. a) Draw ASM charts for datapath and control circuits for the multiplier and write its VHDL code **(4)**

b) Draw schematic diagram of SRAM Block **(6)**

c) Explain clock synchronization **(6)**

OR

5. a) Briefly explain schematic diagram for the data path circuit for the divide operation **(8)**

b) Write short notes on **(any two)**

i) CPU organization

ii) Clock synchronization

iii) Clock skew and jitter **(4x2=8)**

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8E4089

Roll No. _____ [Total No. of Pages : 3

8E4089

B.Tech. VIII Semester (Old Back) Examination, April/May 2016

Electronics & Comm. Engg.

8EC2 (O) Radar & TV Engineering

Time : 3 Hours

Maximum Marks : 80
Min. Passing Marks : 24

Instructions to Candidates:

*Attempt any **five** questions, selecting one question from **each unit**. All questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.)*

Units of quantities used/calculated must be stated clearly.

Unit - I

1. a) Explain the working of FMCW radar with the help of block diagram **(8)**

   b) Describe the conical scanning method of tracking of an acquired target. How is this an improvement over lobe switching **(8)**

OR

1. a) What do you understand by PPI display explain where it is used **(8)**

   b) Explain the block diagram of amplitude comparison in monopulse in one angle coordinate **(8)**

Unit - II

2. a) Explain the principle of operation of radar direction finder and range system **(8)**

b) What are Radar Beacons? Explain in detail (8)

OR

2. a) Explain the aircraft landing system (8)

b) Explain the LORAN system used in navigation (8)

Unit - III

3. a) Explain the working of Delta Gun color picture tube? Write also drawback of Delta Gun tubes (8)

b) Explain the working of solid state camera tube, using charge coupled device. (8)

OR

3. a) Explain the working of plumbicon camera tube How halo effect is formed and how it is eliminated ? (8)

b) Describe the various controls used in PAL receiver (8)

Unit - IV

4. a) What is vestigial side band transmission? Explain briefly draw it for two continuous channels (8)

b) Explain TV transmitting and receiving antennas (8)

OR

4. a) Why the color difference signal(G-Y) is not transmitted along with (B-Y) and (R-Y) signals (8)

b) What do you understand by compatibility of color and monochrome TV systems (8)

Unit - V

5. a) Explain the basic idea of digital TV (8)

b) Explain the function of RF tuner and IF amplifier in the TV receiver (8)

OR

5. a) Explain the satellite TV with the help of a block diagram **(8)**

b) Explain the role of AFC and AGC in TV receiver **(8)**

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8E4090

Roll No. _____ [Total No. of Pages : 3]

8E4090

B.Tech. VIII Semester (Old Back) Examination, April/May 2016

Electronics and Communication

8EC3 (O) Optical Communication

Time : 3 Hours **Maximum Marks : 80**

Min. Passing Marks : 24

Instructions to Candidates:

*Attempt any **five** questions. Selecting one question from **each unit**. All questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.)*

Units of quantities used/calculated must be stated clearly.

Unit - I

1. a) Explain and classify the fiber and compare single mode with multimode step index and graded index fiber **(8)**

   b) A multimode step index fiber is operating at a wave length of 0.85 μm with a core diameter is 80 μm and a relative index difference of 15% if the refractive index of core is 1.48 determine

      i) The normalized frequency for the fiber **(4)**

      ii) The number of guided mode **(4)**

OR

1. a) What is dispersion. Explain dispersion shifted and flattened fibers with neat diagram **(8)**

   b) List the different types of materials use for manufacturing of fiber. Explain modified chemical vapour. Deposition (MCVD) process for optical fiber manufacturing. **(8)**

Unit - II

2. a) Describe the common LED structure for optical fiber communication. In particular compass surface and edge emitting devices **(8)**

   b) What is LASER? Explain the working principle of an injection semiconductor LASER with neat diagram **(8)**

OR

2. a) What are direct and indirect band gap materials? Explain and which one is used for LED and why? **(8)**

   b) A ruby LASER contains a crystal length 4 cm with a refractive index of 1.78. The peak emission wavelength from the device is 0.55 μm. Determine the number of longitudinal modes and their frequency separation

Unit - III

3. a) Explain the physical principle of PIN photo detector using schematic circuit diagram. Also explain the operation of RAPD

   b) A P-N photodiode has a quantum efficiency 50% at a wavelength of 0.9 μ m calculate

      i) Its responsivity at 0.9 μm **(2)**

      ii) The received optical power if the mean photo current is 10^{-6}A **(3)**

      iii) The corresponding number of received photons at this wavelength **(3)**

OR

3. a) Explain the various different types of noises in optical detectors **(8)**

   b) What are the important characteristics of an optical receiver. Explain different types of optical receiver use in optical communication **(8)**

Unit - IV

4. a) What is meant by splicing? Explain different types of splices and compare with the connectors **(8)**

   b) A 80/125 μm graded index (GI) fiber with a NA of 0.25 and α of 2.0 is jointed with 60/125 μm GI fiber with an NA of 0.21 and α of 1.9. The fiber axes are perfectly aligned and there is no air gap. Calculate the insertion loss at a joint for the signal transmission in the forward and backward directions. **(8)**

OR

4. a) Explain the link design for optical communication system. Give brief description of the losses to be counted in link design **(8)**

   b) Describe the Wavelength Devisions Multiplexing (WDM) use in optical fiber communication. **(8)**

Unit - V

5. a) Explain the measurement of retractive index profile parameter of fiber with neat diagram **(8)**

   b) A 2km length of multimode fiber is attached to apparatus for spectral loss measurement. The measured output voltage from the photoreceiver using the full 2km fiber length is 21.V at a wavelength of 0.85 μm. When the fiber is then cut back to leave a 2m length the output voltage increases to 10.7v. Determine the attenuation per kilometer for the fiber at a wavelength of 0.85 μm **(8)**

OR

5. a) What is Optical Time Domain Reflectometry(OTDR)? Explain the principle and measurement technique with neat diagram **(8)**

   b) Discuss with the aid of suitable diagram the measurement of scattering losses in optical fibers. **(8)**

8E4096

Roll No. _____ (Total No. of Pages : 2)

8E4096

B.Tech. VIII Semester (Main/Back) Examination, April/May 2016
Electronics Instrumentation & Control
8EI1(O) Instrumentation in Industries
Common in 8EI1 & 8AI1

Time : 3 Hours **Maximum Marks : 80**
Min. Passing Marks : 24

Instructions to Candidates:

*Attempt any **five** questions, selecting one question from **each unit**. All questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly)*

Units of quantities used/calculated must be stated clearly

Unit - I

1. a) Explain the use of specialized process plant instrumentation in overcoming the effects of corrosive nature of materials and hazardous environment. **(8)**

   b) Draw and explain the man power distribution curve for process industries. **(8)**

OR

1. a) Why power plant training is useful for instrumentation engineer. Discuss about the major areas of power plant training for process industries. **(8)**

   b) What are the basic considerations for design the control room for the process industries. Discuss about the system architecture for manufacturing automation (consider any process plant) **(8)**

Unit - II

2. a) Explain the control schemes of reactor temperature control with recirculation **(8)**

   b) Explain the control loop of cascade temperature control with heading & cooling capability of chemical reaction **(8)**

OR

2. a) Draw and explain the control and instrumentation of reactor pressure control by throttling flow of vent gas. **(8)**

   b) Explain the control schemes of reactor pressure control by modulating gas make up. **(8)**

Unit - III

3. a) Explain the control loop of steam trap replaced by level control of heat exchangers **(8)**

   b) Draw and explain the C&I of temperature-flow cascade control loop on steam reboiler. **(8)**

OR

3. a) Explain the control schemes of hot gas by pass control of heat exchanger **(8)**

   b) Draw and explain the C&I of condenser on pressure control of heat exchanger. **(8)**

Unit - IV

4. a) Explain the principles and classification of dryers with neat sketches **(8)**

   b) Explain the control and instrumentation scheme of short tube vertical evaporators **(8)**

OR

4. a) Draw and explain the C&I of centrifugal pumps with applications **(8)**

   b) Write short notes on the batch and continuous dryers **(8)**

Unit - V

5. a) What are the selection criteria of instrumentation for steam power plants. Explain the various control techniques are implemented in steam power plants **(8)**

   b) Draw and explain the C&I of feed water control systems **(8)**

OR

5. Write short notes on the following

   a) Data logging & computing equipments **(8)**

   b) Auxiliary control systems in power plants **(8)**

8E8101

Roll No. _____ [Total No. of Pages : 3

8E8101

B.Tech. VIII Semester (Main) Examination, April/May 2016

Electronic Instrumentation & Control Engg.

8EI1A Industrial Electronics

Time : 3 Hours **Maximum Marks : 80**

Min. Passing Marks : 24

Instructions to Candidates:

*Attempt any **five** questions, selecting **One** question from **each unit**. All questions carry **equal** marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.*

Unit - I

1. a) Explain the working of SCR and its V-I characteristics using suitable circuit diagram. **(8)**

   b) Explain the working principal of GTO **(4)**

   c) Compare power diode and crystal diode **(4)**

OR

1. a) Compare power transistor and ordinary transistor **(4)**

   b) Explain the working principal of IGBT using suitable circuit diagram **(8)**

   c) Explain the role of latching current and holding current **(4)**

Unit - II

2. a) Draw the schematic diagram of single phase bridge rectifier and explain its working using waveform **(8)**

b) Compare voltage and current source inverter (8)

OR

2. a) Draw the schematic diagram of voltage source inverter and explain its working using wave form (8)

b) Explain the working of three phase bridge rectifier (8)

Unit - III

3. a) Compare step up and step down choppers (4)

b) Draw the schematic diagram of SMPS and explain its working principal using suitable circuit diagram (8)

c) Explain the working principal of flyback converter. (4)

OR

3. a) Define the need of uninterruptible power supply. Compare UPS with inverter. Explain the working principal of UPS. (8)

b) Compare boost converter and buck-boost converter. (8)

Unit - IV

4. a) Explain the speed control of three phase induction motor using frequency control method (8)

b) Compare voltage and frequency control methods of 3-ϕ induction motor (8)

OR

4. Explain the different method of speed control of DC motor (16)

Unit - V

5. a) Explain the working principal of variable reluctance stepper motor (8)

b) Compare hybrid and permanent magnet stepper motor (8)

OR

5. Write short notes on following

a) Induction Heat control **(8)**

b) Dielectric heat control **(8)**

8E4097

Roll No. _____ [Total No. of Pages : 2

8E4097

B.Tech. VIII Semester (Old Back) Examination, April/May 2016
Electronics Instrumentation & Control
8E12(O) Non Linear Control System

Time : 3 Hours **Maximum Marks : 80**
Min. Passing Marks : 24

Instructions to Candidates:

*Attempt any **five** questions, selecting **One** question from **each unit**. All questions carry **equal** marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.*

Units of quantities used/calculated must be stated clearly

Unit - I

a) Discriminate between linearity and non-linearity. What do you mean by phase trajectory? (8)

b) What do you mean by following
   i) Force point
   ii) Saddle point
   iii) Central point
   iv) Unfocused point (8)

OR

1. Describe following in details: (4×4=16)
   a) Power plane analysis
   b) Limit cycles
   c) Isocline method
   d) Limit & continuity

Unit - II

2. a) Check out whether the given below system of equation is balanced or not?

$$x_1 = x_2 + x_3$$

$$x_2 = x_1 + ax_2 + bx_3; \quad a.b > 0$$

(8)

b) Explain lyapunov's direct method (8)

OR

2. a) State and explain Autonomous and non-autonomous system **(8)**

   b) State and explain local and global stability **(8)**

Unit - III

3. a) What do you mean by relay controlled system? Explain in detail **(8)**

   b) What are the basic assumptions considered while designing function analysis **(8)**

OR

3. Describe in detail: **(16)**

   i) Continuous non linearity

   ii) Discontinuous non-linearity

Unit - IV

4. a) Explain the available method of non-linear control design **(8)**

   b) What do you mean by autonomous system and also give the concept of stability for it **(8)**

OR

4. What are the non-linear control system design and non-linear control problems **(16)**

Unit - V

5. a) How can you define the control of first order system? Describe the extension of non linear plants **(8)**

   b) What is control law adoption law **(8)**

OR

5. Write down short notes upon **(16)**

   a) Robustness of adaptive control system

   b) Output feedbacked system

8E8102

Roll No. _____ [Total No. of Pages : 2

8E8102

B.Tech. VIII - Semester (Main) Examination, April 2016
Electronic Instrumentation & Control Engineering
8EI2A Non-Linear Control Systems

Time : 3 Hours **Maximum Marks : 80**
Min. Passing Marks : 26

Instructions to Candidates:

*Attempt any **five** questions, selecting one question from **each unit**. All questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.*

Unit - I

1. Explain all non linearities in control system in detail **(16)**

OR

1. Differentiate the linear control system with non - linear control system behaviour in detail **(16)**

Unit - II

2. Explain:
   a) Method of isoclines **(8)**
   b) Jump response **(8)**

OR

2. Explain:
   a) Limit cycles **(8)**
   b) Poincare-Bendixson theorem **(8)**

Unit - III

3. Derive the describing function for the following non linearity **(8×2=16)**
   a) Threshold
   b) Saturation

OR

3. How can you determine the stability of the non-linear control system? Explain it with the suitable example **(16)**

Unit - IV

4. Explain
   a) Linearization and local stability **(8)**
   b) Lyapunov's Direct Method **(8)**

OR

4. Explain
   a) Equilibrium point theorem **(8)**
   b) Krasoviskii's method **(8)**

Unit - V

5. What is the adaptive control? Explain all the components for constructing the adaptive control with a neat diagram **(16)**

OR

5. Explain:
   a) Input-output linearization **(8)**
   b) Gain scheduling **(8)**

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8E 4100

Roll No. _____ [Total No. of Pages : 3

8E 4100

B.Tech. VIII Semester (Main/Back) Examination, April/May 2016

Applied Electronics & Instrumentation Engineering

8AI4.2 Operating Systems

Common with 8EI4.2

Time : 3 Hours **Maximum Marks : 80**

Min. Passing Marks : 24

Instructions to Candidates:

*Attempt any **five** questions, selecting one question from **each unit**. All questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.*

Unit - I

1. a) Write short notes on early operating systems. List the differences between multiprogramming and time sharing operating systems **(8)**

   b) Explain the architecture of an operating system **(8)**

OR

1. a) i) Describe the essential properties of real time operating system and distributed operating systems **(4)**

   ii) Explain the boot process of windows and linux operating system **(4)**

   b) Explain how operating system act as on resource manager. Differentiate multiprogramming and multi threading **(8)**

Unit - II

2. a) What do you mean by process life cycle? Explain with a state diagram **(8)**

   b) What are semaphores? Explain busy waiting semaphore **(4)**

   c) Explain short term and long term scheduling **(4)**

OR

2. a) Define process explain process context switching in detail **(8)**

   b) CPU burst time indicates the time, the process needs the CPU. The following are the set of processes with their respective CPU burst time (in milliseconds) $P_1=10$, $P_2=5$, $P_3=5$. Calculate the average waiting time if process arrived in following order :

      i) P_1, P_2 and P_3

      ii) P_2, P_3 and P_1 **(4)**

   c) What do you mean by process scheduling? Explain various levels of scheduling **(4)**

Unit - III

3. a) What is Belachy's anomaly? Explain **(8)**

   b) Explain pure segmentations and segmentation with paging scheme **(8)**

OR

3. Discuss the following disk scheduling algorithms **(4×4=16)**

   i) Shortest seck time first

   ii) First come first served

   iii) Scan

   iv) C-look

Unit - IV

4. a) What do you mean by firewall? Explain types of firewall **(8)**

   b) Write short notes on: (4×2=8)

      i) Tree structured directory

      ii) General graph directory

OR

4. a) What is the difference between absolute and relative path name of a file **(4)**

   b) What are the different file organization and access method in multiprogramming operating system **(4)**

   c) Explain the concept of memory mapped files, also mention different parameters used under memory mapped files **(8)**

Unit - V

5. a) What is the difference between deadlock avoidance and prevention schemes. Explain deadlock avoidance methods. **(8)**

   b) With the help of model of resource management explain the task and goals of resource manager **(8)**

OR

5. a) Explain the four necessary condition of deadlock prevention. **(8)**

   b) What do you mean by mutual exclusion. Also explain it with respect to producer consumer problem. **(8)**

8E8103

Roll No. _____ [Total No. of Pages : 2]

8E8103

B.Tech. VIII semester (Main & Back) Examination, May 2016

Electronic Instrumentation & Control Engineering

8EI3A Distributed Control Systems

Time : 3 Hours **Maximum Marks : 80**

Min. Passing Marks : 24

Instructions to Candidates:

*Attempt any **five** questions, selecting **One** question from **each unit**. All questions carry **equal** marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.*

Unit - I

1. Explain the Hierarchical Organization for a process computer control and computer system structure for a manufacturing complex with the heep of Block diagram. **(16)**

OR

1. a) Explain the concept of distributed control **(6)**

   b) What are the functional requirements of DPCS. Explain. **(5)**

   c) Write short note on DPCS system Configurations. **(5)**

Unit - II

2. a) Explain the System Architectures of DPCS in detail. **(8)**

   b) Give configuration of Control unit along with the state of the art in DPCS **(8)**

OR

2. a) Explain different card system Implementation concepts. **(10)**

   b) Write a short note on DPCS elements. **(6)**

Unit - III

3. a) Explain the concepts of standard and users defined displays in detail. **(10)**

   b) Write a technical note on ground display. **(6)**

OR

3. Write short notes on

   a) Graphic Display **(6)**

   b) Annunciator display **(5)**

   c) Tuning Point **(5)**

Unit - IV

4. Write and explain MAP and TOP protocols in detail. **(16)**

OR

4. a) Give Comparison of MODBUS, PROFIBUS and FIPBUS **(10)**

   b) Write short note on error handling. **(6)**

Unit - V

5. Explain the following :

   a) Control Unit **(8)**

   b) Batch System Builder **(8)**

OR

5. a) Describe Feedback Control builder in detail. **(8)**

   b) Explain sequential control in detail. **(8)**
