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APR-MAY

B. E. (Eighth Semester) Examination, 2020

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(New Course)

(Electronics & Telecommunication Engg. Branch)

ENTERPRISE RESOURCE PLANNING

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

Note : *Attempt all questions. Part (a) of each unit is compulsory carry 2 marks. Attempt any **two** parts from (b), (c) and (d) carry 7 marks. Assume suitable data if required.*

Unit-I

1. (a) Define ERP.

   (b) What are the functional areas of business operations.

(c) Define the roles and objectives of material management.

(d) Briefly describe forecasting subsystem. Also explain some forecasting methods.

Unit-II

2. (a) Explain the term core process.

(b) Explain the sales and distribution module.

(c) Explain marketing and sales in detail.

(d) What is strategic planning? Explain the importance of strategic planning in a business enterprise.

Unit-III

3. (a) Explain EDP.

(b) What is Decision Support System (DSS)? Explain its various attributes. What are the different types of Decision Support Systems.

(c) Explain Executive Information System in detail.

(d) What are the main misconceptions about ERP? What

are the limitations of ERP?

Unit-IV

4. (a) Define OLAP.

(b) Explain MRP & MRP-II.

(c) Explain major subsystems of manufacturing module.

(d) Explain in detail the subsystems of finance.

Unit-V

5. (a) What are the ERP pre-implementation issues?

(b) What is BPR? Explain the roles of BPR in implementing ERP?

(c) Explain ERP implementation life cycle.

(d) Describe in detail of project management in care business.

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APR-MAY

B. E. (Eighth Semester) Examination, 2020

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(New Scheme)

(Elect. Engg. Branch)

INSTALLATION, MAINTENANCE & TESTING
of ELECTRICAL EQUIPMENTS

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

*Note : Part (a) of each question is compulsory and carries 2 marks. Attempt any **two** parts from (b), (c) and (d). Each of them carries 7 marks each.*

Unit-I

1. (a) What do you mean by preventive and corrective maintenance?   2

[2]

(b) Explain types and scope of maintenance.   7

(c) Discuss recommended safety precautions against
    electric shocks in LV and HV installation.   7

(d) What do you mean by safety management? Write
    down various principles of safety management.   7

Unit-II

2. (a) What parameters information are given on the trans-
       former's name plate?   2

(b) Write maintenance schedule of transformer upto
    10000 kVA.   7

(c) Explain the filtering process and filtering plant for
    transformer oil filtration with schematic diagram.   7

(d) Write important steps in maintenance of power
    transformer and causes of failure.   7

Unit-III

3. (a) Define Type test, routine test and commissioning
       tests.   2

(b) Explain trouble shooting of substation equipments.   7

(c) Write maintenace procedure of SF_6 circuit breaker. 7

(d) Discuss troubles, causes and remedial action for outdoor circuit breaker in brief.   7

Unit-IV

4. (a) Why the test for degree of protection is necessary? 2

(b) State the various steps in the installation and commissioning of induction motors.   7

(c) Write drying out procedure of rotating electrical equipments.   7

(d) Explain the mechanical maintenance of motor.   7

Unit-V

5. (a) What do you mean by hot line maintenance?   2

(b) Explain various types of hot line operation.   7

(c) Write safety procedures during hot line maintenance. 7

(d) Explain Dry powder type fire extinguisher.   7

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APR-MAY

B. E. (Eighth Semester) Examination, 2020

(Old Scheme)

(Elect. & EEE Engg. Branch)

EHV AC & DC TRANSMISSION

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

*Note : Attempt all questions. Part (a) is compulsory
for each question. Attempt any two questions
from part (b), (c) and (d).*

Unit-I

1. (a) Enlist the limitation of HVDC transmission system.

    (Any two)   2

(b) Describe the operation of six-pulse GREATZ bridge circuit with detailed derivation.   7

(c) Explain the modern trends of DC transmission technology.   7

(d) Discuss the type of D.C. links used in DC transmission system.   7

Unit-II

2. (a) Define the term FACTs controller.   2

(b) What is STATCOM? Explain its principle operation and draw the characteristics.   7

(c) Describe the operation of TCR.   7

(d) Explain the voltaage profile along EHVAC line with light and heavy load.   7

Unit-III

3. (a) Define the term voltage instability.   2

(b) An overhead conductor of 1·6 cm radius is 10 m

above the ground. The normal voltage is 133 kV (rms) to ground (230 kV) line to line. The switching surge experienced is 3·5 per unit. Taking $K = 0.7$, calculate the energy loss per km of line. Assume smooth conductors.   7

(c) Expklain the lighting phenomena in travelling waves.   7

(d) Explain different protection system used against the overvoltage due to lighting.   7

Unit-IV

4. (a) What is the difference between even and odd harmonics.   2

(b) What is smoothing reactor? Explain its functions to reduce harmonics in HVDC converters.   7

(c) Explain converter station in HVDC transmission system.   7

(d) Explain the designing of AC filters.   7

Unit-V

5. (a) Explain the term commutation failure?   2

(b) Describe the advantages and problems associated with EHVDC transmission system.   7

(c) Explain HVDC converter firing angle control system.   7

(d) Explain parallel operation of DC link with AC network.   7

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APR-MAY

B. E. (Eighth Semester) Examination, 2020

(New Scheme)

(EEE Engg. Branch)

COMPUTER AIDED POWER SYSTEM

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

Note : *Attempt all questions. Part (a) of each question is compulsory. Attempt any two parts from (b), (c) and (d).*

Unit-I

1. (a) Define Tree and Co-tree.   2

(b) Discuss the step by step method of formation of Y_{bus} 7

(c) Explain in brief the procedure for formation of Y_{bus} using singular transformation. Derive the necessary equations.   7

(d) An incomplete nodal admittance matrix for a 4-bus system with negligible charging admittance is given below. Find missing terms :   7

$$\begin{bmatrix} 0 \cdot 7 - j_3 & -0 \cdot 2 + j_1 & -0 \cdot 5 + j_2 & y_{14} \\ y_{21} & y_{22} & -0 \cdot 3 + j_2 & -0 \cdot 5 + j_3 \\ y_{31} & y_{32} & y_{33} & -1 + j_4 \\ y_{41} & y_{42} & y_{43} & y_{44} \end{bmatrix}$$

Unit-II

2. (a) Why are fault studies important?   2

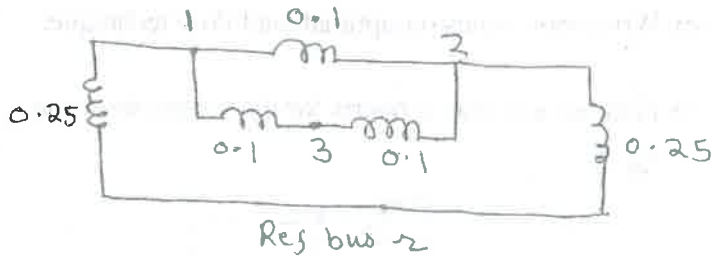(b) For the 3-bus network shown in fig. 1, find build Z_{bus}.   7

Res bus 2

Fig. 1

(c) A generator experiences a double line to ground fault in phase b and c through a fault impedance Z_f. Derive the necessary expression for this fault and hence give the connection between three sequence networks.   7

(d) Why the phase shift in the positive sequence and negative sequence quantities through a star delta transformer are opposite to each other? Explain in brief.   7

Unit-III

3. (a) What is meant by optimal load flow?   2

(b) Draw and explain flow chart for fast decoupled load flow method.   7

(c) Write short notes on optimal load flow technique.   7

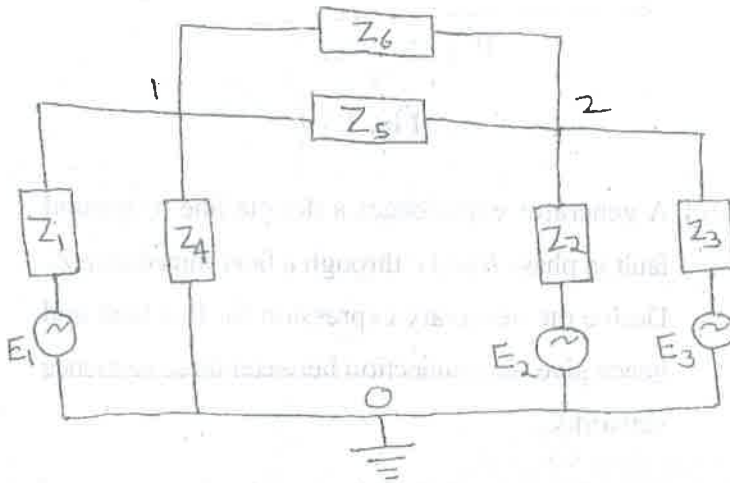(d) Find bus admittance matrix for the system shown in fig. 2.   7

Fig. 2

Unit-IV

4. (a) What is the essential difference between steady state stability and transient stability?   2

(b) Write down the swing equation and drive the expression for iterative solution of swing equation using modified Euler method.   7

(c) How can the transient stability of a system be improved? Discuss the traditional as well as new approaches to the problem. 7

(d) A 50 Hz, 4 pole turbogenerator rated 100 mVA, 11 kV has an inertia constant of 0.8 MJ/mVA :

   (i) Find the stored energy in the rotar at synchronous speed.

   (ii) If the mechanical input is suddenly raised to 80 MW for an electrical load of 50 MW, find rotar acceleration, neglecting mechanical and electrical losses.

   (iii) If the acceleration calculated in part (ii) is maintained for 10 cycles. Find the change in torque angle and rotar speed in revolution per minute at the end of this period. 1+3+3=7

Unit-V

5. (a) What is contingency analysis? 2

   (b) Discuss the factors affecting power system security. 7

   (c) Explain AC power flow method of contingency analysis. 7

(d) Explain following terms : (any **two**)   7

    (i)   Contingency selection

    (ii)   Network sensitivity method for contingency analysis

    (iii) Static security analysis at control centers

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B. E. (Eighth Semester) Examination, 2020
APR-MAY

(New Scheme)

(EI Branch)

INDUSTRIAL ELECTRONICS

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

Note : *Attempt all questions. Part (a) of each question is compulsory. Attempt any **two** parts from (b), (c) and (d). Sketch neat and clear diagram and waveform wherever necessary.*

Unit-I

1. (a) What do you mean by controlled rectifiers?   2

(b) Explain the principle of operation of single phase, half-wave controlled converted with R-load. Draw the waveforms for (a) output average voltage across the load (b) average current (c) voltage across SCR.   7

(c) A half-wave controlled rectifier circuit is connected to a purely resistive load. Findout the maximum value of the resistance to be connected as a load when $\alpha_{min} = 10°$. The latcling and holding current for thyristor are 10 mA and 5 mA respectively. The circuit is operated from $V = 100 \sin 314\, t$. Find out the angle of thyrister.   7

(d) Write a short note on ideal and practical dual converters.   7

Unit-II

2. (a) What is Cycloconverter?   2

(b) An AC voltage controller has a resistive load of $R = 10\,\Omega$ and RMS input voltage is $V_s = 230$ V, 50 Hz. The SCRs are switched on for $n = 25$ cycles and off for $m = 75$ cycles.

[3]

Determine :

(i) RMS output voltage

(ii) Input power factor

(iii) Average and RMS rating of SCRs　　7

(c) Describe the operation of single phase to single phase cycloconverter for an inductive load.　　7

(d) Write the single phase voltage controller working principle with proper circuit diagram.　　7

Unit-III

3. (a) List a few industrial application in inverters.　　2

(b) Explain the various methods of reduction of harmonics from output voltage of inverter.　　7

(c) Describe the working of a single phase parallel inverter with relevent circuit and waveforms.　　7

(d) Write a short notes on series inverters.　　7

Unit-IV

4. (a) What is SMPS?　　2

(b) What is an UPS? Give its industrial application. Describe rotating-type UPS configuration. 7

(c) What is a static switch? List the merits of static switch over mechanical switches. 7

(d) What are solid state relays? How is electrical isolation obtained in these relays? 7

Unit-V

5. (a) What is thermal times? 2

(b) Explain principle of induction heating. Enlist merits of induction heating over conventional method. 7

(c) Explain the basic principle of high-frequency diclectric heating. Give two applications. 7

(d) Classify timers according to the functions and techiques. 7

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APR-MAY

B. E. (Eighth Semester) Examination, 2020

(Old Scheme)

(Et & T Engg. Branch)

OPTICAL COMMUNICATION

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

Note : *Attempt all questions. Part (a) from each question is compulsory. Attempt any two parts from (b), (c) and (d) of each question.*

Unit-I

1. (a) Define Snell's law of refraction.   2

    (b) What is step-index fiber? Explain the refractive index profile and ray transmission in step index fiber.   7

(c) Explain different types of attenuation in an optical fiber. 7

(d) A silica optical fiber has a core refractive index of 1·50 and a cladding refractive index of 1·47. Determing (i) The critical angle at the core cladding interface (ii) The NA for the fiber (iii) The acceptance angle in air for the fiber. 7

Unit-II

2. (a) What are the advantages of LED source? 2

(b) Explain edge emitter LEDs structure in detail. 7

(c) What is meant by population inversion? Explain its significance. 7

(d) A DH surface emitter which has an emission area diameter of 50 μm is butt joint to an 80 μm core step index fiber with a NA of 0·15. The device has a radiance of 30 W Sr^{-1} cm^{-2} at a constant operating drive current. Estimate the optical power coupled into the fiber if it is assumed that the Fresnal reflection coefficient at the index matched fiber surface is 0·01. 7

Unit-III

3. (a) Explain the significance of fiber coupler. 2

(b) Write short note on mechanical splices. 7

(c) Explain star coupler in detail. 7

(d) Write short note on distribution network. 7

Unit-IV

4. (a) What is the function of optical detector? 2

(b) Explain the principle of photo-detection. 7

(c) Explain the construction and working of PIN Photo diode. 7

(d) When 3×10^{11} photons each with a wavelength of 0·85 μm are incident on a photo diode, on average $1·2 \times 10^{11}$ electrons are collected at the terminals of the device. Determine the quantum efficiency and the responsibity of the photo diode at 0·85 μm. 7

Unit-V

5. (a) What is optical network? 2

(b) Explain cut-back technique for the measurement of spectral loss in optical fiber. 7

(c) Explain the measurement technique for intermodel dispertion. 7

(d) Write short notes on SONET. 7

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APR-MAY

B. E. (Eight Semester) Examination, 2020
(Old Scheme)

(Et & T Engg. Branch)

VLSI DESIGN

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

Note : Part (a) of each question is compulsory.
Attempt any two parts from (b), (c) and (d).

Unit-I

1. (a) Define CPLD.   2

   (b) What are differences in SSI, MSI and LSI?   7

(c) Explain VLSI Design flow chart with diagram. 7

(d) Explain FPGA architecture with block diagram. 7

Unit-II

2. (a) Define Bi-CMOS. 2

(b) Explain PMOS fabrication process. 7

(c) What are the main point of Lambda based design rule? Explain it. 7

(d) Draw schematic and stick diagram for 2 input CMOS NOR Gate. 7

Unit-III

3. (a) Define Layout. 2

(b) Draw and explain 4 × 4 NAND-ROM layouts. 7

(c) Draw and explain layout of JK flip flop. 7

(d) Construct layout for 1 bit full adder. 7

Unit-IV

4. (a) Define VHDL. 2

(b) Explain the static and dynamic power dissipation in CMOS inverter. 7

(c) Explain different type Architecture body in VHDL. 7

(d) What is entity in VHDL? Explain the entity declaration. 7

Unit-V

5. (a) Define "process" in VHDL. 2

(b) Write VHDL code for D-flip flops. 7

(c) Explain inertial delay model and transport delay model in VHDL. 7

(d) Write the comparison of Moore and Mealy FSM. 7

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APR-MAY

B. E. (Eighth Semester) Examination, 2020

(Old Scheme)

(Et & T Branch)

INDUSTRIAL & POWER ELECTRONICS

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

Note : All questions are compulsory. Part (a) is compulsory and solve any two from parts (b), (c) and (d).

Unit-I

1. (a) What is the Breakdown mechanism of Zener diode.   2

   (b) Explain three terminal voltage regulator using LM-340IC.   7

(c) Explain basic transistorized shunt voltage Regulator and how its performance can be improved?   7

(d) Write short notes on : (any **one**)   7

   (i) SMPS

   (ii) Dual Tracking Regulator

Unit-II

2. (a) Justify the statement "Higher is the gate current, lower is the fwd breakover voltage".   2

   (b) Give the comparison between any three thyristor family members.   7

   (c) What is the basic difference between load commutation and external pulse commutation?   7

   (d) Write short notes on :

     (i) Different methods of triggering SCR circuits   4

     (ii) SCR's operation - series & parallel operation   3

Unit-III

3. (a) What do you mean by Chopper & write used.   2

(b) Explain the working principle of three phase converter.   7

(c) Explain the single mid-point cycloconverter with the help of circuit.   7

(d) Describe McMurray bridge inverter in brief.   7

Unit-IV

4. (a) Define skin effect in Induction Heating.   2

   (b) Explain different types of Resistance Welding.   7

   (c) Write the limitations, theory and effect of variation of supply voltage & frequency of "dielectric heating" with two application.   7

   (d) For the high frequency induction heating derive the total power entering the metal per sq. cm. of the surface given by :   7

$$P_t = \frac{8\pi H_0 \sqrt{10^{-9}\mu_r f}}{\sqrt{\sigma}}$$

Unit-V

5. (a) Explain origin of noise.   2

   (b) Briefly with the help of B.D. of operation of ONLINE UPS and OFFLINE UPS.   7

   (c) What are the different types of noise? Explain any three in brief.   7

   (d) Write short notes on : (any **one**)   7

       (i) Servo Motor of servo system
       (ii) Buck-Boost control voltage stabilizer

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APR-MAY

B. E. (Eighth Semester) Examination, 2020

(New Scheme)

(Et & T Engg. Branch)

ADVANCED COMMUNICATION SYSTEMS

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

Note : *Part (a) of each question is compulsory.*
*Attempt any **two** parts from (b), (c) and (d)*

Unit-I

1. (a) What is Satellite Stabilization?   2

   (b) A geo-synchronous satellite moving in a equatorial
       circular orbit at the hight 35786 k.m. from the earth

surface. If the earth radius is taken as 6378 km. Determine the coverage angle and slant range (elevation angle $= 0°$).　　　　　　　　　　　　7

(c) What are the elements of satellite communication system? Explain each with suitable block diagram.　　7

(d) Explain the basic differences between an active satellite systems. Discuss their merit and demerits.　　7

Unit-II

2. (a) Define Noise figure and Noise temperature.　　2

(b) Why satellite link design is done? Derive the general link design equation for communication satellite.　　7

(c) Explain in detail interference effects on complete link design.　　7

(d) In the link budget of a satellite, the free space loss at 12 GHz is 210 db, the antenna pointing loss is 2 db and atmospheric absorption is 2 db. If the receiver C/T ratio is 19 db/K, receiver feeder losses are 1 db 8 the E&RP is 50 dbW. Calculate the carrier to noise spectral density ratio. ·　　7

Unit-III

3. (a) What is difference between multipliexing and multiple access technique?   2

   (b) What is Burst? Explain the difference between the burst and traffic burst. Explain their structure too.   7

   (c) What is CDMA? Explain in detail. In what way it is superior to TDMA.   7

   (d) Explain the operation of typical satellite switched TDMA (SSTDMA) system.   7

Unit-IV

4. (a) Define skey rays.   2

   (b) A multinode step index fiber has a numerical aperture of 0·3 and core refractive index of 1·45. The material dispersion parameter for the fibre is 250 PS nm^{-1} km^{-1} which makes material dispersion the totally dominating intrumodal dispersion mechanism. Estimate :

     (i) Total rms pulse broadening per km when the fiber is used with an LED source of rms spectral width 50 nm.

     (ii) Corresponding bandwidth length product for the fiber.   7

(c) Explain different types of attenuations used in optical fiber communication. 7

(d) Explain with the aid or diagram :

   (i)   The multimode step index fiber

   (ii) The single mode step index fiber.

   Compare the advantages and disadvantages of these two types of fiber for use as an optical channel. 7

Unit-V

5. (a) Define homojunction and hetrojunction LED. 2

(b) Compare the LED of LASER on the following points :

   (i)   Spectral width

   (ii)   Coupling efficiency

   (iii) Modulation B.W.

   (iv)   Lifetime

   (v)   Cost

   (vi)   Temp. senstivity

   (vii) Compatible fiber 7

(c) Compare SONET & SDH optical network. 7

(d) Write short note on any **two** :   7

    (i)   Semiconductor photodiode

    (ii)   PIN photodiode

    (iii) Avalance photodiode

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B. E. (Eighth Semester) Examination, 2020

APR-MAY
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(New Scheme)

(ET & T Engg. Branch)

POWER ELECTRONICS

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

Note : *Attempt all questions. Part (a) of each question is compulsory. Attempt any **two** parts from (b), (c) and (d). Draw neat sketch & waveforms with proper labelling wherever required.*

Unit-I

1. (a) Compare GTO & SCS.   2

(b) With help of proper sketch, explain Mesa type construction of SCR. What are its advantages.   7

(c) Explain two transistor analogy of SCR. Derive the expression of anode current in two transistor analogy. What is the condition of conducting SCR.   7

(d) What is the difference between Symmetric & Asymmetric IGBT. Explain the working of Asymmetric IGBT.   7

Unit-II

2. (a) Compare natural commutation & forced commutation.   2

(b) What is the need of series & parallel operation of SCR. Discuss the importance of series equallization circuit in static condition & find out the value of resistance connected across each SCR.   7

(c) With help of neat waveforms, explain dynamic turn on & turn off switching characteristics of SCR.   7

(d) With help of neat sketch & waveforms, explain the working of single phase full wave converter using RLE load.   7

Unit-III

3. (a) Differentiate between Symmetric & Asymmetric
    semiconverter.   2

    (b) With help of neat sketch & waveforms, explain three
        phase fully controlled Bridge convertor for firing angle
        $30°$ & $90°$.   7

    (c) A half controlled Bridge converter feeds a load with
        ripple free current $\alpha = 60°$, input voltage is 240 V,
        50 Hz, $R_L = 10\Omega$.   7
        Find :
        (i) Average load voltage
        (ii) Average Power dissipated in load
        (iii) RMS input current

    (d) Difference between circulating current type & non
        circulating current type modes of Dual converter.
        Explain how single phase dual converter works in
        all four quadrants.   7

Unit-IV

4. (a) Define constant frequency mode & variable
    frequency mode of chopper.   2

(b) With help of neat sketch & waveforms. Explain single phase full bridge inverter using R (Resistive) load.   7

(c) With help of neat sketch & waveforms, explain working of Jone's chopper.   7

(d) With help of neat sketch & waveforms and explain working of 3 phase bridge inverter using 180° conduction mode.   7

Unit-V

5. (a) What is step down cycloconverter.   2

(b) Explain the TRIAC based AC voltage controller.   7

(c) With help of circuit diagram & waveforms explain working of three phase to single phase cycloconvertor.   7

(d) Write short notes on following :   7

    (i) Integral cycle control in AC voltage controller.

    (ii) Single phase to single phase cycloconverter using bridge configuration.

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B. E. (Eighth Semester) Examination, 2020 APR-MAY

(New Scheme)

(ET&T Engg. Branch)

CRYPTOGRAPHY & SECURE COMMUNICATION

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

Note : Attempt **all** questions. Part (a) of each question is compulsory carrying 2 marks. Attempt any **two** parts from parts (b), (c) and (d) carrying 7 marks each.

Unit-I

1. (a) Define finite group and order of group.

(b) Explain Euler's theorem with example.

(c) Write Euclidean algorithm to obtain the greatest common divisor and extended Euclidean algorithm to obtain the multiplicative inverse with example.

(d) State and explain Fermat's theorem with example.

Unit-II

2. (a) Define Block cipher and Stream Cipher.

(b) Briefly describe the working of Data Encryption Standard (DES).

(c) Explain RSA algorithm with example in detail along with its advantages and disadvantages.

(d) Explain Diffie-Hellman key exchange algorithm and show how this algorithm is insecure against a Man-in-the-middle attack.

Unit-III

3. (a) Define Hash function.

(b) Briefly describe the MD5 algorithm with the working steps in it.

(c) Explain Digital signature with its advantages and disadvantages.

(d) Describe the basic usage of Message Authentication Code (MAC).

Unit-IV

4. (a) Define Virus and Firewall.

(b) Explain the services provided by IPSec in detail.

(c) Mention, how the most significant types of viruses can be categorized.

(d) Describe firewall configurations in brief.

Unit-V

5. (a) What is the purpose of dual signature?

(b) Briefly describe the overall operation of SSL Record protocol with SSL Record format.

(c) Draw a table of comparison of threats, their consequences and counter measures.

(d) What is Secure Electronic Transaction (SET)? Give an overview of SET along with its key features.

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B. E. (Eighth Semester) Examination, 2020

APR-MAY

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(New Scheme)

(Et&T Engg. Branch)

MICROELECTRONIC DEVICES
& VLSI TECHNOLOGY

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

Note : Part (a) of each question is compulsory having 2 marks each and attempt any two parts from (b), (c) and (d) from each question having 7 marks each.

Unit-I

1. (a) What is Moore's Law?   2

(b) Explain the Czochralski (CZ) technique of crystal growth. Why it is prefferred over other techniques? 7

(c) Write detail history of evolution in Integrated circuit. 7

(d) Explain the Bridgeman technique. 7

Unit-II

2. (a) Why oxidation is needed in Integrated circuit? 2

(b) Explain Thermal Oxidation. Write the difference between thick & thin oxidation. 7

(c) Explain kinetics of thermal oxidation. 7

(d) Explain the purpose of film deposition. Also explain polysilicon deposition. 7

Unit-III

3. (a) Define Diffusion. What are the type of dopents give examples? 2

(b) Explain Ion Impantation with suitable diagram. 7

(c) Compare low energy & high energy implantation.   7

(d) Explain Diffusion equation & Diffusion mechanism.   7

Unit-IV

4. (a) Why Metallization is needed?   2

(b) What is Lithography? Explain the electron beam Lithography.   7

(c) What is Epitaxy? Explain the molecular beam Epitaxy.   7

(d) Write short notes on :   7

    (i) Dry eatching vs Wet eatching

    (ii) Process simulation and integration

Unit-V

5. (a) What are the types of MOSFET?   2

(b) Explain the MOS capacitance with equivalent circuit.   7

(c) Explain the scaling of MOSFET. Also mention its benefits.   7

(d) Write short notes on : 7

(i) Channel length modulation

(ii) Sub-Threshold Region

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B. E. (Eighth Semester) Examination, 2020

APR-MAY

(New Scheme)

(Electronics & Telecommunication Engg. Branch)

BIOMETRIC TECHNIQUES

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

Note : *Attempt all questions. Part (a) of each unit is compulsory and carries 2 marks. Attempt any **two** parts from (b), (c) and (d), each carry 7 marks. Assume suitable data if required.*

Unit-I

1. (a) How is identification different from verification?   2

(b) How do we evaluate the performance of biometric

system? What are various causes of errors in the biometrics? 7

(c) Define template. How do we use the templates in biometric recognition? 7

(d) Explain the basic process involved in biometrics verification and identification. 7

Unit-II

2. (a) Define self similarity in an image. 2

(b) Discuss EIGEN face method of face recognition system. 7

(c) What are the steps required to design an iris recognition system? 7

(d) What are the various advantages and disadvantages of iris biometrics? 7

Unit-III

3. (a) Define ridge, valleys and minute. 2

(b) What are the main stages of pre-processing involved in fingerprint matching? 7

(c) Why is SIFT algorithm most widely used for feature extraction? Draw and explain various stages involved in ISL recognition system. 7

(d) Fingerprint biometrics in now commonly used at attendance record systems. What are the advantages and disadvantages of this application? 7

Unit-IV

4. (a) Define biometric cryptography. 2

(b) Explain public key cryptography. Discuss secrecy and authenticity. 7

(c) Discuss DES algorithm in detail. 7

(d) Discuss RSA algorithm and compare it with DES algorithm. 7

Unit-V

5. (a) What do you mean by biometric standards? 2

(b) How does AADHAAR help in providing various services to the common people? Explain. 7

(c) What are the challenges of single modality biometrics and how does multimodal biometric system overcome them? 7

(d) Discuss DNA biometric system. 7

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B. E. (Eighth Semester) Examination, 2020

APR-MAY

(New Scheme)

(ET&T Branch)

ARTIFICIAL INTELLIGENCE & EXPERT SYSTEM

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

Note : *Attempt all questions. Part (a) is compulsory from each unit and solve any two out of (b), (c) and (d). Assume suitable data if required.*

Unit-I

1.　(a)　Explain any two characteristics of AI.　　　　2

(b) Explain BFS and DFS technique with suitable example.   7

(c) Explain applications of AI in different fields   7

(d) What is forward and backward chaining?   7

Unit-II

2. (a) What is heuristic search technique?   2

    (b) What is hill climbing & what are the problems in hill climbing?   7

    (c) Explain A* algorithm with suitable example.   7

    (d) Explain alpha-beta cut off with suitable example.   7

Unit-III

3. (a) What is knowledge representation?   2

    (b) Discuss the resolution in predicate logic.   7

    (c) What is Semantic Network?   7

    (d) What is Conceptual Dependency?   7

Unit-IV

4. (a) What is natural language processing?   2

    (b) Explain RTN and ATN with suitable example   7

    (c) What is Block Word? Explain with suitable example   7

    (d) Explain Bayesian network with example   7

Unit-V

5. (a) What is Expert System?   2

    (b) Explain architecture of expert system.   7

    (c) What is knowledge acquisition?   7

    (d) How AI used in MYCIN?   7

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APR–MAY

B. E. (Eighth Semester) Examination, 2020

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(New Scheme)

(Et. & T Engg. Branch)

TELECOMMUNICATION SWITCHING CIRCUITS
and NETWORKS

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

*Note : All questions are compulsory. Part (a) is compulsory and from remaining you have to attempt any **two** parts (b), (c) & (d) of each question. The figures in the right hand margin indicate marks.*

Unit-I

1. (a) What do you mean by folded and non-folded network?　　　　　　　　　　　　　　　　2

(b) Discuss basic elements of switching system.   7

(c) Explain the principle of switching and its switch configuration with neat sketch.   7

(d) What is centralised SPC? Explain its working with different modes of configuration.   7

Unit-II

2. (a) What do you understand by Digital Switching System? 2

    (b) Explain time division space switching with suitable diagram.   7

    (c) Explain software architecture of call processing in briefly.   7

    (d) Discuss the various electronic exchanges in India.   7

Unit-III

3. (a) What is GOS of a delay system?   2

    (b) Explain Birth-Death process with its probabilities.   7

    (c) How to work in echo suppessors in transmission plan? 7

(d) What is the basic difference betwenn in-channel signalling and common channel signalling?   7

Unit-IV

4. (a) Explain to data networks are classified according to geographical coverage.   7

(b) Discuss various switching techniques for data transmission in PSTN.   7

(c) Explain the role and importance of end-to-end layers in data communication architecture.   7

(d) Calculate the through put of pure ALOHA and slotted ALOHA in satellite based data network (SBDN).   7

Unit-V

5. (a) What do you mean by ISDN?   2

(b) What are various new service supported by ISDN? Give a brief description of few services.   7

(c) Explain network and protocol architecture of ISDN.   7

(d) Explain user level signalling and network level signalling in detail. 7

Unit IV

4. (a) Explain 1-s data recovery encoding/decoding in periodical principle.

(b) Discuss various switching techniques for data transmission in PSTN.

(c) Explain the role and importance of each layers in data communication architecture.

(d) Calculate the through-put of pure ALOHA and slotted ALOHA in satellite based data networks (SBDN). 7

Unit V

5. (a) What do you mean by ISDN?

(b) What are various new services supported by ISDN? Give a brief description of Tele services. 7

(c) Explain network and protocol architecture of ISDN. 7

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APR-MAY

B. E. (Eighth Semester) Examination, 2020

(Old Scheme)

(ET & T Engg. Branch)

RADAR ENGINEERING and NAVIGATIONAL AIDS

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

*Note : Attempt all questions. Part (a) of each question is compulsory and carries 2 marks and attempt **two** parts from (b), (c) and (d) and carry 7 marks each.*

Unit-I

1. (a) What is RADAR?   2

   (b) Derive the expression for RADAR range equation and give its application.   7

(c) Discuss the limitation to the backing accuracy of Radar. 7

(d) Draw the basic block diagram of pulse RADAR and explain the various block in brief. 7

Unit-II

2. (a) Define Doppler effects. 2

(b) Draw the block diagram of MTI Radar. Explain the functioning of each block alongwith delay line canceller. 7

(c) Write a short notes on : 7

(i) Conical Scan

(ii) Law Angle Tracking

(d) Draw the block diagram of sequential lobing trucker radar and explain its operation. 7

Unit-III

3. (a) What is refruction and diffruction of radar wave? 2

(b) What are the various external noise limit the detedability of radar tanget. 7

(c) Write short notes on the terms : 7

(i) Refruction

(ii) Scattering

(iii) Diffruction

(d) Describe forward scattering from flat candle. 7

Unit-IV

4. (a) What are the various function performed by antenna? 2

(b) Write short notes on cosecant squared antenna. 7

(c) Explain the various types of parabolic reflector. 7

(d) Write short notes on Radome. 7

Unit-V

5. (a) Define Noise figure. 2

(b) Draw and explain the block diagram of super hetrodyne receiver. 7

(c) Explain different types of Radar display. 7

(d) Write short notes on :

    (i) Magnetron

    (ii) ECM

7

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B. E. (Eight Semester) Examination,
April-May 2020

(Old Scheme)

(Et & T Engg. Branch)

MICRO-ELECTRONIC DEVICES & VLSI
TECHNOLOGY

(Elective-III)

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

Note : All questions carry equal marks. Part (a) of
*each question is compulsory. Attempt any **two***
from (b), (c) & (d).

Unit-I

1. (a) What do you mean by scale of Integration. Give
the classification.   2

(b) Why CZ techniques is preferred over the other
techniques in silicon processing.   7

(c) Give comparitive analysis of Bridgeman Technique
and Float Zone process.   7

(d) Explain the process of silicon wafer preparation. 7

Unit-II

2. (a) Give the types of Oxidation process.   2

(b) Show that to grow an oxide layer of thickness x,
a thickness of $0.44\ x$ of silicon is consumed.   7

(c) Explain Dielectric Deposition with neat diagram.   7

(d) Explain Polysilicon Deposition in detail.   7

Unit-III

3. (a) Define the Fick's diffusion law.   2

(b) Draw & explain the ion implantation system. Also
explain the role of mass separator & Beam scanning
in detail.   7

(c) Which implantation techniques avoids long diffusion steps. Explain the terms implantation damage. channeling & recoils.　7

(d) Explain Vacancy mechanism & Interstitial mechanism.　7

Unit-IV

4. (a) Define EPITAXY & give its uses in MOS structure.　2

(b) (i) Explain optical Lithography with neat diagram.　5

(ii) A proximity printer operates with a 20　m marks of wafer gap and a wavelength of 250 nm. Find line width that can be obtained.　2

(c) Give comparison between WET & DRY ETCHING.　7

(d) Explain the flow diagram of process simulation and Integration.　7

Unit-V

5. (a) Draw MOSFET structure.　2

(b) Explain the operation of N channel MOSFET with pictorial view.　7

(c) Explain following :

　(i) Channel Length Modulation　3½

　(ii) Subthreshold Region　3½

(d) Explain scaling of MOSFET.　7