(DEC 311)

B.Tech. DEGREE EXAMINATION, MAY - 2015

(Examination at the end of Third Year)

ELECTRONICS & COMMUNICATIONS

Paper - I : Linear Control Systems

Time : 3 Hours **Maximum Marks : 75**

Answer question No.1 compulsory ***(15)***

Answer ONE question from each unit ***(4 × 15 = 60)***

1) a) Define time variant systems.

b) How root loci are modified when a zero is added to open loop transfer function?

c) What is open loop transfer function?

d) What are the advantages in design using root locus?

e) Define conditional stability?

f) Draw the bode plot of lag compensator.

g) What is the significance of band width?

h) What is lead compensation?

i) What is an asymptote in a Bode plot?

j) What is a polar plot?

k) What happens to setting time if a pole at origin is added to a system?

l) Define phase trajectory.

m) What is feedback compensation?

n) Define observability.

o) What is Nichols chart?

UNIT - I

2) a) Give the guidelines to form the state model of mechanical rotational systems.

b) Explain the effect of feedback on overall gain.

OR

3) a) Explain the functioning of a synchro.

b) Derive the total transfer function of a simple closed loop with negative feedback.

UNIT - II

4) a) Find the stability if
$P(s) = s^5 + s^4 + 2s^3 + 2s^2 + 3s + 5 = 0$.

b) Draw the time response law of a typical second order system and explain salient features.

OR

5) a) Explain Routh - Hurwitz criterion. Find $F(s) = s(s + 2)^2 (s + 3)$

b) Explain the effect of adding poles and zeros an overshoot.

UNIT - III

6) For a unity feedback system $G(s) = (800(s + 2))/(s^2(s + 10)(s + 40))$. Sketch bode plots and comment upon its stability.

OR

7) Give the salient features of Nyquist stability criterion.

UNIT - IV

8) a) Explain the terms controllability and observability.

b) Explain the significance of Eigen values and Eigen vectors.

OR

9) Sketch the root locus for a system with unity feedback and open loop transfer given by $G(s) = ((s + 4)(s + 40)) / (s^3(s + 200)(s + 900))$.

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(DEC 312)

B.Tech. DEGREE EXAMINATION, MAY - 2015

(Examination at the end of Third Year)

ELECTRONICS & COMMUNICATIONS

Paper - II : Electronic Circuits - II

Time : 3 Hours **Maximum Marks : 75**

Answer question No.1 compulsory ***(15)***

Answer ONE question from each unit ***(4 × 15 = 60)***

1) a) Define efficiency of power amplifier.

b) What are the advantages of Colpitt's oscillator?

c) What are characteristics of negative feed back amplifier?

d) List out temperature considerations in power amplifiers.

e) What are characteristics Crystal Oscillators?

f) Compare Class B and class AB amplifiers.

g) List out the applications UPS.

h) What is chopper amplifier?

i) Define barkhausen criterion.

UNIT – I

2) a) Explain the complementary symmetry power amplifier, with neat diagram.

b) Explain the classification of power amplifiers based on class of operation and compare them.

OR

3) a) What is the drawback of class-B amplifier? How it is going to overcome using Class - AB amplifier with neat diagram.

b) Explain Harmonic distortion in power amplifiers.

UNIT - II

4) a) With necessary diagram explain about the different feedback techniques in amplifiers.

b) Draw the equivalent circuit of current amplifier with current shunt feedback and derive the expression for input resistance with feedback.

OR

5) a) Derive an expression for frequency of oscillation of Hartley oscillator.

b) Explain the advantages and disadvantages of negative feedback.

UNIT - III

6) a) Derive the expression for bandwidth in terms of resonant frequency and quality factor in case of Double tuned amplifiers.

b) Classify the tuned amplifier? Explain the limitations tuned amplifiers.

OR

7) a) Write short note on the following :

i) Balanced chopper.

ii) FET as chopper.

b) Explain in detail how transistor act as chopper switch.

UNIT - IV

8) a) Explain function of SMPS with neat sketch.

b) Describe different protection techniques used in voltage regulators.

OR

9) a) Design and explain shunt voltage regulator with transistor.

b) List out the applications UPS.

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(DEC 313)

B.Tech. DEGREE EXAMINATION, MAY - 2015

(Examination at the end of Third Year)

ELECTRONICS & COMMUNICATIONS

Paper - III : Computer Organization

Time : 3 Hours **Maximum Marks : 75**

Answer question No.1 compulsory ***(15)***

Answer ONE question from each unit ***(4 × 15 = 60)***

1) Write a short notes on :

a) Logic micro operations.

b) Addressing modes.

c) Floating Point Arithematic operation.

d) Auxiliary memory.

e) Priority interrupt.

UNIT – I

2) What is a Register explain different operations of Registers.

OR

3) Explain the following :

a) Instruction cycle

b) Memory Reference Instruction.

UNIT - II

4) Explain about control memory and Design of control unit.

OR

5) What is Addressing mode? Different types addressing modes.

UNIT - III

6) Describe addition and multiplication operation with example instructions.

OR

7) Explain about memory management and memory hierarchy.

UNIT - IV

8) a) Different types of peripheral devices?

b) Explain Asynchronous serial transfer?

OR

9) a) Direct Memory Access.

b) Serial Communication.

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(DEC 314)

B.Tech. DEGREE EXAMINATION, MAY - 2015

(Examination at the End of Third Year)

ELECTRONICS & COMMUNICATIONS

Paper - IV : Pulse Circuits

Time : 3 Hours **Maximum Marks : 75**

Answer question No.1 compulsory ***(15)***

Answer ONE question from each unit ***(4 × 15 = 60)***

1) a) Define low-pass filter.

b) Define tilt.

c) What is the o/p expression for low pass filter?

d) What is Ringing circuit?

e) State the conditions for good differentiator.

f) Define voltage limiter.

g) When transistor acts as a switch.

h) How many stable states are there in bistable multivibrator.

i) Define Duty cycle.

j) Conditions to be oscillator?

UNIT - I

2) How the low pass circuit acts as good Integrator explain with an example.

OR

3) Analyse the response of RC high pass circuit with different i/p's?

UNIT - II

4) Define clipper and explain the classification of clippers with operation.

OR

5) a) What is clamper and explain the operation of any two clampers.

b) How the transistor acts as switch.

UNIT - III

6) Write short notes on :

a) Commutating capacitors.

b) Fixed bias.

c) Self bias.

OR

7) a) At which condition the astable multivibrator acts as square wave generator?

b) Write & explain any two applications of astable multivibrator.

UNIT - IV

8) Explain the simple current sweep circuit with neat sketches.

OR

9) Draw & explain the operation of astable blocking oscillator.

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(DEC 315)

B.Tech DEGREE EXAMINATION, MAY - 2015

(Examination at the end of Third Year)

Electronics & Communications

Paper - V : OOPS & OS

Time : 3 Hours **Maximum Marks : 75**

Answer question No.1 compulsory ***(15)***

Answer ONE question from each unit ***(4 × 15 = 60)***

1) a) C++ keywords.

b) Scope resolution operator.

c) Inline function.

d) Pointer to members.

e) Inter Process communication.

f) Sheduling Criteria.

g) Paging.

UNIT – I

2) What is object oriented programming? Explain C++ Program Structure.

OR

3) Explain C++ Data types and Keywords.

UNIT - II

4) What is meant by overloading? Explain how overloading implimented in C++ with an example program?

OR

5) What is class in C++? How class and objects are created in C++ explain with example.

UNIT - III

6) What do you mean by Process? How a process can be communicate with other process.

OR

7) Explain sheduling algorithm for a process?

UNIT - IV

8) What is ment by segmentation? Explain segmentation with pagging?

OR

9) Explain different page replacement Algorithms?

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(DEC 316)

B.Tech. DEGREE EXAMINATION, MAY - 2015

(Examination at the end of Third Year)

ELECTRONICS & COMMUNICATIONS

Paper - VI : Analog Communication

Time : 3 Hours **Maximum Marks : 75**

Answer question No.1 compulsory ***(15)***

Answer ONE question from each unit ***(4 × 15 = 60)***

1) a) Draw the Block diagram of communication system.

b) Define modulation.

c) What are the advantages of VSB over SSB?

d) Define frequency modulation.

e) Define selectivity.

f) Which modulation is suitable for transmission of video signals & why.

g) Define white noise.

h) What are the methods for Generation of SSBSC.

i) Compare PAM & PWM.

j) Define capture effect.

UNIT – I

2) a) Explain the Generation & Regeneration of AM.

b) Explain the Time domain & freq description of DSB wave.

OR

3) a) Draw the circuit of a ring modulator & explain its working. Show that it generates waves.

b) Explain the working of envelope detector with a neat diagram.

UNIT - II

4) a) Compare AM, DSBSC, SSBSC & VSB.

b) Explain how coherent Reception accomplishes the demodulation of SSB wave.

OR

5) a) Explain the phase discrimination method for the generation of SSBSC.

b) What are the advantages of multiplexing & Explain with a block diagram of FDM.

UNIT - III

6) a) Explain the Indirect method of Generation of FM.

b) Compare FM & AM.

OR

7) a) Explain the operation of PLL.

b) Explain zero crossing detector in detail.

UNIT - IV

8) a) Explain about TDM.

b) Explain the Generation & Regeneration of PAM.

OR

9) a) Derive the equation for Noise figure of FM receiver.

b) Compare PAM, PWM & PPM.

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(DEC 321)

B.Tech. DEGREE EXAMINATION, MAY - 2015

(Examination at the end of Third Year)

ELECTRONICS & COMMUNICATIONS

Paper - I : Linear Integrated Circuits & Applications

Time : 3 Hours **Maximum Marks : 75**

Answer question No.1 compulsory ***(15)***

Answer ONE question from each unit ***(4 × 15 = 60)***

1) a) Define Ideal voltage amplifiers.

b) What are Band width limitations?

c) State oscillator principles.

d) Define clippers.

e) Define slew rate.

f) State all pass filters.

g) Explain voltage regulator.

h) Define peak detector.

i) Define A to D converter.

j) Explain Band stop filter.

k) Explain positive feed back.

UNIT - I

2) a) Explain the effect of slew rate in op-amp applications.

b) Discuss frequency compensation technique of op-amp.

OR

3) a) Explain the operation of precesion rectifier.

b) Design and explain the operation of instrumentation amplifiers.

UNIT - II

4) a) Explain the operation of triangular wave generator.

b) Explain voltage controlled oscillator.

OR

5) a) Explain high speed and precision type comparators.

b) Explain frequency stability.

UNIT - III

6) a) Explain the Sample and Hold circuit.

b) Explain dual slope A/D converter and explain its operation.

OR

7) a) Compare R-2R and weight resistor types of DACs.

b) Write short notes on A/D converters.

c) Define the following terms as related to DAC

i) Linearity

ii) Resolution

UNIT - IV

8) a) What is band pass filter and what are the two types of band pass filters.

b) Design a wide band reject filter having f_1 = 200 Hz and f_2 =1kHz

OR

9) a) Draw the functional block diagram of 555 timer IC. Explain the function of each block.

b) What are the important blocks of PLL? What is the role of each block? Explain in detail.

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(DEC 322)

B.Tech. DEGREE EXAMINATION, MAY - 2015

(Examination at the end of Third Year)

ELECTRONICS & COMMUNICATIONS

Paper - II : Microprocessors & Interfacing

Time : 3 Hours **Maximum Marks : 75**

Answer question No.1 compulsory **(15)**

Answer ONE question from each unit ***(4 × 15 = 60)***

1) a) What is Register?

b) Why Address Bus is unidirectional?

c) Write the Parts of Microcomputer?

d) What is WAIT Instruction?

e) Define T-State.

f) Write Minimum mode Signals (pins).

g) Define Software.

h) What is the function of Direction Flag(DF)?

i) What is Operand?

j) What is the difference between CALL and INT Instruction?

k) Define Assembler.

UNIT - I

2) a) Discuss about special functions of general purpose registers of 8086.

b) Explain the different types of flags available in 8086 with neat flag register format.

OR

3) a) Discuss about the multiplexing in 8086?

b) Explain the following instructions with an example

i) MOV ii) DAA iii) ROL AL, CL

iv) IN and OUT v) CMPSB

UNIT - II

4) a) Write an ALP to generate the FIBONOCI series.

b) Write an ALP in 8086 to find 1's complement of a 16 bit hexadecimal number.

OR

5) a) Write an ALP to find minimum number from the given array. Array length is N-bytes.

b) Write an ALP to find the given number is Positive or Negative.

UNIT - III

6) a) Discuss the sequence of operations performed in the interrupt acknowledge cycle.

b) What is the address map of interrupt address vector table? How many interrupts that table can serve?

OR

7) a) With relevant pin diagram explain the maximum mode operation of 8086.

b) What is the difference between minimum and maximum modes of 8086?

UNIT - IV

8) a) What is DMA? Explain need of DMA.

b) Explain the Control Word Register format of 8253.

OR

9) a) Draw the Command register of 8251 and explain each bit.

b) Explain the Modem signals of 8251.

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(DEC 323)

B.Tech. DEGREE EXAMINATION, MAY - 2015

(Examination at the End of Third Year)

Electronics & Communications

Paper - III : DIGITAL SIGNAL PROCESSING

Time : 3 Hours **Maximum Marks : 75**

Answer question No.1 compulsory ***(15 × 1 = 15)***

Answer ONE question from each unit ***(4 × 15 = 60)***

1) a) Define causal and Non-causal signals.

b) What is a linear system state its condition.

c) What is the relation between Fourier Transform and Z-transform.

d) Define one-sided and two-sided Z-transform.

e) State the initial value theorem with regard to Z- transform.

f) What is FFT?

g) Define inverse DFT.

h) State the shifting property of DFT.

i) Define an IIR filter.

j) Write the magnitude function of chebyshex lowpass filter.

k) What is Butterworth approximation.

l) Write the equation for Blackman window.

m) Give advantages of FIR filters.

n) What is aliasing.

o) What is the necessary condition for Linear phase realization of FIR systems.

UNIT – I

2) a) Explain the concept of digital signal processing.

b) State and prove following properties of Z-transform.

i) Time reversal

ii) Differentiation in Z-domain

OR

3) a) Prove that conxolution in time domain leads to multiplication in frequency domain for discrete time signals.

b) Determine Z-transform and ROC for $-a^n u(-n-1)$

UNIT - II

4) a) Determine DFT of a sequence $x(n) = \{1, 1, 0, 0\}$

b) Obtain the relation between Z-transform and DFS.

OR

5) a) What is FFT? Calculate the number of multiplications needed in the calculation of DFT with 32 point sequence.

b) Compute circular convolution using DIT-FFT algorithm for the given sequences $x(n) = \{1, 1, 1, 1\}$ and $h(n) = \{1, 0, 1, 0\}$.

UNIT - III

6) a) Describe IIR filter characterization in time domain.

b) Discuss magnitude characteristics of an analog Butterworth filter and give its pole locations.

OR

7) a) Convert the following analog filter transfer function into digital filter transfer function using backward difference method. $H(S)=\frac{1}{(S+2)^2+9}$

b) Design an analog Butterworth filter that has a – 2dB pass band attenuation at a frequency of 20rad/sec and atleast – 10dB stop band attenuation at 30rad/sec.
(Assume $\Omega_C = 21.3868$ rad/sec)

UNIT - IV

8) a) Compare the frequency domain characteristics of different windows used in FIR filter design.

b) Give the expression for rectangular window function. Find its frequency response and also sketch its spectrum.

OR

9) a) What are the advantages of FIR filters over IIR filters.

b) Obtain the parallel form of realization of LTI system governed by the equation.

$$y(n) = -\frac{3}{8}y(n-1) + \frac{3}{32}y(n-2) + \frac{1}{64}y(n-3) + x(n) + 3x(n-1) + 2x(n-2)$$

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(DEC 324)

B.Tech. DEGREE EXAMINATION, MAY - 2015

(Examination at the End of Third Year)

ELECTRONICS & COMMUNICATIONS

Paper - IV : Electronic Measurements & Instrumentation

Time : 3 Hours **Maximum Marks : 75**

Answer question No.1 is compulsory ***(15)***

Answer ONE question from each unit ***(4 × 15 = 60)***

1) a) Define the terms Hysterisis, Dead zone & Drift.

b) What is digital frequency meter?

c) What is deflection sensitivity?

d) What is piezo-electric effect?

e) Give the differences between AC & DC bridges.

f) Give short notes on ECG & EEG.

g) What are the advantages & disadvantages of thermo couples.

UNIT - I

2) a) Explain clearly the differences between accuracy & precision with an example.

b) Define the terms limiting error, calibration error, probable error, mean, standard deviation & variance.

OR

3) Derive the expressions for series type & shunt type ohm meter's.

UNIT - II

4) a) Draw the block diagram of a sampling oscilloscope, its working with necessary waveforms.

b) What do you mean by Graticules & explain them in detail.

OR

5) a) Explain the successive approximation conversion technique.

b) Calculate the value of distributed capacitance of a coil when the following measurements are made.

At frequency, f_1 = 2MHz, the tuning capacitor is set at 410PF.

At frequency, f_2 = 5MHz, the tuning capacitor is tuned at 50PF.

UNIT - III

6) a) Discuss in detail the operation of LVDT & RVDT.

b) Write short notes on capacitive transducer.

OR

7) a) Explain the principle of operation of strain guage? Derive the guage factor expression.

b) Write short notes on thermocouple.

UNIT - IV

8) Draw the block diagram of digital data acquisition system & explain each block clearly.

OR

9) a) Write short notes on Electro myograph.

b) Write short notes on digital recording techniques.

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(DEC 325)

B.Tech. DEGREE EXAMINATION, MAY - 2015

(Examination at the end of Third Year)

ELECTRONICS & COMMUNICATIONS

Paper - V : Digital Communications

Time : 3 Hours **Maximum Marks : 75**

Answer question No.1 compulsory ***(15)***

Answer ONE question from each unit ***(4 × 15 = 60)***

1) a) Define Digital communication.

b) State sampling theorem.

c) Define PCM.

d) Define M-ary signalling.

e) What is QPSK?

f) What is the use of syndrome?

g) Define Entropy.

h) State Shannon's theorem.

i) Write the Properties of mutual information.

j) Define minimum distance.

k) What is cyclic code?

l) List the Advantages of convolution codes.

m) What is ISI?

UNIT - I

2) a) Explain the block diagram of PCM.

b) Explain the following :

i) Duo binary signalling

ii) Modified Duo binary signalling

OR

3) a) Explain the block diagram of DM system.

b) Explain the importance of predictor in DPCM system.

UNIT - II

4) a) Explain the operation of QPSK transmitter.

b) Distinguish b/w base band & pass band transmission techniques.

OR

5) Derive an expression for the probability error of BFSK.

UNIT - III

6) a) Explain the measure of information & its properties.

b) Writes short notes on :

i) Entropy

ii) Mutual information

OR

7) a) Explain the Sharron-Fano coding with an example.

b) Explain the Huffman-coding with an example.

UNIT - IV

8) a) Explain the error correction & detection capabilities of linear block codes.

b) What is meant by forward error correcting codes. State its advantages?

OR

9) Explain the time domain & transform domain approaches in convolution encoder with an example.

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(DEC 326)

B.Tech. DEGREE EXAMINATION, MAY - 2015

(Examination at the end of Third Year)

ELECTRONICS & COMMUNICATIONS

Paper - VI : Communication Systems

Time : 3 Hours **Maximum Marks : 75**

Answer question No.1 compulsory ***(15)***

Answer ONE question from each unit ***(4 × 15 = 60)***

1) a) What is meant by ganged tuning?

b) Define heterodying.

c) Define fading.

d) Define image freq.

e) What are the disadvantages in TRF receiver?

f) What is time division switching?

g) Classify different switching systems.

h) Draw the diagram of telephone circuit.

i) What are primary colours?

j) What is VSB?

k) What is scanning system.

UNIT - I

2) Explain the receiver characteristics in detail.

OR

3) a) Draw & explain the high level AM transmitter.

b) Draw & explain the block diagram Representation of super heterodyne receiver in detail.

UNIT - II

4) a) Explain about stored program control in electronic space division switching system.

b) Explain about distributed SPC.

OR

5) a) Explain about three stage combination switching.

b) Explain about time division time switching in detail.

UNIT - III

6) a) Explain a block diagram of broadcast TV transmitter.

b) Explain the need of pre equalizing & post equalizing pulses with neat sketch.

OR

7) a) Explain the block diagram of broadcast TV receiver.

b) Explain the operation of plumbicon tube with neat diagram.

UNIT - IV

8) a) Distinguish b/w additive mixing & subtractive mixing.

b) Explain the working of Triticon picture tube.

OR

9) a) Explain the PAL system.

b) Explain the following :

i) Digital TV

ii) Cable television.

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