Total No. of Questions : **08** Roll No. : 0701.....

B.Tech FOURTH SEMESTER EXAMINATION JUNE-2025

(Branch : Elx. & Communication Engineering)

EC-4401 PRINCIPLE OF ANALOG COMMUNICATION

Time : Three Hours ***Maximum Marks : 70***
Min. Pass Marks : 22

Note : Attempt any five questions. Each question carries equal marks.

1(a) Evaluate the Fourier transform of the Gaussian function. ***07***

(b) Obtain the Fourier transform of the function : $x(t) = 20\,[u(t+5) - u(t-5)]$ ***07***

2(a) A Signal exp(-3t).u(t) is passed through an ideal LPF with cut off frequency of 1 rad/sec. Test whether the input is energy signal and also evaluate the input and output energy. ***07***

(b) Describe the construction and working of square law device modulator of AM-VSB. ***07***

3(a) Compare the various AM System on the basis of power and bandwidth requirement. ***07***

(b) An AF signal $20\sin(2\pi 500.t)$ is used to amplitude modulate a carrier $50\sin(2\pi 100000.t)$. Evaluate the modulation index, sideband frequencies, amplitude in each side band and total power requirement. ***07***

4(a) Distinguish frequency modulation (FM) and phase modulation (PM). ***07***

(b) In an Armstrong modulator the crystal frequency is 200 kHz. The angular deviation is to be 0.2 and the system is to accommodate modulation frequencies down to 40 Hz. At the output the carrier frequency is to be 108 MHz and the frequency deviation be 80 kHz. Determine multiplier and mixer oscillator frequencies to accomplish this end. ***07***

5(a) A carrier wave of amplitude 10 V and frequency 100 MHz is Frequency Modulation by a sinusoidal voltage. The modulating voltage has an amplitude of 5V and frequency fm = 20 kHz. The frequency deviation constant is 2 kHz/Volt. Draw the frequency spectrum of FM wave. ***07***

(b) What do you mean by a noise performance of a system? ***07***

6(a) Calculate the root mean square noise voltage developed across a capacitor C when it is connected in parallel with a noisy resistor R. ***07***

(b) How will you calculate the noise when system is excited by a single noise source? ***07***

7(a) Explain sensitivity, selectivity, fidelity and tracking in super-heterodyne receiver with relevant diagram. ***07***

(b) Describe the super heterodyne receiver with help of block diagram. ***07***

8 Write a note on **any two** : ***07***

(i) Hilbert Transform
(ii) SSM Modulation
(iii) Various parameter variation Modulator for FM
(iv) Automatic Frequency Control

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Total No. of Questions : **08** Roll No. : 0701.....

B.Tech FOURTH SEMESTER EXAMINATION JUNE-2025

(Branch : Elx. & Communication Engineering)

EC-4402 / EC-4302 ANALOG CIRCUITS

Time : Three Hours ***Maximum Marks : 70***
Min. Pass Marks : 22

Note : Attempt any five questions. Each question carries equal marks.

1(a) What are four types of basic amplifiers? Explain the concept of voltage amplifier and current amplifier. ***07***

(b) Describe the advantages and disadvantages of various methods of transistor biasing. ***07***

2(a) Draw a voltage divider bias circuit and derive an expression for its stability factor. ***07***

(b) Describe low frequency analysis of multistage amplifiers. ***07***

3(a) Why CE stage is more popular than CB and CC stages? ***07***

(b) Explain : (i) Class-A, (ii) Class-B and (iii) Class-C Operation. ***07***

4(a) Compare the negative feedback and positive feedback. ***07***

(b) With a neat diagram, explain the action of phase shift and Wien bridge oscillators. ***07***

5(a) What is a differential amplifier? Draw the basic circuit of a differential amplifier. ***07***

(b) Derive an expression for differential-mode voltage gain of a differential amplifier. ***07***

6(a) What is the difference between ideal op-amp and practical op-amp? ***07***

(b) Explain the working of inverting and non-inverting Schmitt trigger circuits. ***07***

7(a) Explain the operation of 4-bit R-2R type DAC. ***07***

(b) Explain the successive approximation ADC technique with the help of block diagram. ***07***

8 Write short note on : (i) h-parameter (ii) Integrator and Differentiator. ***07***

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Total No. of Questions : **08** Roll No. : 0701.....

B.Tech FOURTH SEMESTER EXAMINATION JUNE-2025

(Branch : Elx. & Communication Engineering)

EC-4403 MICROCONTROLLER AND MICROPROCESSOR

Time : Three Hours ***Maximum Marks : 70***
Min. Pass Marks : 22

Note : Attempt any five questions. Each question carries equal marks.

1(a) Draw and explain the internal block diagram of 8086 Microprocessor. ***10***

(b) Explain with examples the following addressing modes of 8086 - ***04***
(i) Direct memory addressing and (ii) Register indirect addressing.

2(a) Write an assembly language program to add two 8-bit numbers stored in two consecutive memory locations and store the result in next memory location. ***07***

(b) Discuss Interrupt processing sequence of 8086. Also explain NMI interrupt of 8086. ***07***

3(a) Explain the need of a Timer/Counter in a Microprocessor based system. Draw and explain the block diagram of 8254 Timer/Counter. ***07***

(b) Draw and explain the block diagram of 8257 Direct Memory Access (DMA) Controller. ***07***

4(a) Discuss memory hierarchy of computer system with examples. ***07***

(b) What is virtual memory? Explain virtual to physical address mapping in a computer system. ***07***

5(a) What is ADC interfacing? With a suitable diagram, explain interfacing of an ADC with 8086 Microprocessor. ***07***

(b) Write a short note on Pentium processor. ***07***

6(a) Explain flag register of 8051 microcontroller. ***07***

(b) Discuss memory organization of 8051 Microcontroller. ***07***

7(a) Explain “logical instruction set” of 8051with examples. ***07***

(b) Draw and explain the architecture of an ARM processor. ***07***

8 Write short note on **any two** : ***14***

(i) Embedded system
(ii) Cache memory
(iii) Programmable peripheral interface 8255

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Total No. of Questions : **08** Roll No. : 0701.....

B.Tech FOURTH SEMESTER EXAMINATION JUNE-2025

(Branch : Elx. & Communication Engineering)

EC-4404 DATA COMMUNICATION

Time : Three Hours ***Maximum Marks : 70***
Min. Pass Marks : 22

Note : Attempt any five questions. Each question carries equal marks.

1(a)	Explain serial and parallel transmission in detail.	***07***
(b)	What is data flow? Explain simplex, half duplex and full duplex modes of communication with example.	***07***
2	Explain ISO-OSI model in detail with a diagram. Also explain function of each layer in detail.	***14***
3(a)	What do you understand by switching? Compare its types in detail.	***07***
(b)	Explain three major classes of guided media with diagram.	***07***
4(a)	Explain the Hamming codes for single bit and multiple bit error correction.	***07***
(b)	What are the basic types of error? Explain the redundancy technique for error detection.	***07***
5(a)	What do you understand by LAN, MAN and WAN? Explain in detail.	***07***
(b)	Explain reservation and polling controlled access method in detail.	***07***
6(a)	Explain IPv6 addressing in detail with its structure.	***07***
(b)	Discuss about the connecting devices HUB, Switched and Router.	***07***
7	Compare FDMA, CDMA and TDMA in detail.	***14***
8	Write short note on **any** two :	***14***

(i) Linear Block codes
(ii) Data rate and Signal rate
(iii) two layer and three layer switches

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Total No. of Questions : **08** Roll No. : 0701.....

B.Tech FOURTH SEMESTER EXAMINATION JUNE-2025

(Branch : Elx. & Communication Engineering)

HS-4405 ENGINEERING ECONOMICS & MANAGEMENT

Time : Three Hours ***Maximum Marks : 70***
Min. Pass Marks : 22

Note : Attempt any five questions, each question carries equal marks. All parts of a question must be attempted at the same place.

1(a) Discuss nature and scope of economics and differentiate Microeconomics and Macroeconomics clearly.

(b) Discuss elasticity of demand and differentiate price elasticity and income elasticity clearly.

2(a) Discuss the concepts and function of RBI and differentiate CRR, bank rate and reverse repo rate clearly.

(b) Discuss absolute and relative poverty. Discuss the causes of poverty and measures to reduce poverty.

3(a) Discuss the scientific principles and administrative principles of management and differentiate them clearly.

(b) Discuss the span of control and departmentalization clearly.

4(a) Discuss meaning and function of production. Explain meaning and characteristics of Land Labor.

(b) Discuss the objectives of manpower planning process and explain source of recruitment and process of selection.

5(a) Discuss the meaning, and importance of business ethics also discuss the social responsibility of corporate sector.

(b) Explain concepts of marketing, demand forecasting and market segmentation.

6(a) Discuss Plant layout its types and factors affecting it and enlist the factors affecting the plant location.

(b) Discuss law of variable proportion and law of return to scale clearly.

7(a) Define and enlist the types of cost and explain any two of them.

(b) Discuss the meaning, types and causes of unemployment and give some remedies to overcome unemployment.

8(a) Define National Income and Explain GNP, GDP, NNP and NDP.

(b) Discuss meaning, types, causes and measures to control Inflation.

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