B.E. 4/4 (ECE) I-Semester (Main) Examination, November / December 2012

Subject : Digital Image Processing (Elective-III)

Time : 3 Hours

Max. Marks: 75

Note: Answer all questions of Part - A and answer any five questions from Part-B.

PART – A (25 Marks)

1.	Give the transform Kernels for a Hadamard transform.	(2)
2.	What is Histogram specification ?	(3)
3.	Give any two properties of slant transform.	(2)
4.	Explain about speckle Noise.	(3)
5.	What do you understand by interactive restoration?	(3)
6.	What is Homo morphic filtering?	(3)
7.	What are the basic steps in image processing?	(3)
8.	Give the Prewitt and Sobel masks use in image sharpening.	(2)
9.	What is run length coding?	(2)
10	Differentiate between spatial domain representation and frequency	
	domain representation.	(2)
	PART – B (5x10=50 Marks)	
11	.(a) Explain the elements of visual perception. (b) What is non uniform sampling and quantization?	(6) (4)
12	.(a) Explain the spatial domain enhancement techniques in detail. (b) Write about image averaging and image subtraction.	(6) (4)
13	.(a) Derive the degradation model for continuous systems.(b) What is inverse filtering and what are the computational issues concerning inverse filtering?	(5) ng (5)
14	. Explain the process of constrained least squares restoration in detail.	(10)
15	.(a) With an example explain arithmetic coding for error free compression. (b) Explain the Huffman coding.	(5) (5)
16	.(a) Obtain the 8x8 scant transform matrix. (b) Prove the translation property of the 2-dimensional discrete Fourier transform.	(7) (3)
17	.Write short notes on (a) Median filtering (b) Image zooming (c) Truss form coding	(3) (3) (4)

B.E. 4/4 (ECE) I-Semester (Main) Examination, November / December 2012

Subject : Data Communication and Computer Networks (Elective-I)

Time : 3 Hours

Max. Marks: 75

Note: Answer all questions of Part - A and answer any five questions from Part-B.

PART – A (25 Marks)

1.	Write the differences between data grams and virtual circuits.	(3)
2.	Draw the HDLC frame format and explain.	(3)
3.	Give the features of star topology.	(2)
4.	What is congestion control?	(2)
5.	What are various reference points in ISDN?	(2)
6.	Explain sliding window protocols.	(3)
7.	Describe 802.3, 802.4 standards.	(3)
8.	Explain BISDN.	(2)
9.	Explain SMTP and FTP.	(3)
10	10. What is digital private branch exchange?	

PART – B (5x10=50 Marks)

11. Draw ISO-OSI model and explain the functions of various layers of it.	(10)
12.(a) What are various routing strategies in packet switching?(b) Explain DPBX.	(6) (4)
13.(a) What is ring topology in networking? Explain its advantages.(b) What are the objectives of IEEE 802 project?	(5) (5)
14.(a) Explain the features and packet format of TCP.(b) List various transport services.	(7) (3)
15.(a) Explain network management.(b) What is ISDN? Explain.	(5) (5)
16.(a) Discuss about ARQ protocols.(b) Discuss about routing with bridges.	(6) (4)
 17. Write short notes on any two of the following: (a) Topologies (b) Medium Access control (c) X.25 packet switch 	(10)

B.E. 4/4 (ECE) I-Semester (Main) Examination, November / December 2012

Subject : Digital Image Processing (Elective-I)

Time : 3 Hours

Max. Marks: 75

Note: Answer all questions of Part - A and answer any five questions from Part-B.

PART – A (25 Marks)

1.	What is meant by sinusoidal interference? How is it removed?	(3)
2.	How are edges enhanced in images?	(2)
3.	Give the 2-Dimensional forward walsh transform.	(2)
4.	What is Mach Band effect?	(2)
5.	Differentiate between spatial domain representation and frequency domain	
	representation.	(3)
6.	Explain the terms interpixel redundancy and psychovisual redundancy	
	used in image compression.	(3)
7.	What do you understand by row column decomposition?	(3)
8.	Explain the terms	
	(a) N ₈ neighborhood (b) Gamma correction	(2)
9.	What is meant by 'histogram' of an image?	(3)
10. Give any two applications of Discrete cosine transforms.		(2)

PART – B (5x10=50 Marks)

11.(a)	State and prove the periodicity and translation properties of 2-Dimensional DFT.	(5)
(b)	Obtain the Haar Transform matrix for N=4.	(5)
12.(a) (b)	Explain the principle of Derivative filters. Discuss how the derivatives (gradients) can be computed on digital image points. What are the commonly used masks for gradient operators? With an example explain the median filtering as a smoothing technique.	(6) (4)
13.(a) (b)	Explain the basic model of image degradation or restoration process. Explain image restoration of degraded images by wiener filtering.	(4) (6)
14.(a) (b)	What are the elements of human visual system? Explain the human perception process in detail. What do you mean by non uniform sampling and quantization?	(7) (3)
15.(a) (b)	What is speckle noise of an image? Discuss the methods employed f removal. Explain image zooming techniques.	for its (6) (4)
16.(a) (b)	Explain transform coding technique in image compression. Describe arithmetic coding for error free compression of images.	(6) (4)
17. Wr (a) (b) (c)	rite short notes on : Homomorphic filtering Interactive restoration Local enhancement	(4+3+3)

B.E. 4/4 (ECE) I-Semester (Main) Examination, November / December 2012

Subject : Multi Rate Signal Processing (Elective-I)

Time : 3 Hours

Max. Marks: 75

Note: Answer all questions of Part - A and answer any five questions from Part-B.

 PART – A (25 Marks) 1. What are the parameters required to specify a sampled data low pass filter? 2. What do you understand by linear phase response? 3. What is the need for anti-aliasing filter prior to down sampling? 4. When do we need multi-stage implementation of sampling rate conversion? 5. Explain why re-sampling filters are used. 6. Draw the characteristics of square root Nyquist filter. 7. How do you find Impulse response of a Half-band filter? 8. Draw the realization diagram of a recursive all pass filter. 9. What are the advantages of multiple stage filter structures? 10 Draw the signal flow diagram of Digital EM discriminator 	 (2) (2) (3) (3) (2) (3) (2) (3) (2) (3) (2) (3) (2)
 PART – B (5x10=50 Marks) 11.(a) Design a Low pass FIR filter with the Remez algorithm that meets the following specifications. Sampling Rate : 100 KHz Minimum Attenuation : 60 dB Pass band Edge : ± 10 KHz Pass band Ripple : 0.1 dB (1.2%) Stop band edge : ± 15 KHz (b) What are the advantages and disadvantages of bilinear transformation? 	(6) (4)
 12.(a) Compare equi ripple Vs 1/f Ripple designs. (b) Obtain H(z) using the bilinear transformation with T=1 sec for (i) H(s)=1/s³+3x²+4s+1 (ii) H(s)=s/s²+2s+1 	(4) (6)
13.(a) A multirate system is shown in figure 1 find the relation between x(n) and y(n). $X [N] \longrightarrow 2 \longrightarrow $	(6)
(b) Draw the two channel QMF filter bank and explain.	(4)
14.(a) State and prove noble identities.(b) Explain about Forrow filters.	(5) (5)
15.(a) Draw the polyphase diagram for a decimation of 10.(b) Discuss about M-path recursive all-pass filter with the diagram.	(5) (5)
16.(a) Explain the interpolated FIR filter with block diagram.(b) Discuss the applications of comb filters.	(6) (4)
 17. Write short notes on any two of the following: (a) Remez Algorithm (b) Digitally controlled sampled data relay (c) Arbitrary Resampling Ratio 	(10)

B.E. 4/4 (ECE) I-Semester (Main) Examination, November / December 2012

Subject : Embedded System (Elective-I)

Time : 3 Hours

Max. Marks: 75

Note: Answer all questions of Part - A and answer any five questions from Part-B.

PART – A (25 Marks)

1.	What are the challenges to design Embedded systems?	(2)
2.	Define Emulator and simulator.	(2)
3.	What are the applications of Embedded systems?	(2)
4.	Define spawning tasks, process, multitask.	(2)
5.	What are the main attributes in RTOS in comparison with standard OS?	(2)
6.	What are the functions of H/W components in Embedded systems?	(3)
7.	Write the advantages of Earliest task scheduling policy?	(3)
8.	Define cross compiler and its functions.	(3)
9.	State Pareto's principle.	(3)
10. What is real time clock and why is it required?		(3)

PART – B (5x10=50 Marks)

- 11.(a) Write the software tools required to design embedded applications.
 - (b) Explain the processor architecture to design embedded system.
- 12.(a) What is the role of interrupts service routine in device drivers?(b) How the synchronization process take place in embedded processors?
- 13.(a) Discuss the programming concept of embedded programming in C and C++.(b) What is a petrinet and FSM? Explain their use in modeling embedded system.
- 14.(a) Explain CAN.

(b) What is shared data problem? Explain how it can be solved using critical section.

- 15. Draw the block diagram of structural units in an embedded systems and explain.
- 16. Discuss the features of V_x works and MuCOS.
- 17. Write short notes on the following:
 - (a) Software Co-design process
 - (b) General purpose processors

B.E. 4/4 (ECE) I-Semester (Main) Examination, November / December 2012

Subject : Optical Fiber Communication (Elective-I)

Time : 3 Hours

Max. Marks: 75

Note: Answer all questions of Part - A and answer any five questions from Part-B.

PART – A (25 Marks)

1.	Calculate the refractive indices of the care and the cladding materials	
	of an optical fiber whose NA=0.35 and Δ =0.01.	(3)
2.	What are the different fiber materials used in optical communication?	(2)
3.	Compare between step-index and graded-index fibres.	(3)
4.	What are different types of bending loses in optical fiber?	(2)
5.	What is meant by impact ionization and avalanche effect in avalanche	
	photo diode?	(3)
6.	What is the need for double hetrojunction structure?	(3)
7.	What are the advantages of LASER over LED?	(3)
8.	Differentiate between analog optical receiver and digital optical receiver.	(2)
9.	What are different error sources in optical communication system?	(2)
10. How WDM is different from FDM?		(2)

PART – B (5x10=50 Marks)

11.(a) Write short notes on modes in cylindrical wave guide fiber.(b) What are the merits and demerits of optical fibers?	(5) (5)
12. Write detailed notes on linear and non linear scattering in optical fibers.	(10)
13.(a) What is meant by absorption losses in optical fibers? Explain intrinsic extrinsic absorption mechanisms.(b) Explain the material dispersion in optical wave guide.	and (5) (5)
14. Explain the principle and construction of reach through APD with neat sketch.	(10)
15.(a) List out different types of pre-amplifier and explain them.(b) Define quantum efficiency and responsivity of photodiode with mathemate expressions? Establish the relationship between these two.	(5) tical (5)
16. Explain the principle of operation of a typical optical receivers with necess mathematical expression.	sary (10)
17.(a) What are the applications of WDM in LANS?(b) Write note on SONET / SDH network services.	(5) (5)

B.E. 4/4 (EE/Inst./ECE) I-Semester (Main) Examination, November / December 2012

Subject : VLSI Design (Elective-I)

Time : 3 Hours

Max. Marks: 75

Note: Answer all questions of Part - A and answer any five questions from Part-B.

PART – A (25 Marks)

1.	Draw the inverter circuit using BiCOMOS logic.	(3)
2.	Define one unit delay in CMOS circuits.	(2)
3.	Give the relation between β_n and β_p in a CMOS circuit.	(2)
4.	Draw the circuit diagram a 1 bit shift register cell.	(3)
5.	Explain how CAD tools are used for simulation and synthesis.	(3)
6.	What is chemical vapor deposition?	(2)
7.	Realize the Boolean expression using CMOS logic f= $\overline{xy+(x+z)+xz}$.	(3)
8.	Explain how packaging and testing of ICs are performed.	(2)
9.	Explain the applications of a current mirror.	(2)
10. Draw the circuit of differential amplifier with current mirror load.		(3)

PART – B (5x10=50 Marks)

11.(a)	What is sheet resistance? Calculate the resistance of a transistor structure with channel length $I = 8$	(3)
(U)	and width = 2λ .	(7)
12.(a) (b)	Derive the expression for rise time and fall time of a CMOS inverter response. Design NOR based RS flip flop using CMOS logic. Explain its operation.	(5) (5)
13.(a) (b)	Design 4x1 mux using switch logic. Draw the circuit and stick diagram. Explain the operation of 3T DRAM cell.	(5) (5)
14.(a) (b)	Draw the flow chart of VLSI chip design hierarchy and explain. What is the difference between diffusion and ion implantation techniques?	(5) (5)
15.(a) (b)	Derive the expression for the output current in a BJT current mirror. Drive the expression for the voltage gain of a common source amplifier	(4)
	using current mirror level.	(6)
16.(a)	Explain the operation of D-flip flop using transmission cycle switches with a neat circuit diagram.	(5)
(b)	Realize ALU using adder circuit.	(5)
17.Wr (a) (b) (c)	rite short notes on : Bonding, meteralization, etching Emitter area in BJTs Layout of input NAND gate	(10)

B.E. 4/4 (Common to All) I-Semester (Main) Examination, November / December 2012

Subject : Entrepreneurship (Elective-I)

Time : 3 Hours

Max. Marks: 75

Note: Answer all questions of Part - A and answer any five questions from Part-B.

PART – A (25 Marks)

1. 2. 3. 4. 5. 6. 7.	Define entrepreneurship. What are the salient features of small scale industries? Differentiate between manager and an entrepreneur. Explain briefly about first generation entrepreneurs. What are the various sources of project financing in India? List out various factors to be considered in choosing the right technology. Define a project and mention different parameters to be considered in	(2) (3) (2) (2) (2) (2)
8. 9.	project formulation. Discuss about significant features of marketing analysis. What is behaviour? And explain the role of motivation in behaviour of an	(3) (3)
10	entrepreneur. . Define personality and list out its various attributes.	(3) (3)
	PART – B (5x10=50 Marks)	
11 (b)	.(a) List out various opportunities and challenges of entrepreneurs in Indian context. Explain the role of entrepreneurs in developing the economical status of a country.	(5) (5)
12	.(a) Explain in detail about women entrepreneurs by highlighting the favourable conditions for them in Indian context.(b) Define an Idea and elaborate various methods used for Idea generation.) (5) (5)
13	.What is project formulation? Explain in detail about marketing, financial and technical analysis in project formulation.	(10)
14	Discuss in detail about the concept and salient features of PERT and CPM techniques and explain their role in helping an entrepreneur in successful completion of a project.	ר (10)
15	 .(a) What is leadership? How any entrepreneur develops leadership qualities required to be successful in his profession? (b) Explain in detail about Time management matrix. 	s (5) (5)
16	 .(a) Discuss about the concept of assessment of text burden and how it will be helpful to an entrepreneur in planning and managing finance effectively. (b) "Entrepreneurs are made not born". Give your views with proper justification. 	(5) (5)
17	.Write short notes on any three of the following : (a) Partnership firm (b) Large scale industries (c) Human aspects in project management	(10)

(d) Change behaviour