14EC601

Hall Ticket Number:

III/IV B.Tech (Regular/ Supplementary – Repeat Exam) DEGREE EXAMINATION

January, 2021 **Common for ECE, EEE & EIE**

Second Semester **Professional Ethics And Human Values**

Time: Three Hours **Maximum :** 60 Marks

Answer all Questions from Part - A. (1X12 = 12 Marks)

Answer ANY FOUR Questions from Part - B. (4X12=48 Marks)

Part - A

1. Write short notes on the following (12X1=12M)
   a) Integrity
   b) Caring
   c) Service Learning
   d) Self-respect
   e) Responsibility
   f) Inquiry
   g) Occupational crime
   h) Risk
   i) Loyalty
   j) IETE
   k) Computer Ethics
   l) ASME

Part - B

2. a) Briefly explain about 'self-confidence'. 6M
   b) Discuss about 'courage' in detail. 6M

3. a) What are the common reflections of honesty? Give some actions of Engineer that may lead to dishonesty 8M
   b) Briefly discuss valuing the time. 4M

4. a) What is meant by moral dilemma? Suggest some steps to solve moral dilemma. 8M
   b) Discuss about the types of responsibility 4M

5. Explain about Kohlberg's and carol Gilligan's theory in detail. 12M

6. a) Explain engineering as social experimentation 8M
   b) Differentiate Engineering projects from standard experiments. 4M

7. a) What are the moral principles that justify confidentiality? Also give the types of Confidential information. 6M
   b) Write a detailed note on Occupational Crime. 6M

8. a) What are the ten international human rights to be taken care of in case of giving practical justice to the conflicts in MNCs? 8M
   b) What are the characters of engineers should have as managers? 4M

9. a) Explain about Environmental ethics in detail ? 6M
   b) Explain about Computer ethics in detail? 6M

14EC602

Hall Ticket Number:

III/IV B.Tech (Regular / Supplementary – Repeat Exam) DEGREE EXAMINATION

January, 2020 — **Electronics and Communication Engineering**

Sixth Semester — **Microprocessor and Microcontroller**

Time: Three Hours — **Maximum :** 60 Marks

*Answer **All** Questions from **Part - A.*** (1X12 = 12 Marks)

*Answer **ANY FOUR** questions from **Part - B**.* (4X12=48 Marks)

Part - A

1. Answer all questions (1X12=12 Marks)

a Explain the physical address formation in 8086.

b What is an addressing mode?

c What are the general purposes registers in 8086?

d What is the difference between simulator and emulator

e What is an interrupt?

f Define macro.

g What is a port? What is the need of a port?

h What is USART?

i What is 8259A?

j What is DPTR?

k Write the purpose of SBUF register.

l Explain TMOD and TCON

Part - B

2.a Draw the internal block diagram of 8086 microprocessor and explain pipe line concept? 6M

2.b Explain the concept of segmented memory? What are its advantages? 6M

3.a Explain the addressing modes of 8086. 6M

3.b Write arithmetic and logical instructions and explain them 6M

4.a Explain the programming development steps in 8086? 6M

4.b Explain the program development steps in 8086. 6M

5.a Write an assembly language program to convert packed BCD to ASCII code. 6M

5.b What is an interrupt? What is the difference between software and hardware interrupts? 6M

6.a Draw the block diagram of 8255 and explain working and modes of operation. 6M

6.b Explain how a matrix keyboard can be interface to the processor and what are the steps involved? 6M

7.a Draw the block diagram of 8237 and explain working and modes of operation. 6M

7.b Write short notes on 8251 6M

8.a Explain ADDRESSING MODES OF 8051 micro controller. 6M

8.b Write about the comparison of Microprocessor and Micro controller? 6M

9.a Explain memory organization of 8051 micro controller 6M

9.b Write a program for multiplication of two numbers using 8051 micro controller 6M

14EC/EI 603 EC/EI 323

Hall Ticket Number:

III/IV B.Tech (Regular/Supplementary - Repeat Exam) DEGREE EXAMINATION

January, 2021 — **Electronics & Communication Engineering**

Sixth Semester — **Digital Signal Processing**

Time: Three Hours — **Maximum:** 60 Marks

Answer ALL Questions from PART-A. (1X12 = 12 Marks)

*Answer **ANY FOUR** questions from PART-B.* (4X12=48 Marks)

Part-A

1 **Answer all questions** **(1X12 = 12 Marks)**

a) Check linearity of y(n) = 2x(n)+4

b) Write the difference equation of N^{th} order LTI discrete time system.

c) Properties of the Z Transform

d) List the properties of DFT.

e) If x(n) is real and odd, then its transform X(K) is___

f) What are the advantages of FFT algorithms?

g) What are elements required to design digital filter.

h) Why direct form-II is called canonical form?

i) What are the techniques available to transform analog filter into digital filter?

j) What is frequency Wrapping?

k) What is the necessary and sufficient condition for the linear phase characteristics of an FIR filter?

l) How the order of the filter affects the frequency response of Butterworth filter.

Part-B

Answer ANY FOUR Questions from the following. **(4X12 = 48 Marks)**

2 a) Check whether the system described by y[n] = cos{x[n]} is causal, linear and time-invariant? 6 M

b) State and Prove the following properties of Z-transform: (i) Differentiation in the Z-domain and (ii) convolution. 6 M

3 a) Determine the impulse response and unit step response of the system described by the difference equation: y[n] = 0.7 y[n-1]-0.1 y[n-2] +2 x[n]-x[n-2] 8 M

b) Determine the Z-transform of the sequence $x[n] = a^n u[n]$ where a<1. 4 M

4 a) Compute the 4-point DFT of the sequence x[n] = {2,1,4,3} using DIF-FFT algorithm. 4 M

b) With neat sketches explain the 8-point DIT-FFT algorithm. 8 M

5 a) Compute the circular convolution of the sequences: $x_1[n] = [4,3,2,1]$ and $x_2[n] = [-1,-2,-3,1]$ using graphical method. 6 M

b) State and prove the following properties of DFT: (i) periodicity and (ii) circular time-shifting. 6 M

P.T.O.

6 a) Design a digital low pass Butterworth filter using bilinear transformation with pass band and stop band cut-off frequencies 800 rad/sec and 1800 rad/sec respectively. The pass band attenuation is -3 dB and stop band attenuation is -20dB. 8 M

b) Compare IIR and FIR filters. 4 M

7 a) Convert the analog filter with transfer function $H(s) = \frac{s+1}{(s+0.1)^2+16}$ into digital IIR filter system function using Bilinear transformation technique. Assume sampling time is $1\ sec$. 4 M

b) Obtain Lattice ladder structure for the following system and comment on stability. 8 M

$$y(n) + \frac{13}{24}y(n-1) + \frac{5}{8}y(n-2) + \frac{1}{3}y(n-3) = x(n) + 2x(n-1) + 2x(n-2) + x(n-3)$$

8 a) Design an ideal LPF with a frequency response $H_d[e^{jw}] = \begin{cases} 1, for -\frac{\pi}{2} \le |\omega| \le \frac{\pi}{2} \\ 0, \ for \ \frac{\pi}{2} \le |\omega| \le \pi \end{cases}$ 8 M

Find the values of $h[n]$ for N=11. Determine $H[z]$. Use Rectangular and Hamming windows.

b) Compare the characteristics of rectangular window with Bartlett window. 4 M

9 a) Design a linear phase FIR high pass filter using Hamming window with a cut off frequencies ω_c=0.8πrad/sample and N=7. 8 M

b) Prove that symmetric and anti-symmetric FIR filter have Linear phase. 4 M

14EC604

Hall Ticket Number:

III/IV B.Tech (Regular/ Supplementary – Repeat Exam) DEGREE EXAMINATION

January, 2021 **Electronics & Communication Engineering**

Sixth Semester **ANTENNAS AND WAVE PROPAGATION**

Time: Three Hours **Maximum:** 60 Marks

Answer All Questions from Part - A. (1X12 = 12 Marks)

Answer ANY FOUR questions from Part - B. (4X12=48 Marks)

Part - A

1. Answer all questions (1X12=12 Marks)
   a) What is a half wave monopole?
   b) Define a non-resonant antenna?
   c) Define hertzian dipole?
   d) What is meant by isotropic radiator?
   e) Define Radiation efficiency.
   f) Define array factor.
   g) What is the radiation resistance of a folded dipole?
   h) Write the applications of a Loop antenna?
   i) What are the applications of Rhombic antenna?
   j) Give the relation between MUF and skip distance.
   k) What is a radio horizon?
   l) Define critical frequency

Part - B

2. a) Explain how antenna radiates EM waves. 8M
   b) A half-wave dipole radiating in free space is driven by a current of 0.5 Amp at the terminals. Calculate the E and H field strengths at a distance 1 Km the antenna at an angle of 90^0 4M

3. a) Derive the Magnetic field components of an alternating current element. 6M
   b) Show that the directivity of an alternating current element is 1.76 dB 6M

4. a) Define and explain the following terms related to antennas: 8M
      (i) Gain
      (ii) Directivity
      (iii) Radiation resistance
      (iv) Beam width
   b) Find the Null-to-Null beam width of end fire array when array length is 10λ and N=20. 4M

5. a) Write short notes on Broadside array. 6M
   b) Compare Binomial array and Endfire Array antennas. 6M

6. a) Explain the operation of Log periodic antenna in detail. 6M
   b) Design a Rhombic antenna to operate at f = 30 MHz with an elevation angle $\Delta = 30^0$ 6M

P.T.O.

7. a) Explain the Cassegrain feed system of reflectors. List out theadvantages and disadvantages of Cassegrain feed. 8M
   b) Find the power gain and directivity of a horn whose dimensions are 10 x 5 cm operating at a frequency of 6 GHz. 4M

8. a) Bring out the important features of Ionosphere wave propagation. 8M
   b) A HF radio link is established for a range of 2000 Km. If the reflection region of the ionosphere is at a height of 200 Km and has the critical frequency of 6 MHz, calculate MUF. 4M

9. a) Explain about the important characteristics of Ground wave propagation. 8M
   b) Calculate the radio horizon of a TV antenna placed at a height of 166 meters. If the receiver is at a distance of 66 Km, what should be the height of the receiving antenna? 4M

14EC605

Hall Ticket Number:

III/IV B.Tech (Regular/Supplementary – Repeat Exam) DEGREE EXAMINATION

January, 2021 — **Electronics and Communication Engineering**

Fourth Semester — **Object Oriented Programming with JAVA**

Time: Three Hours — **Maximum:** 60 Marks

Answer ALL Questions from PART-A. (1X12 = 12 Marks)

*Answer **ANY FOUR** questions from PART-B.* (4X12=48 Marks)

Part - A

1. Answer all questions (1X12=12 Marks)
   a) Encapsulation.
   b) List any four buzzwords of JAVA.
   c) Type casting.
   d) Class
   e) this keyword
   f) List any four methods of String class.
   g) Abstract class
   h) Use of super keyword
   i) List any four built-in packages in JAVA
   j) Use of throws in JAVA
   k) Process vs. Thread
   l) Thread life cycle

Part – B

2. a) Explain the importance of byte code and its significance in making JAVA popular. 6M
   b) Write a JAVA program to calculate the roots of a quadratic equation. Also draw the concerned flow chart. 6M

3. a) With an example program, explain the differences between break and continue statements. 6M
   b) Write a Java program to perform multiplication of two matrices. 6M

4. a) Explain different types of constructors with an example programs. 6M
   b) Write the uses of “final” keyword in JAVA. 6M

5. a) With an example program, illustrate constructor overloading. 6M
   b) Illustrate the use of nested classis in JAVA with example program. 6M

6. a) Write a Java program to demonstrate hierarchical inheritance technique. 6M
   b) What is the use of Object class? List and briefly describe any five methods of Object class. 6M

7. a) Explain method overriding with an example program. 6M
   b) Illustrate the use of extending interfaces with an example program. 6M

8. a) What is an exception? Explain exception handling mechanism with an example. 6M
   b) Write a JAVA program that prompts the user to enter age (0-99). If age is less than 18, generate a user defined exception with message “Not eligible to vote” otherwise print “eligible to cast the vote”. 6M

9. a) Explain the procedure of creating a thread using Runnable interface. 6M
   b) Illustrate synchronization of multiple threads with an example program 6M

14EC606A

Hall Ticket Number:

III/IV B.Tech (Regular/Supplementary- Repeat Exam) DEGREE EXAMINATION

January, 2021 — **Electronics and Communication Engineering**

Sixth Semester — **Computer Organization &Architecture**

Time: Three Hours — **Maximum:** 60 Marks

Answer ALL Questions from PART-A. (1X12 = 12 Marks)

*Answer **ANY FOUR** questions from PART-B.* (4X12=48 Marks)

Part - A

1. Answer all questions (1X12=12 Marks)
   a) What is a mnemonic
   b) What are conditional codes
   c) What is the efficient way to represent signed numbers in computers and why?
   d) Define control store
   e) What is a register file
   f) Write the names of fast multipliers
   g) What is the use of cache memory
   h) What is LRU?
   i) What is super scalar operation
   j) What is interrupt
   k) What is ISR
   l) What is cycle stealing

Part - B

2.	a)	Explain about basic operational concept?	6M
	b)	Explain about basic input and output operations?	6M
3.	a)	Write short notes on stacks and queues	6M
	b)	Explain basic instruction types	6M
4.	a)	Perform the multiplication of (-13*11) using booth's algorithm	6M
	b)	Write procedure to perform the arithmetic operations on floating point number	6M
5.	a)	Explain about micro programmed control	6M
	b)	Draw and explain single bus architecture	6M
6.	a)	Write the operation of four stage pipeline	6M
	b)	With neat figure explain about memory controller	6M
7.	a)	Explain about virtual memory	6M
	b)	Implement 16MB DRAM using 2M*8 memory chips	6M
8.	a)	Draw and explain parallel port interfacing circuit	6M
	b)	Compare synchronous and Asynchronous buses	6M
9.	a)	Write short notes on USB	6M
	b)	Explain about bus arbitration	6M

14EC/EE602

Hall Ticket Number:

III/IV B.Tech (Regular/Supplementary-Repeat Exam) DEGREE EXAMINATION

January, 2021 — **Electronics and Communication Engineering**

Sixth Semester — **Microprocessors and Microcontrollers**

Time: Three Hours — **Maximum:**60 Marks

Answer All Questions (1X12 = 12 Marks)

Answer ONE question from each unit. (4X12=48 Marks)

1		Answer all questions	(1X12=12 Marks)
a)			
b)			
c)			
d)			
e)			
f)			
g)			
h)			
i)			
j)			
a)			
b)			
		UNIT I	
2	a)	Draw the 8086-microprocessor internal architecture and explain the operation of each block. Architecture Block Diagram ---------- 3M Explanation ---------- 3M	6M
	b)	Explain the register organization of 8086. Register Block Diagram ---------- 3M Explanation ---------- 3M	6M
		(OR)	
3	a)	Explain program sequence changing instructions in Intel 8086. What are program sequence changing instructions? ---------- 2M Explanation---------- 4M	6M
	b)	What is the length of the instruction queue in 8086? Explain its usage? Explain the reason for limiting the length of the queue? Length of the instruction queue ---------- 1M Usage ---------- 1M Explanation ---------- 4M	6M
		UNIT II	
4	a)	Explain how a program is written in assembly language using Program development steps. Flow chart ---------- 3M Explanation ---------- 3M	6M
	b)	Draw the minimum mode pin diagram of 8086 microprocessor and explain each pin in detail. Minimum Mode pin Diagram ---------- 3M Each pin Explanation ---------- 3M	6M
		(OR)	
5	a)	Write an 8086 assembly language program to find maximum and minimum numbers in a	6M

		series of data.
		
		DATA SEGMENT
		A DW 8,2,5,6,1,3
		DATA ENDS
		CODE SEGMENT
		ASSUME DS: DATA, CS:CODE
		START:
		MOV AX,DATA
		MOV DS,AX
		MOV CX,0000
		MOV CL,06
		LEA BX,AX
		MOV DX, WORD PTR[BX]
		MOV AX,0000
		L1: CMP AX,WORD PTR [BX]
		JNC L2
		MOV AX,WORD PTR[BX]
		L2: CMP DX,WORD PTR [BX]
		JC L3
		MOV DX, WORD PTR [BX]
		L3: ADD BX,02
		DEC CL
		CMP CL,00
		JNZ L1
		MOV AH,4CH
		INT 21H
		CODE ENDS
		END START.
		Program with comments ---------- 6M	

	b)	Draw the timing diagrams of minimum mode read operation and explain indetail. Minimum mode Explanation ---------- 2M Timing diagram with explanation ---------- 4M	6M
		UNIT III	
6	a)	Explain mode 0 and Mode 1 operation of 8255 PPI with necessary timing diagrams. Mode 0 Operation of 8255: ---------- 3M Mode 1 Operation of 8255: ---------- 3M	6M
	b)	With a neat sketch, explain DAC interfacing to 8086 microprocessor. DAC Block diagram ---------- 3M Interfacing Explanation ---------- 3M	6M
		(OR)	
7	a)	Explain sequence of operations for DMA data transfer with a neat sketch. DMA with 8086 Block diagram ---------- 3M Explanation ---------- 3M	6M
	b)	Illustrate and explain the internal architecture of 8251 USART. Block Diagram ---------- 3M Explanation ---------- 3M	6M
		UNIT IV	
8	a)	Draw the 8051 architecture and explain its operation in detail. Block Diagram ---------- 3M Explanation ---------- 3M	6M

	b)	Write a program to find the given number is even or odd. If odd, count the number of 1's and sends the result to R0.
		ORG 00H
		MOV A,#NUMBER
		MOV B,#02H
		DIV AB
		MOV R0,B
		CJNE R0,#0H,ODD
		MOV A,#00H
		SJMP EVEN
		ODD: MOV A,#01H
		EVEN: NOP
		END
		Program Explanation -------- 6M
			6M

		(OR)	

9	a)	Write an assembly language program to read the data serially at 19,200 baud rate and transfer the data to port 2.
		ORG 00H
		MOV A,PCON
		SETB ACC.7
		MOV PCON,A
		MOV TMOD,#20H
		MOV TH1,#-3
		MOV SCON,#50H
		MOV P0,#0FFH
		SETB TR1
		REP: MOV A,P0
		ACALL SEND
		SJMP REP
		SEND: MOV SBUF,A
		JNB TI,$
		CLR TI
		RET
		Program Explanation ---------- 6M
			6M

	b)	Explain the interrupt structure and priorities of 8051 microcontroller. Interrupt structure ---------- 3M Explanation with priorities ---------- 3M	6M