Paper Code: IT-311 (B.Tech. CSE, 5th Semester)

Subject: DSD using VHDL

M.Marks: 15

Duration: 1 Hr

Note Attempt all questions.

Q.1   Explain Gajski's 'Y' Chart.   (5)

Q.2   Design 4-bit adder using a macro of Half adder and full adder   (5)

Q.3   Design a 5:32 Decoder using a component of 2:4 and 3:8 Decoder.   (5)

B.Tech (CSE)V Sem IT-303 (CSE) Analog and Digital Communication Time : 1 hr   MM:20

Q1. Define Amplitude Modulation. Briefly discuss types of AM methods.   (5)

Q2. Define Angle Modulation. Briefly explain relationship between Phase & Frequency modulation (5)

Q3. Briefly explain (any two)   (2.5 *2 = 5)

(a) Narrow band and Wideband FM

(b) Power Spectral Density

(c) Generation and Demodulation of AM

(d) Radio Communication   (2.5*2 = 5)

Q4. Attempt the following questions:

(a) Suppose that the modulating signal m(t) is a sinusoid of a form

$$m(t) = a \cos 2\pi f_m t \qquad\qquad f_m << f_c$$

Determine the DSB-SC AM signal and its upper and lower sidebands.

(b) The message signal $m(t) = a \cos (2\pi f_m t)$ is used to either frequency modulate or phase modulate the carrier $A_c \cos (2\pi f_c t)$. Find the modulated signal in each case.

DSP

IT-307 (CSE)

Minor-I

Max. Marks: 15   Max. Time: 1 hour

Q1. Determine a) linearity, b) shift-invariance, c) stability and d) causality of the following
discrete time systems: (5)

i) $T[x(n)] = \sum_{k=n_o}^{n} x(k)$.   ii) $T[x(n)] = nx^2(n - n_o)$,   iii) $T[x(n)] = e^{x(n)}$,

iv) $T[x(n)] = cx(n) + d$

Q2. Determine the z-transform of the following signals and sketch the corresponding pole zero
patterns.   (5)

i) $x(n) = (1 + n)u(n)$,   ii) $x(n) = n^2 u(n)$,   iii) $x(n) = -b^n u(-n - 1)$

Q3. Explain various methods of finding convolution of a finite length sequence with infinite
length sequence.   (5)

CSE

MINOR EXAM

Object Oriented Software Engineering, Paper code:IT309

Max Marks=20

Q1.A. Answer the following   (3)

(a) What characteristics does a good SRS must possess?

(b) What are identifying actors.

(c) Classes and objects

B. Explain FAST technique.   (3)

Q2. A. What do you mean by Requirement model? Design a requirement model for airline reservation system.   (4)

B. Explain object oriented methodology given by Booch.   (3)

Q3 (A) What is the purpose of analysis model.   (2)

B. Differentiate between Sequence and collaboration diagram with suitable examples   (5)

Minor Exam.
B. Tech. (IT/CSE) 5th Sem.
Subject –Computer Architecture (IT-305)

Duration: 1 hour   **Max. Marks: 20**

All questions carry equal marks.

Q1. What is storage layout of IEEE 754 floating point standard? Store 42.25 in single precision layout.

Q2. What are different shift micro-operations? Draw a 4-bit shift logic diagram.

Q3. What is an interrupt? Draw a flowchart for interrupt cycle of a basic computer.

Q4. What is different instruction code formats? Explain.

IT-301 (Theory of Computation) B.Tech Vth Semester CSE Branch

Max. Marks: 20

Attempt all questions, an internal choice is given in Q.1 only

1. [6 Marks] Define Pumping Lemma for Regular Languages. Prove that the Langugae $L = \{a^n b^n \mid n >= 0\}$ is not regular. Check whether the Langugae $L1 = \{wcw^R \mid$ where $w, c \in \{a,b\}^*\}$ is regular or not?

OR

Define Pushdown Automata. Design a PDA to Langugae $L = \{a^n b^n \mid n >= 0\}$

2. [7 Marks] Explain Chomsky classification of langugaes

3. [7 Marks] Differentiate in between DFA and NDFA. Let $L1 =$ set of strings over $\{a,b\}$ having an even number of a's and odd number of b's

$L2 =$ set of strings over $\{a,b\}$ whose length is divisble by 4.

Construct a DFA to recognise the language $L1 \cap L2$.