Department of Computer science and engineering

SUB: signal and system **Marks:20**

BE(CSE)-IV SEMISTER **Time: 1Hr**

PART – A(ANSWER ALL) 3*2=6M

1. a) Determine if the signal x(n) given below periodic or not. If yes give its fundamental period. If not state why it is aperiodic.

$$X[n] = \sin\left(\frac{6\pi}{7}n + 1\right)$$

b) Check whether the following signal is Time invariant/ Time variant and also causal non causal

$$Y(t) = x\left(\frac{t}{3}\right)$$

c) Define and derive Energy and power signal

PART – B(ANSWER ALL) 2*7=14M

1. Prove the following properties of Fourier series
   i) Scaling ii) Time differentiation iii) Convolution in time iv)Time shift and frequency shift
2. A periodic signal with a period of 4 sec is described over one fundamental period by x(t)= 3-t ,0≤t≤4. Plot the signal and find i) exponential ii) trigonometric Fourier series
3. Derive the following
   i) Mean square error in signals
   ii) Trigonometric Fourier series (a_0, a_n, b_n)

Department of Computer Science & Engineering
University College of Engineering(A), O. U, Hyderabad-07.

Internal Examination – I

Class : B.E IV Sem. **Time : 1 hour**

Subject: Microprocessors & Interfacing **Max. Marks : 20**

PART - A

Answer ALL Questions **(3 x 2 = 6 marks)**

1. Define Microprocessor.
2. Describe T State?
3. What is an addressing mode?

PART – B

Answer any TWO Questions **(2 x 7 = 14 marks)**

4. List and explain the types of instructions of 8085.
5. Draw and explain the architecture of 8085.
6. Explain the working model of DMA controller and draw pin diagram.

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Class Test – I

Class : B.E(CSE) IV Sem. **Time : 1 hour**

Subject : OOP using Java **Max. Marks : 20**

Part-A (Answer all Questions) **(6Marks)**

1) Range and behavior for a primitive type in java is to supported by [ ]
   a) Java virtual machine
   b) Operating System
   c) Hardware
   d) User

2) Explain what occurs when one reference variable is assigned to another.

3) A class that contains atleast one abstract method must itself be declared abstract. True/False

4) How can you manually throw an exception? What is its use?

Part-B (Answer any 2) **(14 Marks)**

5)a) Can an inner catch rethrow an exception to an outer catch? Explain with an example.

b) What will be the out of the following program? Explain

```
class progese {
  public static void main(String[] args) {
    String[] data= {"larry", "Moe", null, "john"};
    try {
      for (String s: data)
        System.out.println(s.length()); }
  catch (Exception e) {  }
}
}
```

6)a) What is garbage collection, and how does it work? What is finalize()?

b) What is "this" keyword?

7) a) Describe the purpose of super keyword with an example.

b) Explain about dynamic method dispatch with an example.

DEPARTMENT OF MATHEMATICS
UNIVERSITY COLLEGE OF ENGINEERING (A) – O.U.HYD - 7
B.E. (CSE) –IV-SEMESTER- CLASS TEST-I
MATHEMATICS AND STATISTICS

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

PART – A **6 Marks**

Answer ALL the Questions

1. If $L\{f(at)\} = F(s)$ then find the $L\{f(at)\}$ *and* $L\{e^{-at} f(t)\}$ (2 M)

2. Find $L\{f(t)\}$, *where* $f(t) = \begin{cases} 2, & 0 \le t \le 3 \\ 0, & t > 3 \end{cases}$ (2 M)

3. If $F\{f(t)\} = F(w)$ then find $F\{\cos at\ f(t)\}$ (1 M)

4. If $F_s\{f(t)\} = F_s(w)$ then find $F\{\cos at\, f(t)\}$ (1 M)

PART - B **2 × 7 = 14**

Answer any Two Questions

5. Solve $y' + 3y + 2\int_0^t y(\Upsilon)\, d\Upsilon = t, \quad y(0) = 0$ by using Laplace transform. (7 M)

6. Find the Fourier Integral representation of function $f(t) = \begin{cases} 0 & t < 0 \\ e^{-t} & t \ge 0 \end{cases}$. (7 M)

7. Find the Fourier Sine transform of $\frac{e^{-at}}{t}$. (7 M)

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Department of Computer Science & Engineering

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Internal Examination – I

Class : B.E IV Sem
Subject : Computer Organization

Time : 1 hour
Max. Marks : 20

PART – A

Answer ALL questions **(3 x 2 = 6marks)**

1. a) Convert into binary $(41.6875)_{10}$
   b) Define r's Complementation and find 10's complement of 7984.
2. a) What is Gray Code? Give an example.
   b) What is Control Function? Give an example.
3. a) Define Micro-Instruction.
   b) What is the use of program counter.

PART – B

Answer any TWO Questions **(2x7=14marks)**

4. A Computer uses a memory unit with 256K words of 32 bits each. A binary instruction code is stored in one word of memory. The instruction has Four parts: an indirect bit, an operation code, a register code, part, to specify are of 64 registers, and an address part.

   How many bits are there in the operation code, the register code part and the address part. Draw the instruction word Format and indicate the number of bits in each part.

5. a) A digital computer has a common bus system for 16 registers of 32 bits each. The bus is constructed with multiplexers.
   i) How many selection inputs are there in each multiplexer?
   ii) What size of multiplexers are needed?
   iii) How many multiplexer are there in the bus.

   b) Draw the 4-bit adder-subtractor circuit.

6. A 36-bit floating-point binary number has eight bits plus sign for the exponent and 26 bits plus sign for the mantissa. The mantissa is a normalized fraction. Numbers in the mantissa and exponent are in signed –magnitude representation. What are the largest and smallest positive quantities that can be represented, excluding zero?

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Class Test – I

Class : B.E(CSE) IV Sem.
Subject: Programming Language

Time : 1 hour
Max. Marks : 20

PART - A

Answer ALL Questions (6 marks)

1 Define the principle of orthogonality in language design. Give one example of lack of orthogonality in the design of C

2 How does typing system of JavaScript differ from that of Java?

3 In what fundamental way do operational semantics and denotational semantics differ?

4 What is the referencing environment of statement?

5 How does enumeration type in C++ differ from that in C?

6 What is the output of the following C program? Assume that **sizeof(short)** is 2 bytes and that the address of a is 1000 (decimal).

```
short a[10];
char* b = (char*) a;
printf( "%d\n", a+3 );
printf( "%d\n", b+3 );
```

PART – B

Answer any TWO Questions (2 x 7 = 14marks)

7(a) What are different language implementation methods? Describe each of these. Which of these methods used in the implantation of Java ?

(b) Describe the major language concepts that are introduced as part of Algol language development

(c) What two programming language deficiencies were discovered as a result of research in software development in the 1970s?

8(a) Devise a grammar that produces all whole numbers (including "0") , but no strings with unnecessary leading zeros

[P.T.O]

(b) Given the following grammar:

<assign> -> <id> := <expr>
<id> -> A | B | C
<expr> -> <expr> + <expr>
-> <expr> * <expr>
-> (<expr>)
-> <id>

show a **parse tree** and a **leftmost derivation** for each of the following sentences accepted by this grammar:

(i) A := C * (A * C + B)
(ii) A := A + (B + (C))

9(a) What are different ways of implementing STRING data type? Give their relative advantages and disadvantages

(b) What are the two major kinds of pointer errors? Give example code snippets to illustrate these errors. Briefly describe the techniques to solve these

(c) Assume the following Ada program was compiled and executed using static scoping rules. What value of X is printed in procedure Sub1? Under dynamic scoping rules, what value of X is printed in procedure Sub1?

```
procedure Main is
  X : Integer;
  procedure Sub1 is
    begin                    -- of Sub1
    Put(X);
    end;                     -- of Sub1
  procedure Sub2 is
  X : Integer;
  begin                      -- of Sub2
  X := 10;
  Sub1
  end;                       -- of Sub2
begin                        -- of Main
X := 5;
Sub2
end;                         -- of Main
```