Registration No: | | | | | | | | | | |

Total Number of Pages: 02 **B.Tech.**
PCS3I103

3rd Semester Regular / Back Examination 2017-18
SYSTEM PROGRAMMING
BRANCH: CSE
Time: 3 Hours
Max Marks: 100
Q.CODE: B986

Answer Question No.1 and 2 which are compulsory and any four from the rest.
The figures in the right hand margin indicate marks.

Q1 **Answer the following questions:** **(2 x 10)**

a) Of the four different programs that UNIX invokes to prepare a C program for execution, namely the linker, assembler, compiler, and loader, which actually builds an executable file such as a.out
(a) Linker (b) Assembler (c) Loader (d) Compiler (e) None of the above

b) Timer interrupt is a _____.
(a) Hardware Interrupt (b) Software Interrupt (c) Both of these
(d) None of These

c) Only _____ ports are important from programming point of view.
(a)70 and 71H (b) 71 and 72H (c)70 and 72H (d)72 and 73H

d) In a two pass assembler the object code generation is done during which phase?
(a) zeroth pass (b) One pass (c) Two pass (d) Not done by assembler.

e) Forward Reference Table (FRT) is arranged like?
(a)stack (b)Queue (c)Linked List (d)Doubly Linked list

f) Which of the following is not a function of pass1 of an assembler?
(a)generate data (b) keep track of LC (c)remember literals
(d)remember values of symbols until pass2

g) The last statement of the source program should be
(a) Stop (b) Return (c) Op (d) End

h) Address symbol table is generated by the (a) Memory management software (b) Assembler (c) Match logic of associative memory (d) Generated by operating system.

i) Analysis which determines the meaning of a statement once its grammatical structure becomes known is termed as
(a) Semantic analysis (b) Syntax analysis
(c) Regular analysis (d) General analysis

j) A linker program
(a) Places the program in the memory for the purpose of execution.
(b) relocates the program to execute from the specific memory area allocated to it.
(c) Links the program with other programs needed for its execution.
(d) Interfaces the program with the entities generating its input data.

Q2 **Answer the following questions: *Short answer type*** **(2 x 10)**

a) Mention any four features of System Programming.
b) What do you mean by Assembler? How it is different from Loaders?
c) Differentiate between compiler and interpreter.
d) What is a dummy argument in macro? Explain with example.
e) Differentiate between systems software and application software .
f) What is an absolute loader? What are the disadvantages of absolute loader?
g) With suitable example explain linkage editor.
h) What is a formal system? Define a formal system mathematically.
i) Give user interface criteria for a debugger.
j) Define the data structure of MDT and MNT tables.

Q3 **a)** List and explain the main components of a typical microprocessor. **(10)**

b) Explain the following. I) SYMTAB II) LOCCTR III)OPTAB IV) LITTAB V)CSADDR **(5)**

Q4 **a)** Describe the overall design of pass1 of an assembler with the description of the data structures used in it. Differentiate it from pass 2 compiler. **(10)**

b) Explain dynamic linking and loading. **(5)**

Q5 **a)** Describe the design of a relocating loader. What are the advantages of relocating loader over absolute loader? **(10)**

b) What is BNF? Show the BNF specification for an arithmetic expression X=U+V×W-X/Y **(5)**

Q6 **a)** Write a simple SCI/ XE program that gets two integers NUM1 and NUM2 from memory. Compare the two integers and adds them up, if NUM1 is greater than NUM2 or subtracts NUM1 from NUM2 if NUM1 is less than NUM2. Store the answer in memory at memory location result. **(10)**

b) What do you mean by High Level Language? Briefly explain its features and advantages over Lower Level Language. **(5)**

Q7 **a)** Explain debugger functionalities and facilities. **(10)**

b) Programming Environment vs Integrated Development Environments **(5)**

Q8 **a)** Draw a parse tree according to Pascal grammar for the following expressions. i)ALPHA –BETA *GAMMA ii) ALPHA DIV(BETTA+GAMMA)-DELTA **(10)**

b) With suitable examples classify grammars. **(5)**

Q9 **a)** Write short notes on i) General Machine structures ii)Functional Modularity iii) Absolute expression vs Relative expression iv)Lexical Analysis vs Syntactic Analysis **(10)**

b) Explain Bootstrap loader. **(5)**