53 (IT-404) SYPR

2015

SYSTEM PROGRAMMING

Paper : IT 404

Full Marks : 100

Time : Three hours

**The figures in the margin indicate
full marks for the questions.**

Answer **any five** questions out of seven.

1. *(a)* What is Software ? Define System
Software and it's various components.
$1+1+6=8$

    (b) Briefly explain General Machine
Structure. 6

    (c) Explain the role of base register in
addressing. 6

2. *(a)* Explain with example the basic
instruction formats of IBM 360. 10

    (b) Write the basic function and data
structure for pass 1 in a two pass
assembler. 10

3. *(a)* Define Macro call, Macro definition and Macro processor. $1+1+1=3$

   (b) Explain conditional Macro with example. 6

   (c) Explain the Implementation of Macro calls within Macro with example. 7

   (d) Differentiate between $2+2=4$

       (i) System software and Application software

       (ii) Compiler and interpreter.

4. *(a)* What are the basic functions of loader. 5

   (b) Explain the following loader schemes $5+5+5=15$

       (i) General loader schemes

       (ii) Absolute loaders

       (iii) Binders.

5. *(a)* What do you mean by operating system ? What are the various services provided by the operating systems ? $1+5=6$

(b) Consider the following set of processes with the length of CPU burst given in milliseconds.

Process	Burst time	Priority
P_1	10	3
P_2	1	1
P_3	2	3
P_4	1	4
P_5	5	2

The processes are assumed to have arrived in the order P_1, P_2, P_3, P_4, P_5 all at time 0.

(i) Draw Gantt charts that illustrate the execution of these processes using the following scheduling algorithms — FCFS and RR (quantum =1)   2+2=4

(ii) What is the average waiting time and turnaround time for these processes with the FCFS and priority algorithm ?   5+5=10

6. *(a)* Explain the following command with example.   1×3=3

(i) wc and wc-l

(ii) cp

(iii) cat

(b) Write a shell script to find the sum of the digits of a number. 6

(c) Write a shell script to find the number of files in a directory. 6

(d) Write a shell script to perform the following task

KOKRAJHAR/CIT/IT/4th Sem/IT 404.txt

where KOKRAJHAR, CIT, IT and 4th Sem are directories.

and IT 404.txt is a empty file which need to be create in the desktop and copy to the directory 4th Sem. After copying the file IT 404.txt, you need to delete the file as well as all directories one by one. 5

7. *(a)* Write short notes : 4×4=16

   (i) Unix editor 'vi'

   (ii) Swapping

   (iii) Demand paging

   (iv) Assembler directives USING and EQU

(b) Explain Unix file system with suitable diagram. 4

———————