

Jaypee University of Engineering & Technology, Guna

T-1 (Even Semester 2022)
18B11CI413 -OPERATING SYSTEMS

Maximum Duration: 1 Hour

Maximum Marks: 15

Notes:

1. This question paper has three questions.
2. Write relevant answers only.
3. Do not write anything on a question paper (Except your Er. No.).

Q1.

Explain the output of a given program and justify the sequence of output lines.

Marks
[03]

```
#include<stdio.h>
#include<stdlib.h>
#include<unistd.h>
int main (int argc,char *argv[])
{
    printf ("Hello world (pid: %d)\n",(int) getpid());
    int rc=fork ();
    if(rc<0) {
        fprintf (stderr,"fork Failed\n");
        exit (1);
    } else if (rc==0) {
        printf ("hello, I am child (pid: %d) \n", (int) getpid());
    } else {
        printf ("hello, I am parent of %d (pid: %d) \n", rc, (int) getpid ());
    }
    return 0;
}
```

Q2.

Suppose that a process is in "RUNNING" state and suddenly a request for some input from the keyboard arrives before the service is completed. Where will the process go? Explain the scenarios by process state diagram.

[04]

Q3.

Consider a set of 5 processes whose arrival time, CPU time needed, and the priorities are given below. Answer the following questions with appropriate calculations and Gantt chart.

Process	Arrival Time (in ms)	Burst Time (in ms)	Priority
P1	0	10	5
P2	2	5	4
P3	4	3	2
P4	7	18	3
P5	8	2	1

- (a) If the CPU scheduling policy is SJF (Preemptive) then calculate the average waiting time and response time for process P5. [04]
- (b) If the CPU scheduling policy is priority scheduling with preemption, then calculate the average turnaround time and throughput. [04]