1. Give the individual completion times (cmp) and response times (rsp) for the following three tasks using:

a) FIFO;

b) Shortest Job First non-preemptive (SJFnp) where any ties (i.e., equal service times) are broken in FIFO order;

c) Shortest Job First prepemptive (SJFp, also known as Shortest Remaining-Time Next / SRTN) where any ties (i.e., equal remaining times) are broken in FIFO order; and,

d) Round Robin (RR), with a time slice of 1 where preempted jobs go to the back of the queue after any arrivals have been added.

Assume that zero time is required for a process to arrive, to be added to the queue, or to be dispatched.

task arrival service FIFO FIFO SJFnp SJFnp SJFp SJFp RR RR

name time time cmp rsp cmp rsp cmp rsp cmp rsp

A 0 6 \_6\_\_ \_6\_\_ \_6\_\_ \_6\_\_ \_10\_ \_10\_ \_10\_\_ \_10\_

B 2 3 \_9\_\_ \_7\_\_ \_10\_\_ \_8\_\_ \_6\_\_ \_4\_\_ \_8\_\_ \_6\_\_

C 3 1 \_10\_\_ \_7\_ \_7\_\_ \_4\_\_ \_4\_\_ \_1\_\_ \_5\_\_ \_2\_\_

0 1 2 3 4 5 6 7 8 9 10

FIFO +----+----+----+----+----+----+----+----+----+----+

A6 |\_\_\_\_\_\_\_\_\_\_\_\_\_\_A\_\_\_\_\_\_\_\_\_\_\_\_\_\_|

B3 |. . . . . . . . . . |\_\_\_\_\_\_B\_\_\_\_\_\_|

C1 |. . . . . . . . . . . . . . .|\_\_C\_\_|

0 1 2 3 4 5 6 7 8 9 10

SJFnp +----+----+----+----+----+----+----+----+----+----+

A6 |\_\_\_\_\_\_\_\_\_\_\_\_\_\_A\_\_\_\_\_\_\_\_\_\_\_\_\_\_|

B3 |. . . . . . . . . . . . . |\_\_\_\_\_\_B\_\_\_\_\_\_|

C1 |. . . . . . . |\_\_C\_\_|

0 1 2 3 4 5 6 7 8 9 10

SJFp +----+----+----+----+----+----+----+----+----+----+

A6 |\_\_\_\_A\_\_\_\_| . . . . . . . . . |\_\_\_\_\_\_\_\_\_A\_\_\_\_\_\_\_\_\_|

B3 |\_\_B\_|. . |\_\_\_\_B\_\_\_\_|

C1 |\_\_C\_|

0 1 2 3 4 5 6 7 8 9 10

RR/TS=1 +----+----+----+----+----+----+----+----+----+----+

A6 |\_A6\_\_A5\_\_| . .|\_A4\_|. . . . .|\_A3\_|. . |\_A2\_\_\_A1\_|

B3 |\_B3\_|. . . . .|\_B2\_|. . |\_B1\_|

C1 |. . |\_C1\_|