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Roll No.

MTCF-101

M.E./M.Tech. I Semester

Examination, November 2018

Operating Systems and Security

Time : Three Hours

Maximum Marks : 70

Note: i) Attempt any five questions.

ii) All questions carry equal marks.

1. a) What are the various services that an operating system provides to the user? Discuss the basic design issues for an operating system.

   b) Explain device drivers. Describe the role of BIOS.

2. a) What is CPU scheduling and why is it important? Can one CPU serve many process at the same time?

   b) What is a race condition? Illustrate it with an example. Why is the presence of race conditions considered a bad design?

3. For the following example calculate average turn around and average waiting time for the following algorithms.

Process	Arrival Time	Burst time
P_1	0	8
P_2	1	4
P_3	2	9
P_4	3	5

   i) FCFS

   ii) SRTF

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4. Consider a Diffie-Hellman scheme with a common prime $q = 11$ and a primitive root $\alpha = 2$.
   i) Show that 2 is primitive root of 11.
   ii) If user A has public key $Y_A = 9$ what is A's private key Y_A?
   iii) If user B has public key $Y_B = 3$. What is the shared secret key K?

5. a) What is DOS and DDOS attacks? How to prevent them?
   b) Explain format String and Buffer overflow.

6. a) What is the difference between SSL connection and an SSL session?
   b) What are the roles of the Oakley key determination protocol and ISAKMP in IPsec?

7. a) What are typical phases of operation of a virus or worm?
   b) Explain secure sockets layer.

8. Write a short notes (any three)
   a) Web security
   b) Digital signatures
   c) TLS
   d) AES cipher

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