QP Code : 75768

2 ½ Hrs [Total marks: 60]

N. B.: (1) All questions are compulsory
(2) Figures to the right indicate full marks.
(3) Assume additional data if necessary but state the same clearly.
(4) Symbols have their usual meanings and tables have their usual standard design unless stated otherwise.
(5) Use of calculators and statistical tables is allowed.

Q.1	Attempt **any two** of the following:	(12)
a)	What is difference between kernel mode and user mode? Why is the difference important to an operating system?	6
b)	What is GRUB? How does GRUB work?	6
c)	What are three main states that a process can be in? Describe the meaning of each one briefly.	6
d)	Discuss three issues related to Interprocess Communication.	6
Q.2	Attempt **any two** of the following:	(12)
a)	Compare 'Fixed memory partitions with separate input queues for each partition' with 'Fixed memory partitions with a single input queue'.	6
b)	What is a memory compaction technique? What are disadvantages of this technique?	6
c)	Consider a swapping system in which memory consists of the following hole sizes in memory order: 10 KB, 4 KB, 20 KB, 18 KB, 7 KB, 9 KB, 12 KB and 15 KB. Which hole is taken for successive segment requests of (i) 12 KB (ii) 10 KB (iii) 9 KB for first fit? Repeat the question for best fit, worst fit and next fit.	6
d)	When segmentation and paging are both being used, as in the Pentium, first the segment descriptor must be looked up, then the page descriptor. Does the TLB also work this way, with two levels of lookup? Explain.	6
Q.3	Attempt **any two** of the following:	(12)
a)	An alternative to interrupts is polling. When polling is better choice?	6
b)	Can a system be in a state that is neither deadlocked nor safe? If so, give an example. If not, prove that all states are either deadlocked or safe.	6
c)	Disk requests come in to the driver for cylinders 10, 22, 20, 2, 40, 6 and 38, in that order. A seek takes 6 msec per cylinder moved. How much seek time is needed for (i) First-come, first served (ii) Closest cylinder next (iii) Elevator algorithm (initially moving upward) In all cases, the arm is initially at cylinder 20.	6

Turn over...

d)	What is the difference between a hard link and a symbolic link? Give an advantage of each one?	6
Q.4	Attempt **any two** of the following:	(12)
a)	Explain any three libraries used in Android operating system with their uses.	6
b)	Explain the Dalvik Virtual Machine's architecture.	6
c)	Explain Android Software stack with neat figure.	6
d)	What is use of XML in Android?	6
Q.5	Attempt **any two** of the following:	(12)
a)	What is activity in Android? Explain Activity life cycle in detail.	6
b)	Are there any circumstances in which clock and second chance choose different pages to replace? If so, what are they?	6
c)	What is DMA? Why it is used? Are there any disadvantages of using DMA?	6
d)	An operating system only supports a single directory but allows that directory to have arbitrarily many files with arbitrarily long file names. Can something approximating a hierarchical file system be simulated? How?	6

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