(3 Hours) [75 marks]

N.B:

1. attempt any three questions from each section
2. Answers to the two sections must be written in same answer sheet.
3. Figures to the right indicate full marks.
4. Assume additional data if necessary but state the same clearly.
5. Symbols have their usual meanings and tables have their usual standard design unless stated otherwise.
6. Use of Simple calculators and statistical tables is allowed.

Section I

1	A	Differentiate between portability and mobility. Give examples of mobile and wireless devices.	6
	B	Write a short note on code division multiplexing.	6
2	A	What are near and far terminal? And write problems cause by near and far terminals.	6
	B	Write short note on Functional architecture of GSM system	6
3	A	Write applications of satellite and also explain different handovers in satellite.	6
	B	Explain digital audio broadcasting.	6
4	A	Write a note on Bluetooth.	6
	B	Explain Dynamic host configuration protocol.	6
5	A	Explain Indirect TCP.	6
	B	Write note on wireless datagram protocol.	6

Section II

6	A	Write down the pdf, mean, mode and cdf of Triangular distribution	7
	B	A cola-dispensing machine set of dispensing on average 7.00 ounces of cola per cup. The standard deviation is 0.10 ounces. The distribution amounts dispended follows a normal distribution (Given area under slandered normal curves; from $z=-\infty$ to 2.5 is 0.9938 and from $z=-\infty$ to 1 is 0.8413) i) What is the probability that the machine will dispense between 7.10 And 7.25 ounces of cola? ii) What is the probability that the machine will dispense 7.25 ounces Of cola or more?	6
7	A	A barber shop has two barbers. Assumes that the customer arrive in a Poisson fashion at the rate of 5 per hour. Each barber serves customers according to an exponential distribution with the mean of 15 minutes. i) What is the probability that a customer will not have to wait for hair cut? ii) What is the expected number of customers in the queue?	7
	B	The time intervals between dial up connation to an Internet service provider are exponentially distributed with a mean of 15 seconds. Find the probability that the	6

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third dial up connection occurs after 30 seconds have elapsed.

8	A	What is Pseudo-Random Number? What are the properties and considerations of Pseudo-Random Number?	6
	B	Test whether the 3rd, 8th 13th and so on, numbers in the following sequencing are auto correlated, use $\alpha = 0.05$ and table value = 1.96 Observations : 0.12, 0.01, 0.23, 0.28, 0.89, 0.31, 0.64, 0.28, 0.83, 0.93, 0.99, 0.15, 0.33, 0.35, 0.91, 0.41, 0.60, 0.27, 0.75, 0.88, 0.68 ,0.49, 0.05, 0.43, 0.95, 0.58, 0.19, 0.36, 0.69, 0.87.	7
9	A	Write an algorithm to generate a sequence of 2-digit random numbers using Linear Congruential method. Also generate three random numbers between 0 and 1 with X0 = 37, a=7, c=29 and m = 100.	6
	B	Discuss the steps in model building. Write an algorithm to generate stationary AR(1) time series model.	7
10	A	What are discrete and continuous systems? Using examples, write the difference between them.	6
	B	Explain Kolmogorov Smirnov test to validate uniformity of generated random numbers.	7

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