



Name : .....

Roll No. : .....

Invigilator's Signature : .....

**CS/M.Tech(MBT)/SEM-1/MBT-115A/2009-10  
2009**

**BASIC COMPUTING & BIOSTATISTICS**

Time Allotted : 3 Hours

Full Marks : 70

*The figures in the margin indicate full marks.*

*Candidates are required to give their answers in their own words  
as far as practicable.*

Answer any seven questions.  $7 \times 10 = 70$

1. a) Below is given the distribution of heights of a group of 60 students :

<b>Height (cm)</b>	145 – 149.9	150 – 154.9	155 – 159.9	160 – 164.9	165 – 169.9	170 – 174.9	175 – 179.9	180 – 184.9
<b>No. of students</b>	2	5	9	15	16	7	5	1

Explain the terms 'class limits' and 'class boundaries' with reference to this distribution.

- b) Evaluate the arithmetic mean, median and mode for the following distribution of 'number of telephone calls received per one minute interval' :

<b>No. of calls</b>	0	1	2	3	4	5	6	7	8
<b>Frequency</b>	5	22	31	43	51	40	35	15	3



2. a) Find the mean and the standard deviation of the first  $n$  natural numbers.

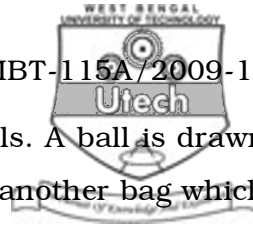
- b) Find the S.D. from the following table, giving the age distribution of 540 members of a Parliament :

<b>Age in years</b>	30	40	50	60	70
<b>No. of members</b>	64	132	153	140	51

3. a) Compute the arithmetic mean, S.D. and variance for the following data :

<b>Scores</b>	4 – 5	6 – 7	8 – 9	10 – 11	12 – 13	14 – 15	Total
<b><math>f</math></b>	4	10	20	15	8	3	60

- b) A batch contains 10 articles of which 4 are defective. If 3 articles are chosen at random, what is the probability that none of them is defective ?
4. a) Five person  $A, B, C, D, E$  speak at a meeting. What is the probability that  $A$  speaks immediately before  $B$  ?
- b) An article manufactured by a company consists of two parts I and II. In the process of manufacture of part I, 9 out of 100 are likely to be defective. Similarly 5 out of 100 are likely to be effective in the manufacture of part II. Calculate the probability that the assembled article will not be defective.



5. a) A bag contains 5 red and 4 black balls. A ball is drawn at random from the bag and put into another bag which contains 3 red and 7 black balls. A ball is drawn randomly from the second bag. What is the probability that it is red ?
- b) State the Baye's theorem. In a population  $P(\text{well}) = 99\%$  and  $P(\text{ill}) = 1\%$ . Suppose when the screening test is applied to a person not having the disease, there is 1% of chance of getting a false positive. What is the probability that person is ill and the result is also positive.
6. a) Define the data abstraction level. What are the differences between Data Definition Language and Data Manipulation Language.
- b) Draw the database system and define the following terms : DDL interpreter, Buffer manager, Data Dictionary.
7. a) What is composite attribute, derived attribute, existence dependencies, candidate key, weak entity set.
- b) Draw an E-R diagram of a university database for the scheduling of classrooms for final exams. This database could be modeled as the set of three entity sets of course, section and room.



8. a) What is Broadcasting ? Describe LAN with Bus and ring topology.
- b) What is connection oriented services ? To establish a connection through connection oriented services, state the five service primitives.
9. a) What is WiFi ? Describe ATM virtual circuits.
- b) Describe the OSI reference model with diagram.
10. a) Take a string and find if there is a match on 'ATOM' word. Also write the syntax of substituting of a word in a given string globally and also ignore the case.
- b) Open two files and write the content of one file on the other file. What is dot and modulus operator ?
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