INDIAN INSTITUTE OF INFORMATION TECHNOLOGY DHARWAD

MID-TERM EXAMINATION EVEN SEMESTER 2020-21

DS101 MATHEMATICS FOR DATA SCIENCE

Date: 01-02-2021 Duration: 60 minutes Max. Marks: 30 Reg. No.:

Note:

- *Clearly mention the assumptions made (if any) in derivations or solving problems.*
- *Answer all questions, briefly to the point.*

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1. Define the following terms: (a) Frequency distribution (b) Measure of central tendency (c) Central Limit Theorem statement (d) Strong law of large numbers statement and (e) Statistics. **(2*5=10M)**

2. Calculate the mean, median, and mode for the following data. **(4+3+3=10M)**

CI	5.5-10.5	10.5-15.5	15.5-20.5	20.5-25.5	25.5-30.5	30.5-35.5	35.5-40.5
Freq.	1	2	3	5	4	3	2

3. On a game show, a contestant can select one of four boxes. Box 1 contains one $100 bill and nine $1 bills. Box 2 contains two $100 bills and eight $1 bills. Box 3 contains three $100 bills and seven $1 bills. Box 4 contains five $100 bills and five $1 bills. The contestant selects a box at random and selects a bill from the box at random. If a $100 bill is selected, find the probability that it came from box 4. **(5=5M)**

4. A recent survey asked 100 people if they thought women in the armed forces should be permitted to participate in combat. The results of the survey are shown. Find these probabilities.

   a. The respondent answered yes, given that the respondent was a female.

   b. The respondent was a male, given that the respondent answered no. **(2.5+2.5=5M)**

Gender	**Yes**	**No**	**Total**
Male	32	18	50
Female	8	42	50
Total	40	60	100