E 2449

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Reg. No....................................

Name...................................

B.Sc. DEGREE (C.B.C.S.S.) EXAMINATION, NOVEMBER 2015

First Semester

Complementary Course—Statistics BASIC STATISTICS

[for B.Sc. Mathematics, Physics, Computer Applications]

(2013 Admission onwards)

Time : Three Hours   Maximum : 80 Marks

Part A

Answer all questions.
Each question carries 1 mark.

1. Write down any one misuse of statistics.

2. What is Primary data ?

3. What is direct personal investigation ?

4. What is cmulative frequency table ?

5. Define Ogive.

6. Define harmonic mean.

7. What is meant by mutually exclusive events ?

8. Write down the sample space when two Coins are tossed.

9. Define Simple aggregative index number.

10. Define deflating.

$(10 \times 1 = 10)$

Part B

Answer any eight questions.
Each question carries 2 marks.

11. What is meant by systematic sampling ?

12. Distinguish between inclussive and exclussive classes.

13. What is meant by bar diagram ?

14. Write down the differences between ratio scale and natural scale.

15. Calculate the harmonic mean of 7, 3, 2, 5, 8, 11, 1 and 14.

16. What are the properties of probability ?

17. If A and B are two mutually exclusive events and P (A) = 0.45 and P (B) = 0.35 find P (A or B).

18. What do you mean by independence of two events ?

Turn over

19. If $P(A) = \dfrac{2}{5}$, $P(B) = \dfrac{3}{8}$ and $P(A \cap B) = \dfrac{1}{20}$ find $P(A \cup B)$ and examine whether A and B are independent.

20. Given $P(B_1) = P(B_2) = P(B_3) = \dfrac{1}{3}$ $P(A/B_1) = \dfrac{1}{2}$, $P(A/B_2) = \dfrac{1}{4}$ and $P(A/B_3) = \dfrac{1}{5}$ find $P(B_2/A)$.

21. What is meant by family budget survey ?

22. What are the limitations of index numbers ?

$(8 \times 2 = 16)$

Part C

Answer any six questions.
Each question carries 4 marks.

23. Construct a less than Ogive for the data :

Class	:	0-10	10-20	20-30	30-40	40-50	50-60
Frequency	:	3	6	15	9	5	2

    and find the median from the Ogive.

24. What do you mean by Classification of data ? What are the purpose and importance of classification ?

25. Calculate the GM and median of 18, 48, 148, 78, 0.42, 0.032, 49, 72, 0.0041, 741 and 21.

26. Calculate mean deviation about mean of the following data :

Marks below	:	90	80	70	60	50	40	30	20
No. of students	:	120	95	78	51	43	28	19	6

27. State and prove addition theorem in probability for two events. Deduce it for three events.

28. A box contains 4 white and 5 black balls. Another box contains 3 white and 7 black balls. One ball is drawn from each box. Find the probability that (a) both are of same colour ; (b) both are of different colour.

29. If P (A) = 0.5, P (B) = 0.6 and $P(A \cap B) = 0.2$, find (i) $P(A \cup B)$; (ii) $P(A')$; (iii) $P(A \cap B')$; (iv) $P(A' \cap B)$.

30. The probability that a female worker in an IT company is affected with vision problem is 0.07 and that for a male worker is 0.09. Out of 2000 workers in the company 800 are females. One worker is selected at random and is found affected with vision problem. What is the probability that the worker is a male ?

31. What is time reversal test ? Examine whether the following index numbers satisfy time reversal test :

    (a) Laspeyer's index number.

    (b) Fisher's index number.

    (c) Paasche's index number.

                                                                          $(6 \times 4 = 24)$

Part D

*Answer any **two** questions.*
Each carries 15 marks.

32. (a) Calculate S.D. of the data :

Variate	:	6	12	18	24	30	36	42	48
Frequency	:	3	9	11	21	29	18	13	4

    (b) What are the merits of standard deviation ?

33. (a) The mean of the combined sample of size 100 is 21 of which the mean of a fraction of size 55 is 16. Find the mean of the other fraction.

    (b) In a moderately assymmetrical distribution the mode and mean are 22.8 and 24. Find median.

34. (a) State and prove Baye's theorem.

    (b) A bag contains 10 balls either black or white. It is not known how many of each colour is in the bag. A ball is drawn at random and is found to be black. What is the probability that the bag contains at least 4 white balls.

35. (a) Explain the meaning uses and limitations of Index Numbers.

    (b) Compute Laspeyer's and Paasche's index numbers and hence Fisher's index number for the following data :

		Wheat	Rice	Maize
Quantity	1999	18	24	11
	2004	13	21	9
Price	1999	48	96	13
	2004	63	111	18

                                                                          $(2 \times 15 = 30)$