Statistics

H.S.S.C (11ᵗʰ)-A-2022

Time : 20 Minutes

Paper : I

Objective

Marks : 17

Paper Code | 6 | 1 | 8 | 1 |

SECTION–A

Q.1	Questions	A	B	C	D
1.	The uniform of the student is an example of:	Variable	Discrete variable	Continuous variable	Constant
2.	Row caption is also called:	Tittle	Body	Box-head	Stub
3.	Total angle of the pie-chart is:	$270°$	$300°$	$320°$	$360°$
4.	The empirical relationship between mean, median and mode is, mode =	3 mean – 2 median	2 mean – 3 median	3 median – 2 mean	2 median – 3 mean
5.	Which of the given average cannot be less than zero?	A.M	G.M	H.M	Median
6.	Which average can only be applicable in qualitative data?	A.M	Median	Mode	H.M
7.	The first moment about origin is:	Zero	One	Mean	Variance
8.	In symmetrical distribution $Q_1 = 4$, $Q_3 = 12$ then median is:	8	4	16	Zero
9.	The first moment about mean is:	Zero	One	Variance	S.D
10.	In a fixed base method which period is taken as 100 (hundred):	Preceding	Following	Base	Current
11.	Cost of living index no. are:	Simple	Composite	Un-weighted	Chain
12.	$^nP_r =$	$\dfrac{n!}{r!(n-r)!}$	$\dfrac{n!}{r!}$	$\dfrac{n!}{(n-r)!}$	$\dfrac{(n-r)!}{n!}$
13.	If A & B are two mutually exclusive events, then $P(A \cap B) =$	0	1	S	ϕ
14.	The probability function cannot be:	< 0	> 0	0	Fractional
15.	Expected value of a constant is:	Zero	One	Two	Constant itself
16.	A binomial distribution has variance:	nq	np	npq	$\sqrt{npq}$
17.	Hypergeometric distribution has parameters:	n,p	n,p,q	N,n,k	n,k

Roll No. ☐☐☐☐☐☐ (To be filled in by the candidate)

Statistics   **H.S.S.C (11ᵗʰ)-A-2022**   Time : 2:40 Hours

Paper : I   Sul – 22   Subjective   Marks : 68

Note :- Section B is compulsory. Attempt any Three Questions from Section C.

SECTION – B

2. Write short answers to any Eight parts.   (8 x 2 = 16)

i. Define discrete variable and give examples.

ii. What is primary data?

iii. Describe any two properties of arithmetic mean.

iv. What are the desirable qualities of a good average.(any two)?

v. Describe any two demerits of geometric mean.

vi. Compute geometric mean by using the basic definition: $45, 30, 35, 40, 44, 32, 42, 37$

vii. Compute upper quartile (i.e. third quartile) from the given data: $95.05, 94.90, 94.50, 84.60, 88.03$.

viii. If $\sum p_n.q_n = 272$, $\sum p_o.q_n = 194$, calculate Paasche's index number.

ix. If Laspeyre's index$=104.5$ and Paasche's index$=103.9$. Compute Fisher Index Number.

x. Describe any two limitations of index numbers.

xi. Describe the importance of consumer price index numbers.

xii. If $\sum p_n.q_o = 280.84$, $\sum p_o.q_o = 258.18$, compute C.P.I by aggregative expenditure method.

3. Write short answers to any Eight parts.   (8 x 2 = 16)

i. What is frequency histogram?

ii. Define Class Frequency with an example.

iii. Enlist the absolute measures of dispersion.

iv. Differentiate symmetry and skewness.

v. Define Standard Deviation.

vi. Given $X = 4, 6, 8, 8, 10$, find mean deviation from mode.

vii. If $var(x) = 25$ then find $var(2x + 4)$

viii. What would be the shape of the distribution if:
 (a) Mean=Median=Mode
 (b) Mean>Median>Mode
 (c) Mean<Median<Mode

ix. Explain sample space of two coins.

x. State additional law for not mutually exclusive events.

xi. Differentiate between simple and compound events.
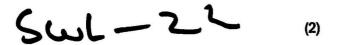
xii. What is meant by dependent event? Give an example.

4. Write short answers to any Six parts.   (6 x 2 = 12)

i. Define the Discrete Random Variable.

ii. If $E(X) = 5$ and $E(X^2) = 50$, find σ^2.

iii. Given below is a function. Is it a probability function?

x	0	1	2
$P(x)$	$\frac{5}{8}$	$\frac{4}{8}$	$\frac{1}{8}$

iv. What is probability density function?

v. If $E(X) = 1.15$, then find $E(3X + 5)$.

vi. If $n = 10$, $p = 0.4$, then find variance of binomial distribution.

vii. In a binomial distribution $n = 3$, $p = \frac{1}{2}$, find $P(X = 3)$.

viii. Given that $N = 10$, $n = 4$, $k = 3$, find $P(X = 1)$.

ix. Write any two properties of binomial experiment.

(Turn Over)

SECTION – C

Each question carries 4 + 4 = 8 Marks

5. (a) Calculate the geometric mean for the following data:

Marks	10 – 19	20 – 29	30 – 39	40 – 49	50 – 59
No. of Students	5	25	40	20	10

(b) The following table gives the frequency distribution of heights recorded to the nearest inch of 100 students. Find mode.

Heights	60 – 62	63 – 65	66 – 68	69 – 71	72 – 74
No. of Students	5	18	42	27	8

6. (a) Calculate variance and standard deviation for the data: $3, 6, 2, 1, 7, 5$

(b) Calculate first 4 moments about origin from the following data:

x	1	2	3	4	5
f	2	5	7	10	4

7. (a) Find the index numbers from the following data taking 2010 as base year.

Year	2010	2011	2012	2013	2014
Prices	15	19	21	30	37

(b) A and B are two independent events. If $P(A) = 0.4, P(B) = 0.3$

Find   (i) $P(A \cap B)$

        (ii) $P(A \cup B)$

8. (a) A continuous random variable "X" has the probability density function given by $f(x) = \dfrac{x+1}{8}$ $2 < x < 4$

Find   (i) $P(2 < x < 4)$

        (ii) $P(x < 3.5)$

(b) A discrete random variable "X" has a probability function given by $P(x) = C(3 - X)$ for $X = 0, 1, 2, 3$. Find the value of "C". Also find $E(X)$ and $E(X^2)$.

9. (a) Find the value of "n" and "p" in a binomial distribution. Which has mean 15 and standard deviation 5.

(b) A committee of size 3 is to be selected from 4 women and 6 men. Obtain the probability distribution of number of men in the committee.

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