2020

GEOGRAPHY — HONOURS

Paper : CC-7

(Statistical Methods in Geography)

Full Marks : 50

The figures in the margin indicate full marks.

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

Use of Scientific calculators is allowed in this Examination / Paper.

Group - A

Answer *any five* questions (each within **50** words). 2×5

1. Distinguish between variable and attribute.

2. What is the relationship between mean, median and mode in a positively skewed frequency distribution?

3. Differentiate between population and sample.

4. Examine whether the following variables are discrete or continuous :

   (a) Age of a person

   (b) Size of land holding

   (c) Size of a family

   (d) Temperature of a place.

5. A jar contains 6 granite pebbles, 9 basalt pebbles and 10 sandstone pebbles. If a pebble is drawn from the jar at random, what is the probability that this pebble is sandstone?

6. Compute the mode of age in years in a unimodal distribution with moderate skewness, given mean equals to 25 years and median equals to 23 years.

7. What are partition values and how are they represented diagrammatically?

Group - B

Answer *any four* questions (each within **150** words). 5×4

8. Define probability. State the three axioms of probability.

9. Distinguish between systematic and stratified sampling.

Please Turn Over

10. Prepare a grouped frequency distribution table from the following data :

Table no. - 1

Sex Ratio (Females / '000 Males)	Number of states and U.T.s.
< 700	0
< 750	1
< 800	2
< 850	5
< 900	11
< 950	23
< 1000	33
< 1050	34
< 1100	35

11. It is given that Pearson's bi-variate correlation co-efficient (r) between use of fertilizers and agricultural productivity is 0.82 and the number of pairs of observations is 17. Determine using the T-test of significance whether the relationship between use of fertilizers and agricultural productivity is significant at 5% level of significance. (Refer to Table-A1 – Critical value of students' T)

12. Compare the relative advantages of using standard deviation and co-efficient of variation as methods of dispersion. If the standard deviation of income is ₹ 12 and the mean is ₹ 30, find the co-efficient of variation.

13. What are the differences between Primary and Secondary data?

Group - C

Answer *any two* questions (each within **500** words).

14. (a) Define null hypothesis and alternative hypothesis.

  (b) A random sample of 100 people reveals the following details regarding their educational attainment level and salary. Use the chi-square test to determine whether there is any relationship between the level of educational attainment and the level of salary and whether the relationship is significant at 5% level of significance. (Table – A2 — Critical values of chi-square)   2+8

Table - 2 : Educational Attainment Levels and Salary Levels of Population

Educational Attainment Levels	Low Salary	Medium Salary	High Salary	Total
Graduate	5	10	20	35
Medium	9	16	15	40
Elementary	12	8	5	25
Total	26	34	40	100

15. (a) What is the formula for Spearman's Rank Correlation?

(b) From the following data in Table – 3, find the linear regression equation required for estimation of 'y'. 2+8

Table - 3 : Relative Relief and Road Density of a given region

Serial No.	Relative Relief (in metres)	Road Density (km per sq km)
1	20	2.50
2	80	2.00
3	240	1.50
4	380	0.75
5	120	1.00
6	640	0.25
7	280	1.25
8	520	0.25
9	440	0.75
10	320	1.00

16. (a) What is time series?

(b) From the given data, compute and draw the trend by four-yearly moving average. Graphically represent the time-series data.

Year	Electricity Generated (million kw)
2001	101
2003	107
2005	113
2007	121
2009	136
2011	148
2013	142
2015	140

2+4+2+2

17. Discuss the different scales of measurement of data with suitable examples. 10

11.   **Table - A1**

	Significance level (one-tailed)				
	0.05	0.025	0.01	0.005	0.00005
Degrees of freedom	Significance level (two-tailed)				
	0.1	0.05	0.02	0.01	0.001
1	6.31	12.71	31.82	63.66	636.62
2	2.92	4.30	6.97	9.93	31.60
3	2.35	3.18	4.54	5.84	12.92
4	2.13	2.78	3.75	4.60	8.61
5	2.01	2.57	3.37	4.03	6.86
6	1.94	2.45	3.14	3.71	5.96
7	1.89	2.37	3.00	3.50	5.41
8	1.86	2.31	2.90	3.35	5.04
9	1.83	2.26	2.82	3.25	4.78
10	1.81	2.23	2.76	3.17	4.59
11	1.80	2.20	2.72	3.1!	4.44
12	1.78	2.18	2.68	3.05	4.32
13	1.77	2.16	2.65	3.01	4.22
14	1.76	2.15	2.62	2.98	4.14
15	1.75	2.13	2.60	2.95	4.07
16	1.75	2.12	2.58	2.92	4.01

14. (b)   **Table A2– Critical Values of CHI-Square**

Values of x^2 with probability P of being exceed in random sampling v = number of degrees of freedom.					
P \ v	0.20	0.10	0.05	0.02	0.01
1	1.64	2.71	3.84	5.41	6.63
2	3.32	4.61	5.99	7.82	9.21
3	4.64	6.25	7.81	9.84	11.34
4	5.90	7.78	9.49	11.67	13.28
5	7.29	9.24	11.07	13.39	15.09
6	8.56	10.64	12.59	15.03	16.81
7	9.80	12.02	14.07	16.62	18.48
8	11.03	13.36	15.51	18.17	20.09
9	12.24	14.68	16.92	19.68	21.67
10	13.44	15.99	18.31	21.16	23.21