2023

GEOGRAPHY — HONOURS

Paper : CC-7

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 of the following.

1. Differentiate between nominal and ordinal measurements of data. 2

2. Which of these is a discrete variable and which is a continuous variable? 2

   (a) Temperature (b) Production of Tea (c) Population Density (d) Number of Water bodies in different CD blocks.

3. Given that the median of a series exceeds the mean by 5, use the relationship between mean, median and mode to determine by how much does the mode exceed this mean? 2

4. State any two properties of arithmetic mean. 2

5. The mean of seven months temperature is 15°C. Temperature of next month is 23°C, which is added to the above. What is the mean of these eight months temperature? 2

6. The probability of selecting a granite pebble randomly from a heap of 900 assorted pebbles is 0.18. What is the number of granite pebbles in the heap? 1+1

7. What is 'Stub' and 'Caption' in context of a table? Determine the variance of rainfall if the coefficient of variation of rainfall is 25% and mean is 60 mm. 1+1

8. Select a suitable method of calculating dispersion : 1+1

   (a) Frequency distribution with open ended class.

   (b) Comparison of variability of temperature and rainfall of a place.

Please Turn Over

(2)

Group - B

Answer *any four* questions of the following.

9. Prepare a frequency distribution table from the given data in Table - 1 and determine the percentage of villages with literacy rate between 75% and 85%.   3+2

Table - 1 : Distribution of Villages based on Literacy Rate

Literacy Rate (%)	Number of Villages
> 50	121
> 55	113
> 60	98
> 65	81
> 70	63
> 75	37
> 80	15
> 85	06
> 90	02
> 95	01

10. Compare the advantages of random and stratified sampling methods to collect primary data.   5

11. Compute the value of Spearman's Rank Correlation Coefficient between fertilizer and yield with the data in Table-2 and interpret the relationship between them.   4+1

Table - 2

Region	Fertilizer	Yield
A	Medium	Very Good
B	Very Low	Very Poor
C	Very High	Moderate
D	Low	Poor
E	High	Good

12. Calculate the Mean Deviation from the 10 years' rainfall data given as follows in cms :

    97, 100, 95, 85, 115, 112, 102, 106, 87 and 101.   5

13. What kind of distribution does a bell-shaped curve represent? Discuss any four properties of this distribution.   1+4

14. In an analysis of average hours of sunshine and average soil moisture examined for 9 months, it was found that $\sum x = 50, \sum y = 100, \sum x^2 = 400, \sum y^2 = 1700, \sum xy = 800$. Determine the Pearson's correlation coefficient 'r'. Test the hypothesis that the computed correlation coefficient is not significantly different from zero at 1% level of significance (i.e. average hours of sunshine and average soil moisture are not significantly associated). **(Refer to Supplied Table A1 – Critical Value of Student's 't')**   2+3

Group - C

Answer *any two* questions of the following.

15. Discuss the importance of Statistics in Geographical studies. Explain descriptive and analytical statistics with suitable examples.   2+8

16. (a) Define level of significance.

(b) A random sample of 200 people revealed the follwoing details regarding distribution of workers across different economic sectors by gender (Table-5). Using Chi-square test determine whether there is any relationship between gender and employment in specific sectors and whether the relationship is significant at 1% level of significance. **(Refer to Supplied Table A2 — Critical Values of Chi-Square).**   2+8

Table-5 : Employment across Economic Sectors by Gender

Gender	Primary Sector	Secondary Sector	Tertiary Sector	Total
Female	24	10	15	49
Male	9	17	25	51
Total	33	27	40	100

17. (a) What do you mean by cyclic and seasonal trend in time series data analysis?

(b) On the basis of data provided in Table - 6, draw a time series graph to show the milk production in India and compute and draw the trend by four year moving average.   2+(2+6)

Table-6 : Milk Production (MMT) in India

Year	Milk Production (MMT)
2011-12	128
2012-13	132
2013-14	138
2014-15	146
2015-16	155
2016-17	165
2017-18	176
2018-19	188
2019-20	198
2020-21	210
2021-22	221
2022-23	231

18. (a) From the following table, find the regression equation required for estimation of y.

    (b) What will be the expected road density if the relative relief is 500 mts?   8+2

Table

Grid No.	Relative Relief (in mts.)	Road density (Km/km^2)
1	880	0.0
2	420	0.5
3	600	0.5
4	518	0.25
5	120	3.5
6	120	1.75
7	460	0.25
8	260	2.25
9	80	2.0
10	240	1.5

Q. No. 14.

Table : A1

Critical Values of Student's t				
Significance level (one-tailed)				
0.05	0.025	0.01	0.005	0.00005
Degrees of	Significance level (two-tailed)			
freedom	0.1	0.05	0.02	0.01	0.001

Degrees of freedom	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

Q. No. 16(b)

Table : A2

Critical Values of CHI-Square

Values of x^2 with probability P of being exceed in random smapling

v = number of degrees of freedom.

P \\ v	0.20	0.10	0.05	.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