ODD SEMESTER EXAMINATION: 2020-21

Exam ID Number_____

Course_____ Semester_____

Paper Code _____Paper Title _____

Type of Exam: _____ (Regular/Back/Improvement)

Important Instruction for students:

1. Student should write objective and descriptive answer on plain white paper.
2. Give page number in each page starting from 1st page.
3. After completion of examination, Scan all pages, convert into a single PDF, rename the file with Class Roll No. **(2019MBA15)** and upload to the Google classroom as attachment.
4. Exam timing from 10am – 1pm (for morning shift).
5. Question Paper will be uploaded before 10 mins from the schedule time.
6. Additional 20 mins time will be given for scanning and uploading the single PDF file.
7. Student will be marked as ABSENT if failed to upload the PDF answer script due to any reason.

MA/M.Sc. GEOGRAPHY
THIRD SEMESTER
QUANTITATIVE TECHNIQUES
MGE-302

Duration : 3 hrs.   **Full Marks : 70**

⟮ <u>**PART-A : Objective**</u> ⟯

Time : 20 min.   **Marks : 20**

Choose the correct answer from the following: *1X20=20*

1. The ratio between the sum of observations and the number of observations is called:
   a. Mean   **b.** Median
   c. Mode   **d.** Standard deviation

2. ………………is the half of the difference between the third quartile and the first quartile.
   a. Quartile deviation   **b.** Standard deviation
   c. Range   **d.** Average deviation

3. Regression equation formula is:
   a. Y=a+b1x1+bixi….+bnxn   **b.** Y=a+bX
   c. Y=∑Y/n   **d.** Y=a+b/n

4. Which of the following is **not** a measure of central tendency?
   a. Percentile   **b.** Quartile
   c. Standard Deviation   **d.** Mode

5. Chi-square is symbolically written as:
   a. Ki2   **b.** χ^2
   c. Ci2   **d.** None of the above

6. If the variance of a normal population is unknown, the corresponding sampling distribution can be defined using:
   a. F-distribution   **b.** t- distribution
   c. chi square   **d.** z- test

7. 25% of 25% of a quantity is x% of the quantity where x is:
   a. 6.25%   **b.** 12.5%
   c. 25%   **d.** 50%

8. Statistical investigation involves:
   a. Collection of data   **b.** Classification of data
   c. Tabulation   **d.** None of above

9. In case, coefficient of correlation is positive the curve representing the relation will be:
   a. Upward sloping   **b.** Downward sloping
   c. Vertical   **d.** Horizontal

10. Correlation between rainfall and Population is:
    a. Negative   **b.** Positive
    c. Zero   **d.** None of above

11. Coefficient of correlation is independent of:
    a. Change of scale   **b.** Change of origin
    c. a &b   **d.** None of above

12. Coefficient of correlation in case of frequency distribution could not be calculated in case of:
    a. Karl Pearson   **b.** Spearman
    c. Least square method   **d.** None of the above

13. Relation between two variables is determined by:
    a. Dispersion   **b.** Mean
    c. Correlation   **d.** Regression

14. The data presented in the form of frequency data is known as:
    a. Grouped data   **b.** Ungrouped data
    c. Secondary data   **d.** Calculated data

15. If the order of matrix A is $m \times p$ and the order of B is $p \times n$. Then the order of matrix AB is?
    a. $m \times n$ **b.** $n \times m$
    c. $n \times p$ **d.** $m \times p$

16. What is 'a', If
$$B = \begin{bmatrix} 1 & 4 \\ 2 & a \end{bmatrix}$$ is a singular matrix?
    a. 5   **b.** 6
    c. 7   **d.** 8

17. If A and B are symmetric matrices of the same order, then:
    a. AB is a symmetric matrix   **b.** A – B is a skew-symmetric matrix
    c. AB + BA is a symmetric matrix   **d.** AB – BA is a symmetric matrix

18. If A and B matrices are of same order and A + B = B + A, this law is known as:
    a. Distributive law   **b.** Commutative law
    c. Associative law   **d.** Cramer's law

19. If the sum of two matrices A and B is zero matrix, then A and B are said to be:
    a. Multiplicative inverse of each other   **b.** Additive inverse of each other
    c. Transpose of each other   **d.** Determinant of each other

20. Find the minor of the element of second row and third column in the following determinant.
$$\begin{bmatrix} 2 & -3 & 5 \\ 6 & 0 & 4 \\ 1 & 5 & -7 \end{bmatrix}$$
    a. 13   **b.** 4
    c. 5   **d.** 0

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PART-B : Descriptive

Time : 2 hrs. 40 min.   **Marks : 50**

[Answer question no.1 & any four (4) from the rest]

1. Write the need of quantification in geographical research? Also define Population, Sample and Variables in statistics.   4+2+2+2=10

2. What do you mean by Primary and secondary data collection? Explain the significance of Group and ungrouped data in geographical research.   5+5=10

3. What is a geographical data matrix? Prepare a data matrix with some hypothetical data.   4+6=10

4.
    a) If A = $\begin{bmatrix} 1 & -2 & 1 \\ 2 & 1 & 3 \end{bmatrix}$ and B = $\begin{bmatrix} 2 & 1 \\ 3 & 2 \\ 1 & 1 \end{bmatrix}$, then find AB.   5+5=10

    b) Solve the equations with the help of matrix method:
    $x_1 + 2x_2 + 3x_3 = 14$
    $4x_1 + 5x_2 + 6x_3 = 32$
    $6x_1 + 7x_2 + 9x_3 = 47$

5. Explain about the concept of correlation with their types and properties.   4+3+3=10

6. Define the concept of regression. Put forward the types and properties of regression.   3+7=10

7. Put forward definition of t-test. Perform t-test to check Memory capacity of students was tested before and after giving the nourishing food (Horlicks). State whether Horlicks was effective or not from the following scores-   2+6+2=10

Roll no	1	2	3	4	5	6	7	8
Before	8	1	4	6	6	4	1	2
After	5	7	5	3	5	3	3	9

    (Tabled t value is 2.145 at 0.05α with calculated df.)

8. What do you mean by Principal Component Analysis (PCA)? Explain about the type of error in hypothesis testing.   5+5+10

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