SECOND SEMESTER B.VOC. PROGRAMME EXAMINATION, MAY 2018

Multimedia/Software Development/Software Technology

GEC 2NM 06—BASIC NUMERICAL SKILLS (COMMON FOR MULTIMEDIA, SOFT DEV, AND SOFT TECH)

Time : Three Hours   Maximum : 80 Marks

Part A

*Answer **all** questions, each carries 1 mark.*

1. Kelly's co-efficient of skewness is based on ——————.

     (a) Mean.   (b) Quartiles.

     (c) Percentiles.   (d) None of these.

2. Bar diagrams are ——————.

     (a) One dimensional.   (b) Two dimensional.

     (c) Three dimensional.   (d) None of these.

3. Diagrams are the tools of ——————.

     (a) Collection of data.   (b) Analysis of data.

     (c) Summarisation of data.   (d) Presentation of data.

4. Variables are characteristics which are ——————.

     (a) Qualitative.   (b) Capable of measurement.

     (c) Not reliable.   (d) Not consistent.

5. $x = 4 + 8y$ is ——————.

     (a) Quadratic.   (b) Linear.

     (c) Exponential.   (d) None of these.

Fill in the blanks :

6. Equation $ax^2 + b = 0$ is ——————.

7. A matrix with equal no. of rows and columns is ——————.

8. The sum at the end of 2 years for Rs. 1,000 at 10% p.a compounded yearly ——————.

9. —————— are filled by the informants.

10. Average is a measure of ——————.

                                       $(10 \times 1 = 10 \text{ marks})$

Part B

Answer any **eight** *questions, each carries 2 marks.*

11. The mean and standard deviation of 100 observations are 30 and 10 respectively. Later on it was discovered that two items were misread as 12 and 31, instead of 21 and 13. Find the correct value of mean and standard deviation.

12. Specify the reasons behind the acceptance of standard deviation as the best measure of dispersion.

13. " Index numbers are economic barometers." Explain.

14. Explain the components of time series.

15. 2/3 of a number increased by 5 equals 27. Find the number.

16. Find the sum of first n natural numbers.

17. Write a note on;

    (a) Singleton set.

    (b) Subset of a set.

18. State the major limitations of statistics.

19. What are important factors that guides in deciding the type of data to be collected ?

20. Write a note on Lorenz curve.

$(8 \times 2 = 16 \text{ marks})$

Part C (Short Essay Questions)

Answer any **six** *questions, each carries 4 marks.*

21. State the important methods of collecting primary data.

22. The following table gives the lifetime in hours of 400 electric bulbs of certain make. Find the mean lifetime of these bulbs.

Life time (in hours)	No. of bulbs
Less than 300	0
Less than 400	20
Less than 500	60
Less than 600	116
Less than 700	194
Less than 800	265
Less than 900	324
Less than 1000	374
Less than 1100	392
Less than 1200	400

23. Let $P = \begin{bmatrix} 0 & 1 \\ 2 & 3 \end{bmatrix}$, $Q = \begin{bmatrix} -1 & 2 \\ 4 & 3 \end{bmatrix}$ and $R = \begin{bmatrix} 2 & -1 \\ 6 & 5 \end{bmatrix}$. Find $P(Q + R) = PQ + PR$.

24. Explain the various absolute measures of dispersion.

25. A factory employs 100 workers of whom 60 work in the first shift and 40 work in the second shift. The average wage of all the 100 workers is Rs.38. If the average wage of 60 workers of the first shift is Rs.40, find the average wage of the remaining 40 workers of the second shift.

26. Calculate the standard deviation from the data given below :

Size of item	3.5	4.5	5.5	6.5	7.5	8.5	9.5
Frequency	3	7	22	60	85	32	8

27. The first four central moments of a distribution are 0, 2.5, 0.7 and 18.75. Test the skewness and kurtosis of the distribution.

28. Among 60 people, 35 can speak in English, 40 in Malayalam and 20 can speak in both the languages. Find the no. of people who can speak in both the languages. Find the no. of people who can speak in atleast one of the languages. How many cannot speak in any of these languages ?

(6 × 4 = 24 marks)

Part D

Answer any **two** *questions, each carries 15 marks.*

29. Fit a straight line trend by the method of least squares to the following data. Assuming that the same rate of change continues. What would be the predicted earnings for the year 2018 ?

Year	2007	2008	2009	2010	2011	2012	2013	2014
Earnings (Rs. Lakhs)	38	40	65	72	69	60	87	95

30. Find the adjoint of the matrix $\begin{bmatrix} 1 & 1 & 1 \\ 1 & 2 & -3 \\ 2 & -1 & 3 \end{bmatrix}$ and verify the theorem $A\,(Adj\ A) = (Adj\ A)\,A = |A|\ I$.

31. Define the term Statistics and explain its functions and limitations.

(2 × 15 = 30 marks)