

Vidya Vikas Mandal's
Shree Damodar College of Commerce & Economics, Margao-Goa
FY BVoc (ST), Semester-I, S Supplementary Examination June 2023
STG 103 Quantitative Techniques

Duration: 2hrs

Max Marks: 40

Instructions:

- 1) Start each question on fresh page.
- 2) Figures to the right indicate maximum marks.
- 3) Non-scientific, non-programmable calculators are allowed

I. Attempt any FOUR of the following

[4x4=16 Marks]

- a. A grocer has a sale of Rs 6435, Rs. 6927, Rs. 6855, Rs. 7230 and Rs. 6562 for 5 consecutive months. Calculate the sale he must have in the sixth month so that he gets an average sale of Rs. 6500.
- b. Shahid and Nayeem can do a piece of work in 9 days, Nayeem and Dylan can do it in 12 days, Shahid and Dylan can do it in 18 days. Calculate the number of days Shahid, Nayeem and Dylan will finish it, working together.
- c. Find the ratio in which pulses sold at Rs. 14.40 a kg must be mixed with pulses at Rs. 11.40 a kg to produce a mixture worth Rs. 12.60 a kg.
- d. Gurunath buys a color T.V set for Rs. 15,200 and sells it at a loss of 20%. Calculate the selling price of the T.V set.
- e. Three students contested an election and received 1000, 5000 and 10000 votes, respectively. Calculate the percentage of individual candidates and the total votes the winning student gets.
- f. Divide 255 in the ratio 3:2 and 2:5.

II. Attempt the following

- A. Find the volume, Curved surface area and Total surface area of a cone with slant height 17m and diameter of base 30m. **[6 Marks]**

OR

- B. If $f(x) = x^2 - 1$ and $g(x) = \frac{1}{(x-1)}$ find: $f \circ g(x)$, $g[f(x)]$, $f[f(x)]$, $f[g(2)]$, $g[g(x)]$, $f(3) + g(2)$ **[6 Marks]**
- C. Find the general expression for sum of the Geometric Progression $7/10, 7/100, 7/1000, \dots$ to n terms. Hence find sum of first 6 terms. **[6 Marks]**

III. Attempt the following

- A. Daniel borrows Rs. 15000 for 6 years at 12% p. a. simple interest. He immediately lends it to Prathamesh at $75/4\%$ p. a. for 6 years. Find his gain on the transaction per year. Also calculate how much interest Daniel would have gained if he had lent Prathamesh the same amount for the same time, at the same rate of interest compounded annually. **[6 Marks]**

OR

- B. A man travelled a distance of 61kms in 9 hours. He travelled partly on foot at 4km/hr and partly on bicycle at 9km/hr. Calculate the distance travelled on foot. **[6 Marks]**
- C. Find the area of the triangle with vertices $(2, -2)$ $(-3, -3)$ $(1, 6)$. Also verify if it is a right-angled triangle. **[6 Marks]**