

QP CODE: 21100730



Reg No :

Name :

B.Voc Degree Examination, MARCH 2021

First Semester

B.Voc Food Technology and Analysis

BOVS101 - GENERAL MATHEMATICS AND STATISTICS

2018 Admission Onwards

33F6EFD0

Time: 3 Hours

Max. Marks : 80

Part A

*Answer any **ten** questions.*

*Each question carries **2** marks.*

1. Define equality of matrices.
2. Use suitable example for the addition of 2×2 Zero matrix and 2×2 Scalar matrix.
3. Given $A = \begin{bmatrix} 1 & 0 \\ 0 & -1 \end{bmatrix}$. Find A^2
4. Calculate the derivative of the function and find the values of derivatives at the indicated points.
Where $f(x) = 1 - 3x^2$. Find $f'(\frac{1}{2})$, $f'(0)$
5. Calculate the derivative of $y = \frac{x^3}{1-x^4}$
6. Find $\int (x^2 + 1)^2 2x dx$
7. Evaluate $\int \frac{x^3 + 3x + 4}{\sqrt{x}} dx$
8. Evaluate $\int \frac{dx}{(x+1)^2}$
9. Evaluate $\int_{-\frac{\pi}{4}}^{\frac{\pi}{4}} \sin^2 x dx$
10. Give two merits and demerits of mode.
11. Write the classical definition of probability.
12. A dice is thrown once. Find the probability of getting (i) an even number
(ii) an odd number
(iii) number greater than 3

(10×2=20)





Part B

Answer any **six** questions.

Each question carries **5** marks.

13. Construct a 3×4 matrix whose elements are given by $a_{ij} = \frac{(i+2j)^2}{2}$
14. Solve the system using Gauss elimination method
- $$\begin{aligned} 2x + y - z &= 1 \\ 3x + 4y + 2z &= 13 \\ x - 5y - 2z &= 0 \end{aligned}$$
15. Evaluate the derivatives of the functions given (i) $y = x^2(3x^2 + 1)^5$
- (ii) $y = x^3 \sin x$
- (iii) $y = x^5(x + 2)^3$

16. Find $\frac{ds}{dt}$ of the following (i) $s = t \tan t - t^2 \cot t$

(ii) $s = \sqrt{\sec(4t + 5)}$

17. Evaluate (i) $\int \frac{x}{e^{x^2}} dx$

(ii) $\int \frac{\sin^{-1} x}{\sqrt{1-x^2}} dx$

18. Evaluate (i) $\int_1^4 (\sqrt{x} + 3x) dx$

(ii) $\int_1^2 (2x^2 + 1) dx$

19. The following table gives the monthly expenditure in Rs. on various items incurred by 3 families. Represent the data by a subdivided bar diagram.

	Family 1	Family 2	Family 3
Food	43	83	120
Clothing	8	17	25
Rent	10	21	17
Others	14	34	45

20. Calculate Quartile Deviation

C.I	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100
Freq	20	90	150	100	70	50	50	45	25





21. Calculate standard deviation of the following distribution

C.I	20-30	30-40	40-50	50-60	60-70	70-80	80-90
Freq	3	61	132	153	140	51	2

(6×5=30)

Part C

Answer any **two** questions.

Each question carries **15** marks.

22. State and prove four properties of transpose of the matrices using suitable examples
23. Differentiate the following functions (i) $\sec(\tan x)$

(ii) $\sin(\sin x)$

24. Integrate the following functions (i) $\frac{x \cos^{-1} x}{\sqrt{1-x^2}}$ (ii) $x \tan^{-1} x$ (iii) $(x^2 + 1) \log x$

25. The following table gives the marks obtained by some students

Marks	20-40	40-60	60-80	80-100	100-120	120-140	140-160	160-180	180-200
Freq	6	9	11	14	20	15	10	8	7

- (i) Calculate arithmetic mean
- (ii) Calculate median
- (iii) Calculate mode

(2×15=30)

