SHAHEED BHAGAT SINGH STATE TECHNICAL CAMPUS, FEROZEPUR

ROLL NO: | | | | | | | | | | | | |

Total number of pages:[2]

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BCA / 2nd Semester

Mathematics II

Subject Code: BSBC-202(Reappear)

Time allowed: 3 Hrs **Max Marks: 60**

Important Instructions:

- **All questions are compulsory**
- **Assume any missing data**

PART A (2×10) **ALL COs**

Q.1. Answer in brief:

a) *If* $2\begin{bmatrix}3 & 4\\ 5 & x\end{bmatrix}+\begin{bmatrix}1 & y\\ 0 & 11\end{bmatrix}=\begin{bmatrix}7 & 0\\ 1 & 1\end{bmatrix}$, *find* x *and* y.

b) *Calculate the* mean *of the numbers*
22,16,15,16,22,16,14,10,11,16.

c) *Find the amount of annuity immediate of Rs* 100 *per annum for* 5 *years at* 9%.

d) *Differentiate* $x^{-2}+\frac{1}{x^{-2}}$ *w.r.t* x.

e) *Find the* max*ima and* min*ima of the function* x^2+x+7.

f) *Find* $\int\left(x^{3/2}+x\right)dx$.

g) *Evaluate* $\int_0^1 \frac{1}{1+x}dx$.

h) *State Simpson* 1/3 *rule.*

i) *Solve* $x+y=17$ *and* $x-3y=2$.

j) *Differentiate* sec x.

PART B (5×8)

Q.2 Use matrix inversion method to solve x-2y+3z=4, x-2y+z=14, 2x+3y+5z=7. CO1

OR

Find the inverse of the matrix $\begin{bmatrix} 1 & -1 & -3 \\ 1 & -3 & -3 \\ 2 & -1 & -2 \end{bmatrix}$.

Q.3. (i) *Differentiate* $\sqrt{\frac{1+x}{1-x}}$ *w.r.t. x.* (ii) Evaluate $\int \frac{1}{(x-1)(x+4)} dx$ CO3,CO2

OR

Find the maxima and minima of $x^3 - 3x^2 + 5x + 15$.

Q.4. Solve x-y+2z=2, 3x+12y+13z=24, 4x+3y+5z=7 by Cramer rule. CO1

OR

Find the value of $\int_0^1 \frac{dx}{1+x^2}$ using Simpson's 3/8 rule with h = 0.1 . CO5

Q.5. Evaluate $\int_0^{\pi/2} \log \sin x \, dx$ CO4

OR

Calculate by trapezoidal rule $\int_0^6 \frac{1}{1+x^2} dx$ and compare the result with the actual value. CO5

Q.6. Calculate mean,mode, mean deviation and Standard deviation. CO2,CO3 CO2,CO4

x	1-10	11-20	21-30	31-40	41-50	51-60
f	3	16	26	31	16	8

OR

Differentiate the following w.r.t. x (i) $\sin^{-1} \frac{2x}{1+x^2}$ (ii) $\frac{\sin x}{1-\cos x}$