R22 Regulation *Subject code:4B2AM*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech II Semester Supplementary Examinations, June 2026

STATISTICAL METHODS AND VECTOR CALCULUS

(Common to CSE, CSE(AI&ML), CSE(DS) & IT)

Maximum Marks: 60 Date: 17.06.2026 Duration: 3 hours

Note:1.This question paper contains two parts A and B.
2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
3. Part B consists of 5 Units. Answer any one full question from each unit.
4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks (10X1M=10 Marks)		Marks	CO	BTL
1.a	Calculate Mean of 23,45,12,11,5.	1M	CO1	L1
b	Write the formula for geometric mean.	1M	CO1	L1
c	Write the formula for Quartile deviation.	1M	CO2	L2
d	Define Skewness.	1M	CO2	L1
e	What is meant by Time series?	1M	CO3	L1
f	Write any one merit in calculating trend using semi average method	1M	CO3	L1
g	Define irrotational vector	1M	CO4	L1
h	If $\bar{f} = 3x^2\bar{\imath} + \bar{\jmath} + 2z\,\bar{k}$ then find div $\bar{f}$	1M	CO4	L2
i	State Greens theorem in a plane.	1M	CO5	L1
j	Define conservative field	1M	CO5	L2

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
2	Explain about different Functions of Statistics.	10M	CO1	L2
	OR			
3	Find Median to the Following data.	10M	CO1	L2
4	Calculate Quartile Deviation and its co-efficient to the following data.	10M	CO2	L2
	OR			
5	Find the Bowley"s co-efficient skewness of the following series.	10M	CO2	L2

Marks	0-100	100-200	200-300	300-400	400-500	500-600	600-700	700-800
No.of students	34	56	8	90	122	123	34	9

Classes	0-15	15-30	30-45	45-60	60-75	75-90	90-105
frequency	6	15	16	3	11	13	10

x	4	4.5	5	5.5	6	6.5	7	7.5	8
f	10	18	22	25	40	15	10	8	7

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<tr><td>6</td><td>Explain various methods in measurements of Seasonal fluctuations in time series.</td><td>10M</td><td>CO3</td><td>L3</td></tr>
<tr><td></td><td>OR</td><td></td><td></td><td></td></tr>
<tr><td>7</td><td>Calculate seasonal variations for the following data of sale in thousands Rs. Of a firm by the method of Ratio to trend.
<table>
<tr><th>Year</th><th>1st quarter</th><th>2nd quarter</th><th>3rd quarter</th><th>4th quarter</th></tr>
<tr><td>1979</td><td>30</td><td>40</td><td>36</td><td>34</td></tr>
<tr><td>1980</td><td>34</td><td>52</td><td>50</td><td>44</td></tr>
<tr><td>1981</td><td>40</td><td>58</td><td>54</td><td>48</td></tr>
<tr><td>1982</td><td>52</td><td>76</td><td>68</td><td>62</td></tr>
<tr><td>1983</td><td>80</td><td>92</td><td>80</td><td>82</td></tr>
</table></td><td>10M</td><td>CO3</td><td>L2</td></tr>
<tr><td>8</td><td>Show that vector $(x^2 - yz)\,\bar{\imath}+(y^2 - zx)\bar{\jmath}+(z^2 - xy)\bar{k}$ is irrotational and find its scalar potential.</td><td>10M</td><td>CO4</td><td>L3</td></tr>
<tr><td></td><td>OR</td><td></td><td></td><td></td></tr>
<tr><td>9</td><td>Find the value of ‘n’ if $r^n\bar{r}$ is solenoidal</td><td>10M</td><td>CO4</td><td>L2</td></tr>
<tr><td>10</td><td>If F = 3xy$\bar{\imath}$ - $y^2\bar{\jmath}$, then find $\int_c \bar{F}.d\bar{r}$. where C is the curve y=$2x^2$ in the XY – plane from (0,0)to (1,2) .</td><td>10M</td><td>CO5</td><td>L3</td></tr>
<tr><td></td><td>OR</td><td></td><td></td><td></td></tr>
<tr><td>11</td><td>Verify gauss divergence theorem find$\iint_s \bar{f}.\bar{n}\,ds$ where $\bar{f} = 4xz\bar{\imath} - y^2\bar{\jmath} + yz\bar{k}$ taken over the cube bounded by x=0,x=1,y=0,y=1,z=0,z=1.</td><td>10M</td><td>CO5</td><td>L2</td></tr>
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