

Mid Term Examination, Even Semester 2022-23

B.Tech (Bio-Tech), I Year, II Semester

BMAS 0131 & Calculus and Statistics

Time: 2 Hours

Maximum Marks: 30

Instruction for students:
Attempts all of the questions.

Section – A

3 x 5 = 15 Marks

No.	Detail of Question	Marks	CO	BL	KL
1	The runs scored by 11 players of a team in a cricket match are as follows: 7, 16, 121, 51, 101, 81, 1, 16, 9, 11, 16 Find the median of this data.	3	3	E	P
2	Integrate $\cos^2 x$ with respect to x by using trigonometric identities.	3	1	A	C
3	Write a note on measures of central tendency emphasising on their importance and applications in biostatistics. Given that the mean of 5 numbers is 18. If one number is excluded, their mean becomes 16. Find the excluded number.	3	3	U	F
4	How can you apply integration by parts in solving an integral? Find the integration of xe^x using integration by parts.	3	1	An	C
5	Evaluate $\int \frac{x dx}{x^2 - 3x + 2}$ using partial fraction method.	3	1	A	P

Section – B

5 x 3 = 15 Marks

No.	Detail of Question	Marks	CO	BL	KL																						
1	<p>Find mean of the following data:</p> <p>Class: 0-10 10-20 20-30 30-40 40-50 50-60</p> <p>f : 5 15 20 28 35 21</p> <p>where f is frequency.</p>	5	3	R	F																						
2	<p>Discuss the importance of Biostatistics. Prove that the mode of the following distribution is 10.</p> <table border="1"><tr><td>Size (x)</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td></tr><tr><td>Frequency (f)</td><td>2</td><td>5</td><td>8</td><td>9</td><td>12</td><td>14</td><td>14</td><td>15</td><td>11</td><td>13</td></tr></table>	Size (x)	4	5	6	7	8	9	10	11	12	13	Frequency (f)	2	5	8	9	12	14	14	15	11	13	5	3	E	P
Size (x)	4	5	6	7	8	9	10	11	12	13																	
Frequency (f)	2	5	8	9	12	14	14	15	11	13																	
3	<p>Write down any three properties of definite integrals. Hence or otherwise, evaluate the following integrals:</p> <p>(a) $\int_{-\pi}^{\pi} (x^2 + x + 1) dx$</p> <p>(b) $\int_0^{\frac{\pi}{2}} \frac{\sin x}{\sin x + \cos x} dx$</p> <p style="text-align: center;">OR,</p> <p>In a certain examination, the average grade of all the students in class A is 68.4 and that of all the students in class B is 71.2. If the average of both classes combined is 70, find the ratio of the number of students in class A to the number in class B.</p>	5	1, 3	C	M																						

CO – Course Outcome, BL – Behavioral, KL – Knowledge

CO – Course Outcome, BL – Abbreviation for Bloom's Taxonomy Level (R-Remember, U-Understand, A-Apply, An-Analyze, E-Evaluate, C-Create), KL – Abbreviation for Knowledge Level (F-Factual, C-Conceptual, P-Procedural, M-Metacognitive).