Total No. of Questions: 20

Enrollment No : _____

MEDICAPS UNIVERSITY

Faculty of Management

End Semester Examination May 2025

MS5CO21 Statistics for Decision Making

Programme	:	MBA	**Branch/Specialisation**	:	-
Duration	:	3 hours	**Maximum Marks**	:	60

Note: *All questions are compulsory. Internal choices, if any, are indicated. Assume suitable data if necessary. Notations and symbols have their usual meaning.*

Section 1 (Answer all question(s))

Q1. If $f(-x) = f(x)$ then $f(x)$ is called _____ function. **Marks: 1 CO: 1 BL: 1**

Rubric	Marks
(a) even	1

- (●) Even
- ( ) Odd
- ( ) Constant
- ( ) Identity

Q2. The value of the $\lim_{x\to 0} \frac{e^x-1}{x}$ is - **Marks: 1 CO: 2 BL: 2**

Rubric	Marks
(b) 1	1

- ( ) 0
- (●) 1
- ( ) 2
- ( ) None of these

Q3. $y = 4x + 2x^2 \ \ than \ \ \frac{d^2y}{dx^2} =$ _____. **Marks: 1 CO: 3 BL: 3**

Rubric	Marks
(b) = 4	1

- ( ) 2
- (●) 4
- ( ) -6
- ( ) None of these

Q4. The value of $\int e^{3x}\,dx$ is- **Marks: 1 CO: 3 BL: 3**

Rubric	Marks
(a) $\frac{e^{3x}}{3}+c$	1

- (●) $\frac{e^{3x}}{3}+c$
- ( ) $\frac{e^{3x}}{4}$
- ( ) $e^{3x}+C$
- ( ) None of these

Q5. Statistics is _____. **1 1 1**

Rubric	Marks
(d)All these statements are true in respect of statistics.	1

- ○ Branch of scientific method deals with numbers, counts
- ○ Calculation of data using figures, preparing charts and conclusion
- ○ Subject just like mathematics include symbols and operations
- ◉ All these statements are true in respect of statistics.

Q6. In statistics the word singular means _____. **1 1 1**

Rubric	Marks
Ans (a) methods	1

- ◉ Methods
- ○ Data
- ○ Attribute
- ○ None of these

Q7. In which of the following probability distribution mean, median and mode are equal? **1 1 1**

Rubric	Marks
(c) Normal distribution	1

- ○ Binomial distribution
- ○ Poisson distribution
- ◉ Normal distribution
- ○ None of these

Q8. In a binomial distribution, the mean and variance are 6 and 2 respectively. The Probability of failure is- **1 2 2**

Rubric	Marks
1/3	1

- ◉ 2/3
- ○ 1/3
- ○ 1/4
- ○ 1/2

Q9. A rise in prices in lights and crackers before Deepawali is an example of- **1 1 1**

Rubric	Marks
b Seasonal Variation	1

- ○ Secular trend
- ◉ Seasonal variation
- ○ Cyclical variation
- ○ Irregular variation

Q10. The addition model in time Series is- **1 2 2**

- ◉ Y=T+S+C+I
- ○ Y=TCSI
- ○ Y= TC+SI
- ○ None of these

Section 2 (Answer all question(s))

Marks CO BL

Q11. Write a short note on implicit & explicit functions and algebraic & transcendental functions. **4 1 1**

Q12. (a) Evaluate the following- **6 1 1**

$(i).\ \lim_{x\to 0}\frac{\sqrt{3+x}-\sqrt{3-x}}{x}$ (ii). $\lim_{x\to 0}\frac{8x^2+6x+2}{2x^2+9x+4}$

Rubric	Marks
a part	3
b part	3

(OR)

(b) The fixed cost of a new product is Rs 35000 and the variable cost per unit is Rs 500.If the demand function is p(x) = 5000-100x, then

- Determine the cost function and Revenue function.
- Determine the profit function.
- Determine the break- even values.

Rubric	Marks
a	2
c	2
c	2

Section 3 (Answer all question(s))

Q13. Find derivative of $\sqrt{x}\,(1+x)$ with respect to x. Find integral of $x\ \log x$ with respect to x. **Marks CO BL 4 2 2**

Rubric	Marks
a	2
b	2

Q14. (a) The cost function is $\mathbf{C}(x) = 300x + \frac{x^3}{3} - 10x^2$, $\mathbf{x}$ is output then calculate **6 2 2**

- Output at which marginal cost is minimum
- Output at which average cost is minimum

Rubric	Marks
a	3
b	3

(OR)

(b) The marginal cost of manufacturing x pair of fancy rubber bands is $6 + 10x - 6x^2$. The total cost producing a pair of rubber band is Rs 12. Then Find the total cost function and average cost function.

Rubric	Marks
total function	3
avg cost function	3

Section 4 (Answer all question(s))

Q15. Explain the concept of population and sample with an example. **Marks CO BL 4 1 1**

Rubric	Marks
definitions and any three difference	4

Q16. (a) Define statistics and write its scope in any four areas in real life. **6 2 2**

Rubric	Marks
definition	2
scope	4

(OR)

(b) Write a short note on descriptive statistics and statistics in singular & plural sense.

Rubric	Marks
Descriptive statistics and inferential statistics	3
Statistics in singular and plural sense	3

Section 5 (Answer all question(s))

Marks CO BL

Q17. Write a short note on random experiment and addition theorem on probability. **4 2 1**

Q18. (a) Fit a poisson distribution to the following data. *given* $\epsilon^{-0.974} = 0.37756$ **6 4 4**

X	0	1	2	3	4
Y	46	38	22	9	1

Rubric	Marks
table for mean value	2
freq calculation	4

(OR)

(b) A coin is tossed four times, what is the probability of getting-

- Two heads
- At least two heads
- No head

Rubric	Marks
1) two heads calculation	2
2) at least two heads calculation	2
3) No head calculation	2

Section 6 (Answer all question(s))

Marks CO BL

Q19. What is time series? Explain its various components. **4 1 1**

Rubric	Marks
def and copmo	4

Q20. (a) Construct a 3-yearly moving average from the following data: **6 4 4**

Year	1953	1954	1955	1956	1957	1958	1959	1960
Sales	129	131	70	106	91	95	84	93

Rubric	Marks
for table and basic formulae (3+3)	6

(OR)

(b) Fit a straight line trend to the following data by the Least square method. Estimate trend for the year 1990 and 1995.

Year	1985	1987	1989	1991	1993
Production	18	21	23	27	16

Rubric	Marks
normal equations	2
table for summation and product	2
estimation for 2 years	2

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