

Bankim Sardar College

Semester III

B.Com.

Paper: GE3.3 Chg

Subject: Business Mathematics and Statistics

Module I

F.M. 45

Group - A

Answer any one question

1. If $A = \{1, 2\}$, $B = \{2, 3\}$ and $C = \{3, 4\}$ find $A \times (B \cup C)$. 5
2. Find n if ${}^n P_6 = 30 \times {}^n P_4$. 5
3. Find the sum of $1 + \frac{2}{3} + \frac{4}{9} + \frac{8}{27} + \dots$ 5

Group - B

Answer any four questions

4. In a class of 120 students, 70 read Mathematics, 46 read Economics and 33 read both the subjects. How many of them read none of these subjects? 10
5. In how many ways can a committee of 5 be formed from 4 Professors and 6 Students so as to include at least 2 Professors? 10
6. Find the middle term of $\left(\frac{x^2}{3} + \frac{3}{x^3}\right)^8$. 10
7. If $\frac{\log x}{b-c} = \frac{\log y}{c-a} = \frac{\log z}{a-b}$, then show that (i) $xyz = 1$ and (ii) $x^a y^b z^c = 1$. 10
8. A Government constructed housing flat costs Rs. 1,36,000; 40% is to be paid at the time of possession and the balance, reckoning compound interest @ 9% p.a., to be paid in 12 equal annual instalments. Find the amount of each such instalment. [Given $(1.09)^{-12} = 0.3558$] 10
9. If the interest rate is 6% p.a., for what sum of money will the difference between compound interest and simple interest for 2 years be Rs. 13.50? Find the C.I. and S.I. also. 10
10. If $a^2 + b^2 = 23ab$, prove that $\log \left\{ \frac{1}{5}(a+b) \right\} = \frac{1}{2}(\log a + \log b)$. 10
11. How many even numbers can be formed by using all digits 1, 2, 3, 4, 5, 6 ? 10

Module II

F.M. 45

Group - C

Answer any one question

12. If $r_{xy} = 0.6$ find r_{uv} , where $u = 3x + 5$, $v = 3 - 4y$. 5
13. If $P(A) = \frac{2}{11}$ and $P(B) = \frac{6}{7}$, what is the probability that at least one of the two independent events A and B will occur? 5
14. If the two regression co-efficient are $b_{yx} = -0.4$ and $b_{xy} = -0.9$, find the value of the correlation co-efficient r . 5

Group - D

Answer any four questions

15. For two attributes A and B , the following data are given:

$$N = 600, f_A = 330, f_B = 300, f_{AB} = 180$$

Determine Yule's co-efficient of association and interpret the result.

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16. The regression equation of y on x and that of x on y are given by $x - 3y + 10 = 0$ and $4x - 3y + 4 = 0$. If variance of x is 4, find (i) \bar{x}, \bar{y} ; (ii) r, σ_y .

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17. Calculate the correlation co-efficient between the following scores of Economics and Mathematics:

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Students	A	B	C	D	E
Economics	65	56	69	60	75
Mathematics	60	76	74	80	85

18. Five men in a company of 20 are graduates. If 3 men are picked out of the 20 men at random, find the probability that (i) they are all graduates, (ii) exactly one of them is a graduate.

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19. The following table shows the number of salesmen working in a certain concern:

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Year	:	1990	1991	1992	1993	1994
No. of salesmen	:	28	38	46	40	56

Use the method of least squares to fit a straight line trend and estimate the number of salesmen in 1995.

20. Construct five-yearly moving averages of the number of students studying in a college:

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Year	:	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
No. of students	:	332	317	357	392	402	405	410	427	405	431

21. Find the Fisher's Price Index Number from the following data:

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Commodity	2010		2015	
	Price	Quantity	Price	Quantity
X	5	10	4	12
Y	8	6	7	7
Z	6	3	5	4

22. From the following data, calculate the general index number for the four groups combined:

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Group	Weight	Price Index Number for 2015 (Base - 2010)
Food	40	225
Fuel	10	330
Stationary goods	5	180
Transport	15	200