Total No. of Questions : 5]

SEAT No. :

P3812

[Total No. of Pages : 3

[5616]-1005

B.B.A. (Semester - I)

BUSINESS MATHEMATICS

(2019 Pattern)

Time : 3 Hours] *[Max. Marks :70*

Instructions to the candidates:

1) *All questions are compulsory.*
2) *Figures to the right indicate full marks.*
3) *Use of statistical tables and calculator is allowed.*
4) *Symbols have their usual meanings.*

Q1) A) Fill in the blanks : **[5 × 2 = 10]**

a) In the ratio $\frac{a}{b}$, "a" is called as _____.

i) Antecedent ii) Consequent

iii) Parameter iv) None of the above

b) 15% of Rs.340 is _____.

i) 51 ii) 52

iii) 53 iv) None of the above

c) $n_{P_r} = \frac{n!}{\_\_\_\_}$

i) (n-r)! ii) (n-r)!r!

iii) (r-n)! r! iv) None of the above

d) In the proportion two ratio are _____.

i) Equal ii) Not equal

iii) greater iv) Less

e) If selling price is more than cost price then profit = _____.

i) Selling Price- Cost Price

ii) Cost Price - Selling Price

iii) $(\text{Cost Price})^2$

iv) None of the above.

P.T.O.

B) State whether the following statement are True or False **[2 × 3 = 6]**

a) For the negative values, we can't find the factorial value.

b) In Linear Programming Problem (L.P.P), we optimize the objective function.

c) $1 + 2 + \ldots + n = \frac{n(n+1)}{4}$

Q2) Attempt any four of the following : **[4 × 4 = 16]**

a) Explain singular and Non-singular matrix

b) The ratio of the ages of father and their son is 7:3 and their sum of ages is 60. Find their ages?

c) A person invested Rs.2000 in 10% shares at Rs.125 and Rs.2400 in 15% shares at Rs.120. What is the total income of the person?

d) Find the simple interest on Rs.8000 at 4% p.a. for 9 months.

e) Find n, if ${}^{n}p_4 = 18(({}^{(n-1)}p_2))$.

f) If $\begin{pmatrix} x & 4 \\ 2 & 8 \end{pmatrix}$ is a singular matrix then find the value of x?

Q3) Attempt any four of the following : **[4 × 4 = 16]**

a) Find X, if ${}^{10}C_5 + {}^{10}C_6 + {}^{11}C_7 = {}^{12}C_x$

b) Solve the following multiplication by logarithmic table:

450 + 345

c) Which of the following is better investment?

8% at Rs.80

15% at Rs. 120 (Face Value = Rs.100)

d) Find the sum of first 60 terms of an A.P. whose 11^{th} term is 14 and 50^{th} term is 130.

e) Find the difference between simple interest and compound interest on Rs. 1000 for 2 years at 10% p.a?

f) A plot is sold atr Rs. 2,50,000/ through an agent charging commission of 2% from the buyer and 1% from the seller. Find the amount paid by the buyer and the amount received by the seller and the agent?

Q4) Attempt any four of the following : **[4 × 4 = 16]**

a) Write note on fundamental principle of counting.

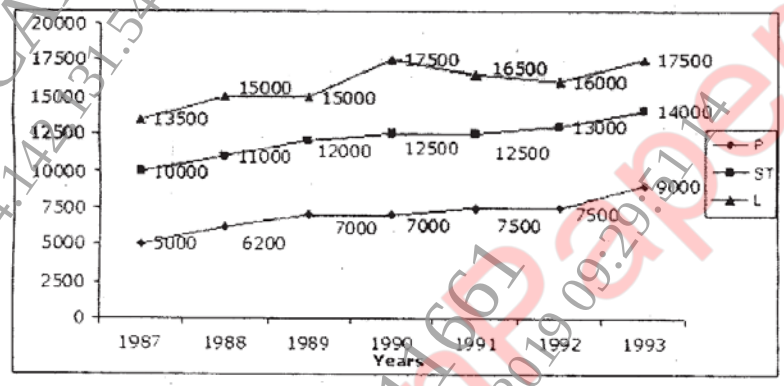
b) Find the volume and total surface area of a cube of side 7 m.

c) Reema can complete a piece of work in 12 days while Seema can the same work in 18 days. If they both work together, then how many days will be required to finish the work?

d) What sum will amount to Rs.43, 200 for 3 years at 12% p.a. compound interest?

e) Find the sum of 7 + 11 +15 +.....+50

f) The graph given shows price variation of three types of wood over 1987 - 1993 in Rs/m^3. 1 ton = 1000 kg and $1m^3$ = 800 kg.



Answer the following questions:

i) Maximum increase in price/m^3 for any product for any two consecutive years was in which of the products?

ii) In 1993, a company's total sales was made of 40% of P, 30% of ST and 30% of L. What is the average realization per m^3 in 1993.

Q5) Attempt any one of the following: **[1 × 6 = 6]**

a) Solve the following L.P.P. by graphical method

Maximize Z = 25X + 17Y

Subject to conditions

$2X + 3Y \leq 18$

$12X + 10Y \leq 60$

$X, Y \geq 0$

b) Find the inverse of the matrix by cofactor method

$$A = \begin{pmatrix} 1 & 3 & 3 \\ 1 & 4 & 3 \\ 1 & 3 & 4 \end{pmatrix}.$$

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