NS – 490

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I Semester B.B.M. Degree Examination, November/December 2016
(Prior to 2012 – 13)
(Repeaters)
BUSINESS MANAGEMENT
Paper – 1.6 : Business Mathematics

Time : 3 Hours Max. Marks : 100

Instruction : *Answer should be written in* ***English only.***

SECTION – A

1. Answer **any ten** of the following sub-questions. **Each** sub-question carries **two** marks. **(10×2=20)**

a) Give the meaning of arithmetic progression.

b) What is linear equation ? Give an example.

c) If $A = \begin{pmatrix} 2 & 4 \\ 1 & 3 \end{pmatrix}$ find $A + A^T$.

d) Calculate simple interest on ₹ 5,000 for 9 months @ 8 % p.a.

e) Find the common ratio of the GP, 2 + 4 + 8 + ...

f) Define inverse of a square matrix.

g) Find x in the proportion, 10 : 40 : : x : 200.

h) Define stock.

i) Find the LCM of 12, 15 and 20.

j) What do you mean by annuity immediate ?

k) Find the value of $^{14}C_{14}$.

l) Two numbers are in the ratio 8 : 5, their difference is 15. Find the numbers.

P.T.O.

SECTION – B

Answer **any five** of the following. **Each** question carries **five** marks. **(5×5=25)**

2. Is – 85 a term of the series 10 + 5 + 0 – 5 – 10 ..... ?

3. Find the difference between compound interest and simple interest on ₹ 4,000 for 4 years @ 4 % p.a.

4. Solve for x : $\frac{3x-1}{2} = \frac{2x+1}{3}$.

5. The HCF and LCM of two integers are 42 and 1260 respectively. If one of them is 210, then find the other.

6. Find the adj (A), if $A = \begin{pmatrix} 1 & 3 & 2 \\ 0 & 2 & 1 \\ 0 & 5 & 3 \end{pmatrix}$.

7. What must be added to each of 9, 42, 3 and 18 so that the sums may be in proportion ?

8. If $A = \begin{pmatrix} 2 & 4 & 4 \\ 4 & 2 & 4 \\ 4 & 4 & 2 \end{pmatrix}$ prove that $A^2 - 8A - 20I = 0$.

SECTION – C

Answer **any three** of the following. **Each** question carries **15** marks. **(3×15=45)**

9. a) The sum of three numbers in AP is 24 and their product is 440. Find the numbers.

   b) Solve for x & y by using Cramer's rule : $4x + 3y - 7 = 0$ and $2x - 5y + 3 = 0$.

10. a) 5 carpenters can earn ₹ 360 in 6 days working at 9 hours a day. How much will 8 carpenters can earn in 12 days working 6 hours a day ?

b) Solve by formula method : $x + \frac{1}{x} = 2\frac{9}{10}$.

11. a) Mr. Ramu borrowed ₹ 6,400 from Mr. Raju. After 2 years and 3 months he paid ₹ 6,136 in cash with a goat and cleared the amount. If the rate of interest was $3\frac{1}{2}$% p.a. Find the value of the goat.

b) What principal amount to ₹ 19,830 in 6 years at 8 % p.a. compound interest ?

12. a) A man wishes to pay back his debt of ₹ 5,044 due after 6 years by 6 equal yearly installments. Find the amount of each installments money being worth 10 % p.a. compound interest.

b) If $A + B = \begin{pmatrix} 2 & 3 \\ 4 & 0 \end{pmatrix}$ and $A - B = \begin{pmatrix} -2 & 2 \\ 1 & -5 \end{pmatrix}$. Find A & B.

13. a) If $y = \frac{(x+1)(x-2)}{(x-3)}$ Find $\frac{dy}{dx}$.

b) How many diagonals are there in polygon of 15 sides ?

SECTION – D

Answer the following question which carries **10** marks. **(1×10=10)**

14. a) Solve for x : $\frac{1}{x+1} + \frac{3}{x+4} = \frac{4}{x+3}$.

b) If a = 13, d = – 3, find fifth term and sum of 5 terms.