(ii) One particular man and woman always.

(iii) A particular man is never to be included.

Or

Find $\frac{dy}{dx}$ for the following functions :

(a) $Y = 9x^3 - \frac{5}{2}x^2 + 3x + 7 + x^{-1/2}$

(b) $Y = \frac{x^3 - 3x^2 + 2}{x^2 - 3x + 5/2}$

Roll No. .....

BBA–201(O)

B. B. A. (Second Semester)
EXAMINATION, May/June, 2015

(Old Course)

Paper First

BUSINESS MATHEMATICS

Time : Three Hours] [*Maximum Marks : 75*

Note : All questions are compulsory.

1. Answer any *ten* questions : $1\frac{1}{2}$ each

(i) Find the 7th term of the series 6, 12, 24 .....

(ii) What is the profit percent when a good costing ₹ 80 was sold for ₹ 100 ?

(iii) If $A = \begin{pmatrix} 13 & 12 \\ 8 & 9 \end{pmatrix}$ and $B = \begin{pmatrix} 10 & 5 \\ -2 & 7 \end{pmatrix}$, find A + B.

(iv) Find the simple interest on ₹ 2,000 for 3 years at 7% p. a.

(v) Find ${}^{18}C_{12}$.

(vi) Find the sum of series upto 10 terms :

3, 5, 7, 9 .....

(vii) A can do a piece of work in 3 days and B in 5 days. How long will they take to do the same work together ?

(viii) $A = \{3, 4, 7, 8\}$, $B = \{1, 3, 7, 5\}$.

Find $A \cup B$.

(ix) Find $22\frac{1}{2}\%$ of 22.

(x) Express in the simplest form :

$$\log 20 + \log 35 - \log 25 - \log 4$$

(xi) Find the speed of car if it travels 3500 km in 50 hrs.

(xii) Find the value of ${}^{13}P_8$.

2. The ratio of the number of boys to the number of girls in a school of 720 students is 3 : 5. If 18 new girls are admitted in the school, find how many new boys may be admitted so that the ratio of the no. of boys to no. of girls changes to 2 : 3.

Or

Given set :

$$S = \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9\}$$

$$P = \{0, 2, 4, 6, 8\}$$

$$Q = \{1, 2, 3, 4, 5\}$$

Find :

(i) $P \cap Q$

(ii) $P \cup Q$

(iii) P'

(iv) $P \cup P'$

(v) $P' \cap Q'$

3. A contractor decided to finish a work in 120 days. He employed 200 men. Only half of the work finished in 72 days. How many more men should be employed in order to complete the work in the prescribed time ?

Or

Find the maximum and minimum values of the following function :

$$Y = \frac{2}{3}x^3 + \frac{1}{2}x^2 - 6x + 8$$

4. In a class of 50 students, 30 play cricket, 20 play football and 20 basketball, 8 play both cricket and basketball, 7 play both basketball and football and 5 play cricket and football only :

(i) Draw a Venn diagram to represent the above information.

(ii) Find the no. of students who play all three games.

(iii) Find the no. of students who play only one game.

Or

Integrate w. r. t. x (any *two*) :

(a) $\int_4^5 \frac{x}{1 + x^2}\, dx$

(b) $\int \frac{12x + 8}{3x^2 + 4x + 8}\, dx$

(c) $\int \frac{x}{\sqrt{x + 3}}\, dx$

5. From 7 men and 4 ladies, a committee of 5 is to be formed. In how many ways can this be done if the committee is to include :

(i) At least one lady.