## K15U 0060

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Reg. No. : .....

Name : .....

# III Semester B.Com./B.B.A./ B.B.A.T.T.M./B.B.A.R.T.M. Degree (CCSS-Supple./Imp.) Examination, November 2015 General Course for B.Com./B.B.A./ B.B.A.T.T.M./B.B.A.R.T.M./ 3A12 COM./B.B.A./B.B.A.(T)/B.B.A.R.T.M. NUMERICAL SKILLS (2012 /13 Admissions)

Time: 3 Hours

Max. Weightage: 30

#### PART-A

This part consist of **two** bunches of questions carrying **equal** Weightage of **one**. **Each** bunch consist of 4 objective questions. Answer all questions.

1. 1) X = 4 + 8Y is \_\_\_\_\_ b) linear (a) quadratic d) none of these] c) exponential 2) The roots of the equation  $3x^2 - 1 = 0$  are c) rational d) integers] b) imaginary (a) irrational 5 3 6 3) The value of the determinant is 4 b) -2 c) 38 d) -38] [a) 2 4) o is \_\_\_\_\_ b) not a subset [a) not a set d) not existing] c) subset of every set II. 5) Let A = {a, b, c}, B = {b, c, d} C = {a, b, d, e} then A  $\cap$  (B  $\cup$  C) is [a) (a, b, c) b) (b, c, d) c) (a, d, b, e) le (b

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6) If  $A = \{1, 2\}$  and  $B = \{2, 1, 1\}$  are

[a) equal b) equivalent

c) either

d) similar]

7) The sum at the end of 4 years, for Rs. 100 at 10% per annum C.I payable quarterly is

[a)  $100 (1.1)^3$ b)  $100 (1.025)^4$ c)  $100 (1.025)^{16}$ d)  $100 (1.1)^4$ ]

[a) 0

c) negative integer

b) positive integer

d) not obtainable]

 $(Wt. 2 \times 1 = 2)$ 

#### PART - B

Answer any eight questions in one or two sentences each. Each question carries a Weightage of one.

- 9) On what sum of money will the compound interest for 2 years at 5% per annum amount to Rs. 768.75 ?
- 10) If a : b = 3 :8, find the value of  $\frac{4a + 3b}{6a b}$ .
- 11) If the ratio between 8 and 11 is the same as the ratio of 2x y to x + 2y, find the

value of 
$$\frac{7x}{9y}$$
.

12) Two chemicals A and B are mixed in the proportion 4:1 and the mixture stored in a container. The same two chemicals are mixed in the proportion 7:3 and the mixture stored in another container. What quantities should be drawn from the two containers to prepare 11 litres of mixture in which the two chemicals are in the proportion 8:3?

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 $(Wt. 8 \times 1 = 8)$ 

- 13) Mr. A lent at simple interest Rs. 7,200 partly at 6% p.a and partly at 7% p.a. If the interest received after one year is Rs. 450, how much did he lend at different rate of interest ?
- 14) A machine depreciates in value each year at 10% of its previous value and at the end of the fourth year its value is Rs. 1,31,220. Find the original value.
- 15) Find the total present value of each cash inflows at the end of each year shown below.

1	2 .	3	4	5	
2000	3000	3500	3000	4000	
est is 8%					
I <sup>st</sup> year	II <sup>nd</sup> year III <sup>rd</sup> year		ar IV <sup>th</sup> year	V <sup>th</sup> year	
0.926	0.85	7 0.794	0.735	0.681	
	1 2000 rest is 8% I <sup>st</sup> year 0.926	1 2 2000 3000 rest is 8% I <sup>st</sup> year II <sup>nd</sup> ye 0.926 0.85	1 2 3 2000 3000 3500 rest is 8% I <sup>st</sup> year II <sup>nd</sup> year III <sup>rd</sup> yea 0.926 0.857 0.794	1 2 3 4   2000 3000 3500 3000   rest is 8% .   I <sup>st</sup> year II <sup>nd</sup> year III <sup>rd</sup> year IV <sup>th</sup> year   0.926 0.857 0.794 0.735	1   2   3   4   5     2000   3000   3500   3000   4000     rest is 8%   .     Ist year   II <sup>nd</sup> year III <sup>rd</sup> year   IV <sup>th</sup> year   V <sup>th</sup> year     0.926   0.857   0.794   0.735   0.681

- 16) If A = {1, 2, 3}, B = {3, 4, 5}, C = {1, 3, 5} prove that  $A-(B\cup C) = (A-B) \cap (A-C)$ .
- 17) Represent the following using Venn diagram.

 $(A \cup B) \cap (A \cup C)$ 

18) Solve  $3x^2 + 4x + 1 = 0$ .

#### PART-C

Answer any six questions. Each question carries Weightage of two.

- 19) If  $a = x \sqrt{x^2 1}$  show that  $a + \frac{1}{a} = 2x$ .
- 20) Solve x + y = 1, y + z = 1, z + x = 4.
- 21) Solve the equation  $2x + \frac{5}{x} = 7$ .

22) Simplify  $\frac{3^5 27^3.9^4}{3(81)^4}$ .

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- 23) Given A =  $\begin{bmatrix} 2 & -3 \end{bmatrix}$ , B =  $\begin{bmatrix} 0 & 2 \end{bmatrix}$  and C =  $\begin{bmatrix} -1 & 4 \end{bmatrix}$  find the matrix X in each of the following :
  - i) X + B = C A ii) A X = B + C.
- 24) Solve the equation  $X + \begin{bmatrix} 0 & 1 & 5 \\ 1 & 0 & 4 \\ 2 & -6 & 8 \end{bmatrix} = \begin{bmatrix} 1 & 2 & 3 \\ 2 & 3 & 1 \\ 3 & 2 & 1 \end{bmatrix}$ .

25) If A = 
$$\begin{bmatrix} 2 & 3 & 4 \\ 5 & 7 & 9 \\ -2 & 1 & 1 \end{bmatrix}$$
 and B = 
$$\begin{bmatrix} 4 & 0 & 5 \\ 1 & 2 & 0 \\ 0 & 3 & 1 \end{bmatrix}$$
 verify that (AB)' = B'A'.

26) Show that 
$$\begin{vmatrix} 3 & 8 & 2 \\ 2 & 1 & 0 \\ 1 & 3 & 2 \end{vmatrix} > 0$$
 (Wt. 6×2=12)

#### PART-D

Answer any two questions. Each questions carries a Weightage of 4.

- 27) Solve completely the following equations :
  - 2x 3y = 3 and

4x - y = 11 using matrices.

28) Find the rank of 
$$\begin{bmatrix} 1 & 2 & 0 & 5 \\ 3 & 1 & 2 & 2 \\ 2 & 4 & 0 & 10 \end{bmatrix}$$
.  
29) Show that  $\frac{1}{1+\sqrt{2}} + \frac{1}{\sqrt{2}+\sqrt{3}} + \frac{1}{\sqrt{3}+2}$  is rational.

(Wt. 2×4=8)

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