K15U 0060

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.

I. 1) $X = 4 + 8Y$ is _____

[a) quadratic b) linear
c) exponential d) none of these]

2) The roots of the equation $3x^2 - 1 = 0$ are

[a) irrational b) imaginary c) rational d) integers]

3) The value of the determinant $\begin{vmatrix} 5 & 6 \\ 3 & 4 \end{vmatrix}$ is

[a) 2 b) –2 c) 38 d) –38]

4) ϕ is _____

[a) not a set b) not a subset
c) subset of every set d) not existing]

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) d) e]

P.T.O.

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) $100\,(1.1)^4$]

8) Value of the determinant $\begin{vmatrix} 2 & 1 & 3 \\ 4 & 2 & 6 \\ 6 & 3 & 9 \end{vmatrix}$ is

[a) 0 b) positive integer

c) negative integer d) not obtainable]

(Wt. 2×1 = 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 ?

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.

Year :	1	2	3	4	5
Cash in flow :	2000	3000	3500	3000	4000

The rate of interest is 8%

	Ist year	IInd year	IIIrd year	IVth year	Vth year
PV factor :	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 $3x^2 + 4x + 1 = 0$. **(Wt. 8×1 = 8)**

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 $\frac{3^5 27^3 . 9^4}{3(81)^4}$.

23) Given A = [2 −3], B = [0 2] and C = [−1 4] 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)**