K15U 0254

Reg. No. : ....

Name : ....

III Semester B.Com. Degree (CCSS – 2014 Admn. – Regular) Examination, November 2015
General Course for B.Com.
3A12 COM : NUMERICAL SKILLS FOR BUSINESS

Time : 3 Hours

Max. Marks : 40

PART – A

Answer **all** questions. **Each** carries $1/2$ marks.

1. The sum of first n natural number is

   a) $\dfrac{n+1}{2}$

   b) $\dfrac{n-1}{2}$

   c) $\dfrac{n(n-1)}{2}$

   d) $\dfrac{n(n+1)}{2}$

2. The simplest form of 8 : 12 : 24 is

   a) 4 : 3 : 6

   b) 2 : 3 : 6

   c) 6 : 4 : 2

   d) 2 : 6 : 3

3. If $4^n = 1024$, then n is

   a) 5

   b) 8

   c) 10

   d) 12

4. $\dfrac{\sqrt{5}-\sqrt{3}}{\sqrt{5}+\sqrt{3}}$ is

   a) $4-\sqrt{15}$

   b) 2

   c) 3

   d) None of these

   $(4 \times 1/2 = 2)$

P.T.O.

PART – B

Answer **four** questions. **Each** carries **one** mark.

5. If $a : b = 3 : 4$ and $b : c = 5 : 6$, then the ratio of $a : c$ is

6. Simple interest on Rs. 1,500 at 7% per annum for a certain time is Rs. 210. Find the time.

7. The average of two numbers is xy. If one number is x, then the other number is

8. Construct a 3×4 matrix whose elements are given by $a_{ij} = \dfrac{1}{2}|-3i + j|$

9. Solve $3x - y = 3$
$6x + y = 3$

10. The Venn diagram for $A - B$ is.   (4×1=4)

PART – C

Answer **any six** questions. **Each** carries **three** marks.

11. Solve the following system of inequalities graphically
$x + 2y \leq 8,\ 2x + y \leq 8,\ x \geq 0,\ y \geq 0.$

12. Let $A = \begin{bmatrix} 2 & 3 \\ -1 & 2 \end{bmatrix}$. Find A^3.

13. The difference between the compound interest and the simple interest on a certain sum at 10% per annum for two years is Rs. 60. Find the sum.

14. Solve $\dfrac{1}{x-3} + \dfrac{1}{x+5} = \dfrac{1}{3}$.

15. The average of 2, 7, 6, x is 5 and the average of 18, 16, x, y is 10. What is the value of y ?

16. The sides of a triangle are in the ratio of $\dfrac{1}{2} : \dfrac{1}{3} : \dfrac{1}{4}$. If the perimeter is 104 cm's.

    Find the length of the smallest side.

17. If $\begin{vmatrix} x & 2 \\ 18 & x \end{vmatrix} = \begin{vmatrix} 6 & 2 \\ 18 & 6 \end{vmatrix}$ then x is.

18. Find adjA if $A = \begin{bmatrix} \cos\alpha & -\sin\alpha & 0 \\ \sin\alpha & \cos\alpha & 0 \\ 0 & 0 & 1 \end{bmatrix}$

(6×3=18)

PART – D

Answer **any two** questions. **Each** carries **eight** marks.

19. Solve $2x + y + z = 1$

$$x - 2y - z = \dfrac{3}{2}$$

$$3y - 5z = 9$$

20. Let $A = \begin{bmatrix} 1 & -2 & 1 \\ -2 & 3 & 1 \\ 1 & 1 & 5 \end{bmatrix}$

    Verify that

    i) $(\text{adj}A)^{-1} = \text{adj}(A^{-1})$

    ii) $(A^{-1})^{-1} = A$.

21. Find the rank of the given matrix

$$\begin{bmatrix} 0 & 1 & -3 & -1 \\ 1 & 0 & 1 & 1 \\ 3 & 1 & 0 & 2 \\ 1 & 1 & -2 & 0 \end{bmatrix}$$

(2×8=16)