M 7482

Reg. No. : .....

Name : .....

III Semester B.Com./B.B.A./B.B.A. T.T.M. Degree (CCSS-Reg./Supple./Imp.) Examination, November 2014

GENERAL COURSE FOR B.COM./B.B.A./B.B.A. T.T.M.

3A12 COM/BBA/BBA(T) : Numerical Skills

(2012 Admission Onwards)

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 **four** objective questions. Answer **all** questions.

I. 1) The equation $4x^2 + 7 = 0$ is known as

a) pure quadratic equation b) simple quadratic equation

c) second degree d) none of these

2) If the discriminant of a quadratic equation is zero, the roots are

a) real and equal b) real and unequal

c) complex d) nothing can be said

3) The expression $b^2 - 4ac$ is called _____ of the quadratic equation.

a) discriminant b) roots

c) characteristics d) none of these

4) $\begin{vmatrix} a & 0 \\ b & -a \end{vmatrix}$ is _____

a) ab b) 0

c) $-a^2$ d) b (W=1)

P.T.O.

II. 5) If the rows and columns of a determinant are interchanged, then the determinant value _____

a) remains the same
b) the sign of the value is changed
c) becomes zero
d) none of these

6) $A \cap B' =$ _____

a) A
b) B'
c) $A - B$
d) $A - B'$

7) When A = {a, b}, its power set has _____ elements.

a) 2
b) 4
c) 8
d) 1

8) The formula $P\left(1+\frac{r}{100}\right)^n$ gives _____

a) The sum at the end of n years
b) the C.I. at the end of n years
c) present value
d) none of these **(W=1)**

PART – B

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

9. What sum of money will amount to Rs. 5445 in 2 years at 10% per annum compound interest ?

10. If x : y = 4 : 7 find the value of (3x + 2y) : (5x + y).

11. Two positive numbers are in the ratio 3 : 5 and the difference between their squares is 400. Find the numbers.

12. One vessel A contains a mixture of milk and water in the proportion of 4 : 5 and in another vessel B, they are mixed in the proportion 5 : 1. In what proportion should quantities be taken from the two vessels so as to form a mixture in which milk and water will be in the proportion 5 : 4 ?

13. A certain sum amounts to Rs. 678 in 2 years and to Rs. 736.50 in 3.5 years, find the rate of interest.

14. A machine is depreciated in such a way that at the end of any year the value is 90% of the value at the beginning of the year. The cost of the machine was Rs. 20,000 and it was sold as waste metal for Rs. 500 on finding it not working properly. How many years the machine was in use ?

15. A man borrowed a certain amount of money, 12% compound interest per annum and cleared the debt by paying Rs. 9408 at the end of 2 years. Find the sum borrowed.

16. Using the sets A = {1, 2, 3, 4} B = {2, 4, 6, 8} C = {3, 4, 5, 6} verify that $A \cap (B \cap C) = (A \cap B) \cap C$.

17. Represent the following using Venn diagram.

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

18. Solve $4x^2 - 12x + 9 = 0$. **(Wt. 8×1=8)**

PART – C

Answer **any six** questions.

19. If $x = a + \sqrt{a^2 + 1}$, show that $a = \frac{1}{2}(x - x^{-1})$.

20. Solve :

    $7x - 4y - 20z = 0$

    $10x - 13y - 14z = 0$

    $3x + 4y - 9z = 11$.

21. Solve the equation $x^2 - 4x + 3 = 0$.

22. Find :

    i) $\left(\frac{a^2}{b^3}\right)^{-2}$

    ii) $\left(\frac{a}{b}\right)^{-1} \times \left(\frac{b}{a}\right)^{-1}$.

23. If $A = \begin{bmatrix} 2 \\ 5 \end{bmatrix}, B = \begin{bmatrix} 1 \\ 4 \end{bmatrix}$ and $C = \begin{bmatrix} 6 \\ -2 \end{bmatrix}$. Find :

1) B + C
2) A – C
3) A + B – C
4) A – B + C.

24. If $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \\ 5 & 6 \end{bmatrix}$, $B = \begin{bmatrix} -1 & -2 \\ 0 & 4 \\ 3 & 1 \end{bmatrix}$ find the matrix X, such that A + B – X = 0.

25. If $A = \begin{bmatrix} 1 & 2 & 2 \\ 2 & 1 & 2 \\ 2 & 2 & 1 \end{bmatrix}$, show that $A^2 - 4A - 51 = 0$.

26. Show that the value of the determinant $\begin{vmatrix} 3 & 4 & 2 \\ 0 & 1 & -3 \\ 2 & -2 & 8 \end{vmatrix} < 0$. **(Wt. 6×2=12)**

PART – D

Answer **any two** questions. **Each** question carries weightage of **4**.

27. Find the inverse of A where $A = \begin{bmatrix} 3 & 5 & 7 \\ 2 & -3 & 1 \\ 1 & 1 & 2 \end{bmatrix}$.

28. Find the rank of the matrix $\begin{bmatrix} 1 & 2 & 3 \\ 3 & 6 & 9 \\ 2 & 4 & 6 \end{bmatrix}$.

29. Compute $\frac{20}{2\sqrt{2}+\sqrt{3}} + \frac{47}{4\sqrt{3}+1} - \frac{62}{4\sqrt{2}+1}$. **(Wt. 2×4=8)**