



M 2264

Reg. No. : .....

Name : .....

**III Semester B.A./B.Sc./B.Com./B.B.A./B.B.A. T.T.M./B.B.M./B.C.A./B.S.W./  
B.A. Afsal Ul Ulama Degree (CCSS – Reg./Supple./Improv.)**

**Examination, November 2012**

**General Course for B.Com./B.B.A./B.B.A./T.T.M.**

**3 A12 COM/B.B.A./B.B.A. (T) : NUMERICAL SKILLS**

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 question. Answer **all** question.

- I. 1) Calculate the total interest on Rs. 500 for 73 days at 6% p.a.
- |         |           |
|---------|-----------|
| i) 6    | ii) 182   |
| iii) 30 | iv) 11.63 |
- 2) In how many ways can the letters of the word FAILURE be arranged so that the consonants may occupy only odd positions.
- |         |        |
|---------|--------|
| i) 23   | ii) 24 |
| iii) 25 | iv) 26 |
- 3)  $A \cup (B \cap C) = (A \cup B) \cap C$  is \_\_\_\_\_ law.
- |                     |
|---------------------|
| i) Commutative      |
| ii) Associative     |
| iii) Distributive   |
| iv) De Morgan's law |
- 4) If the discriminant of a quadratic equation is zero, the roots are
- |                   |                      |
|-------------------|----------------------|
| i) Real and equal | ii) Real and unequal |
| iii) Complex      | iv) None of these    |

P.T.O.



- II. 5) If  $a, b \in \mathbb{R} : m, n \in \mathbb{N}$  then  $a^m \times a^n$
- i)  $a^{mn}$                       ii)  $a^{m+n}$                       iii)  $a^{m/n}$                       iv)  $a^{n/m}$
- 6) Find the value of  $x$  in the equation  $-23x + 14 - 7x + 16 = 10x - 17 + 3x + 4$
- i) 1                      ii) 2                      iii) 4                      iv) 17
- 7) Log of 1728 to the base  $\sqrt[2]{3}$  is
- i) 18                      ii) 9                      iii) 6                      iv) None of these
- 8) The value of  $\sqrt[3]{16}$  is
- i) 4                      ii)  $2\sqrt[3]{2}$                       iii)  $\sqrt[2]{2}$                       iv)  $2\sqrt[3]{4}$                       (2×1=2)

## PART – B

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

- 9) A is six times as old as B. Fifteen years hence. A will be three times old as B. Find the ages of A and B.
- 10) Find the value of  $\sqrt{6 + \sqrt{6 + \sqrt{6 + \dots}}} \infty$ .
- 11) If  $A = \{ 1, 2, 3 \}$  and  $B = \{ 2, 3 \}$ . Prove that  $A \times B \neq B \times A$ .
- 12) Prove that  $m + n = n + m$  for all  $m, n \in \mathbb{N}$ .
- 13) If  $\log_2 [ \log_3 ( \log_2 x ) ] = 1$ , find  $x$ .
- 14) A man borrows Rs. 20,000 at 4% C.I. and agrees to pay both the principal and the interest in 10 equal annual instalments at the end of each year, find the amount of these instalments.
- 15) Find the co-ordinates of the centre and the radius of the circle given by  $4x^2 + 4y^2 + 16x - 24y + 3 = 0$ .
- 16) Three persons go into a railway carriage, where there are 8 seats. In how many ways can they seat themselves.





17) A machine, the life of which is estimated to be 10 years, costs Rs. 10,000. calculate its scrap value at the end of its life, depreciation on the reducing instalment system being charged at 10% p.a.

18) Solve the inequality  $-6x > 24 \wedge x \in \mathbb{N}$ . (8×1=8)

PART – C

Answer **any six** questions. **Each** question carries a weightage of **two** :

19) If  $x = 3 + \sqrt{8}$ . Find the value of  $x^4 + 1/x^4$ .

20) A company studies the product preference of 20,000 consumers. It was found that each of the products A, B, C was liked by 7020, 6230 and 5980 respectively and all the products were liked by 1500; products A and B were liked by 2580, products A and C were liked by 1200 and products B and C were liked by 1950. Prove that the study results are not correct.

21) If the roots of the equation  $ax^2 + bx + c = 0$  may be in the ratio  $m : n$  prove that  $mnb^2 = ac(m + n)^2$ .

22) The population of a country increased by 20% in the first decade, 30% in the second decade and 45% in the third decade. What is the average rate of increase per decade in the population ?

23) Solve the equation  $\sqrt{\frac{x}{1-x}} + \sqrt{\frac{1-x}{x}} = 2\frac{1}{6}$ .

24) Find  $n$ ,  ${}^nC_6 : {}^{n-3}C_3 = 91 : 4$ .

25) Prove that the points (4, 3) (7, - 1) and (9, 3) are the vertices of an isosceles triangle.

26) Prove that  $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$ , using Venn diagram. (6×2=12)



## PART - D

Answer **any two** questions. **Each** question carries a weightage of **four**.

27) Without using a log table, prove that

$$\log_2 \left( \frac{75}{16} \right) - 2 \log_2 \left[ \frac{\sqrt[4]{\left(\frac{25}{81}\right)^3} \cdot \sqrt[3]{\frac{25}{81}}}{\sqrt[12]{\left(\frac{25}{81}\right)^7}} \right] + \frac{1 \log_2 (2^{15} 3^{-15})}{3} = 1$$

28) Find the values of a, b, c and d if  $\frac{1}{1+\sqrt{5}+\sqrt{3}} = a + b\sqrt{3} + c\sqrt{5} + d\sqrt{15}$ .

29) Prove by means of truth table that

i)  $\sim (p \rightarrow q) = p \wedge \sim q$

ii)  $\sim (p \leftrightarrow q) = \sim p \leftrightarrow q = p \leftrightarrow \sim q$ .

(2×4=8)