M 5175

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 – Regular/Supple./Improvement) Examination, November 2013

(2011 and Earlier Admn.)

GENERAL COURSE FOR B.COM/BBA/BBA TTM

3A12 COM/BBA/BBA(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 questions. Answer **all** questions.

I. 1) Which one of following is a commensurable quantity ?

a) $\sqrt{2}:1$ b) $1:\sqrt{2}$ c) 2 : 1 d) $\sqrt{3}:\sqrt{5}$

2) The value of e^5 is

a) i b) – i c) 1 d) –1

3) $\log_{10}1000$ is

a) 10 b) 3 c) 10^3 d) 0.3

4) Which of the following points are not collinear ?

a) (1, 2) (1, 4) (1, – 6) b) (– 2, 1) (– 2, 0) (– 2, 2)

c) (2, 3) (2, 4) (2, 5) d) (2, 0) (0, – 4) (–1, – 4)

II. 5) The proposition $P \vee \Gamma P$ is always

a) Contradiction b) Tautology

c) Logically equivalent to $P \wedge \Gamma P$ d) None of these

6) The fourth proportional to 3, 5, 12 is

a) 20 b) 10 c) 2 d) 16

P.T.O.

7) The root of the equation $x^3 + 3x^2 + 3x + 1 = 0$ is

a) -1 b) 1 c) $\frac{1}{2}$ d) $-\frac{1}{2}$

8) Which one of the following point lies on the line $y = 3x + 2$?

a) $(1, -5)$ b) $(0, -2)$ c) $(1, 5)$ d) $(-1, 1)$ **(2×1=2)**

PART – B

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

9) A man borrows Rs. 20,000 at 4% compound interest and agrees to pay both principal and the interest in 10 equal annual installments at the end of each year, find the amount of these installments.

10) If a : b = c : d show that :

$$\left(\frac{1}{a}+\frac{1}{d}\right)-\left(\frac{1}{b}+\frac{1}{c}\right)=\frac{(a-c)\ (c-d)}{acd}.$$

11) Rationalise $\frac{1}{\sqrt{2}+\sqrt{3}+\sqrt{10}}$.

12) Find the number of permutations of word 'ACCOUNTANT'.

13) Solve $2x^2 - 10x + 5 = 0$.

14) Find $\log \frac{1}{324}$ to base $\sqrt[3]{2}$.

15) The Co-ordinates of two points A and B are $(-1, 2)$ and $(2, -1)$ respectively. Find the equation and slope of line AB.

16) If A = {1, 2, 3, 4, 5, 6}, B = {6, 1, – 1, 4, 2}. Find

1) $A \cup B$ 2) $A \cap B$

3) $A - B$ 4) $B - A$

17) Draw the truth table of $((p \rightarrow q) \wedge \sim p) \rightarrow \sim q$.

18) How many telephone connections can be allotted with 5 and 6 digits from the natural numbers 1 to 9 inclusive ? **(8×1=8)**

PART – C

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

19) Prove that $(A - B) \cup (B - A) = (A \cup B) - (A \cap B)$.

20) Define a rational number. Prove that $\sqrt{2}$ is not a rational number.

21) Prove that if a and b are any two real numbers, then
$a \cdot b = 0 \Rightarrow a = 0$ or $b = 0$.

22) 1) If $a^x = b$, $b^y = c$, $c^z = a$, prove that $xyz = 1$

2) If $a^x = b^y = c^z$ and $b^2 = ac$, prove that $y = \frac{2xz}{x+z}$.

23) Simplify $\frac{1}{2}\log_{10} 25 - 2\log_{10} 3 + \log_{10} 18$.

24) Solve the equation $\sqrt{\frac{x}{1-x}} + \sqrt{\frac{1-x}{x}} = 13/6$.

25) Find the value of n, if ${}^nP_4 = 12 \cdot {}^nP_2$.

26) Find the equations of straight lines through (4, – 2) and at a perpendicular distance of 2 units from origin. **(6×2=12)**

PART – D

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

27) Find the no. of numbers less than 1000 and divisible by 5 which can be formed with digits 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 such that each digit does not occur more then once in each number.

28) Simplify :

a) $\frac{4\sqrt{3}}{2-\sqrt{2}} - \frac{30}{4\sqrt{3}-\sqrt{18}} - \frac{\sqrt{18}}{3+2\sqrt{3}}$ b) $\frac{3\sqrt{2}}{\sqrt{6}-\sqrt{3}} - \frac{4\sqrt{3}}{\sqrt{6}-\sqrt{2}} + \frac{2\sqrt{3}}{\sqrt{6}+2}$

29) Find the compound interest on Rs. 4,500/- in 3 years if the rate of interest is 4% for the first year, 5% for the second year and 6% for the third year.

(2×4=8)
