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(FOR THE CANDIDATES ADMITTED DURING THE ACADEMIC YEAR 2022-23 ONLY)

SUBJECT CODE 22 UPA 1A1

REG.NO. _____

N.G.M.COLLEGE (AUTONOMOUS) : POLLACHI

END-OF-SEMESTER EXAMINATIONS : DECEMBER – 2022

B.Com. – P.A. **MAXIMUM MARKS: 50**

I SEMESTER **TIME : 3 HOURS**

PART – III

ALLIED 1: QUANTITATIVE APTITUDE – I

SECTION – A **(10 X 1 = 10 MARKS)**

ANSWER THE FOLLOWING QUESTIONS.

MULTIPLE CHOICE QUESTIONS. **(K1)**

1. Ratio between two numbers is 3: 4 and their sum is 420. The smaller number is _____

   (a) 240 (b) 140 (c) 180 (d) 160

2. If $-3x + 17 < -13$, then…….

   (a) $x \in (10, \infty)$ (b) $x \in [10, \infty)$ (c) $x \in (-\infty, 10]$ (d) $x \in [-10, 10)$

3. If a, b, c are in AP then…….

   (a) $b = a + c$ (b) $2b = a + c$ (c) $b^2 = a + c$ (d) $2b^2 = a + c$

4. $A \cup B = A$ if

   (a) $A \subset B$ (b) $B \subset A$ (c) $A = B$ (d) $A \cap B = \phi$

5. The derivative of $f(x) = 5(x + 47)^2$ is ____

   (a) $15x^2 + 470x$ (b) $10x - 470$ (c) $10x + 470$ (d) $15x^2 - 470x$

ANSWER THE FOLLOWING IN ONE (OR) TWO SENTENCES. **(K2)**

6. If $\log 2 = 0.3010$ and $\log 3 = 0.4771$, then find the value of $\log_5 512$.

7. The length of a rectangle is three times the breadth. If the minimum perimeter of the rectangle is 160 cm, then find the breadth.

8. From a group of 7 men and 6 women, five persons are to be selected to form a committee so that at least 3 men are there on the committee. In how many ways can it be done?

9. Find $\lim_{r \to 1} \frac{r^2 - 3r + 2}{r - 1}$.

10. Evaluate $\int \sqrt{x}\,dx$

(CONTD…….2)

SECTION – B (5 X 3 = 15 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS. (K3)

11. a) Find two numbers whose sum is 27 and product is 182.

(OR)

b) Calculate the slope of a line, that passes through the origin, and the mid-point of the segment joining the points P (0, -4) and B (8, 0).

12. a) The difference between simple and compound interests compounded annually on a certain sum of money for 2 years at 4% per annum is Re. 1. Find the principal sum.

(OR)

b) Graph the solution set $y > -3x + 1$.

13. a) How many 5-digit telephone numbers can be constructed using the digits 0 to 9, if each number starts with 67 and no digit appears more than once?

(OR)

b) How many numbers between 300 and 1000 are divisible by 7?

14. a) Let a relation R be defined by R = {(4, 5); (1, 4); (4, 6); (7, 6); (3, 7)} then find R^{-1} o R.

(OR)

b) If f(9) = 9, f ′(9) = 4, then find $\lim_{x \to 9} \frac{\sqrt{f(x)}-3}{\sqrt{x}-3}$

15. a) Find the derivative of the following function $f(x) = (7x - 4)(3x + 8)^4$

(OR)

b) Evaluate $\int[(x-1)^5 + 3(x-1)^2 + 5]dx$.

SECTION - C (5 X 5 = 25 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS.

(K4 (Or) K5)

16. a) Solve the following system of equations graphically 2x – y + 1 = 0, x – 2y + 8 = 0.

(OR)

b) Solve the equation $3x^3 - 16x^2 + 23x - 6 = 0$ if the product of two roots is 1.

17. a) The compound interest on a certain sum for 2 years at 10% per annum is Rs. 525. Find the simple interest on the same sum for double the time at half the rate percent per annum.

(OR)

b) Betty deposits $2000 annually into a Roth IRA that earns 6.85% compounded annually. Due to a change in employment, these deposits stop after 10 years, but the account continues to earn interest until Betty retires 25 years after the last deposit is made. How much is in the account when Betty retires?

(CONTD…….3)

18. a) Find the sum of the series 1 + 3·5 + 6 + 8·5 + . . . + 101

(OR)

b) How many terms in the geometric progression 1, 1·1, 1·21, 1·331, . . . will be needed so that the sum of the first n terms is greater than 20?

19. a) If f (x) = cos $[\pi^2]$ x + cos$[-\pi^2]$ x, where [x] stands for the greatest integer function, then find the function of the right angle.

(OR)

b) Find the condition for the following function to be continuous or discontinuous

$$f(x) = \begin{cases} \frac{x^2-4x+3}{x^2-1} & \text{if } x \neq 1 \\ 2 & \text{if } x = 1 \end{cases}$$

20. a) If y = $\frac{\log x}{x}$, then find $\frac{d^2y}{dx^2}$

(OR)

b) Compute $\int x^3 e^{2x} dx$

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