

ARMY PUBLIC SCHOOL RANIKHET

Assignment II 2020-21

CLASS-11TH

Time allowed:3H

Maximum Marks:100

General Instructions:

- (i) All questions are compulsory.
- (ii) This question paper contains 29 question.
- (iii) Question 1-4 is section A are very short-answer type questions carrying 1 marks each.
- (iv) Question 5-12 is section B are short-answer type questions carrying 2 marks each.
- (v) Question 13-23 is section C are long-answer-I type questions carrying 4 marks each
- (vi) Question 24-29 is section D are long-answer-II type questions carrying 6 marks each.

SECTION A

Q1. Find the equation of line parallel to the Y-axis and drawn through the point of intersection of $x-7y=0$ and $3x+y-7=0$

Q2 Find the distance between the parallel lines $3x-4y-5=0$ and $3x-4y-10=0$

Q3. Write the equation of the hyperbola of eccentricity $\sqrt{2}$, if it is known that the distance between its foci is 16.

Q4. Find the common ratio of the following GP:

0.0 1,0.0001,0.000001,.....

SECTION B

Q5. Find the equation of the line for which $p=2$, $\sin \alpha = \frac{4}{5}$.

Q6. The angles of triangle are in A.P. the number of degrees in the least is to the number of radians in the greatest as $60:\pi$ find angle in degrees.

Q7. Find the incentre of the triangle whose vertices are (6,0),(0,6) and (7,7)

Q8. Find the equation of the straight line passing through the points (4,2) and (-2,8)

Q9 . Find the coordinates of a point on the parabola $y^2 = 8x$, whose focal distance is 4

Q10 .In an ellipse, the distance between its foci is 6 and minor axis is 8. Find its eccentricity

Q11. Prove that $\lim_{x \rightarrow 0} \frac{a^x - 1}{x} = \log a$

Q12. Find the derivative of $\frac{x^2 - 6}{3x}$

SECTION C

Q13. Find the derivative of $\sqrt{3x - 4}$ w.r.t. x using the first principle

Q14. Evaluate $\lim_{x \rightarrow 0} \frac{1 - \cos x}{x^2}$

Q15. Find the equation of the circle which passes through the center of the circle $x^2+y^2+8x+10y-7=0$ and is concentric with the circle $2x^2+2y^2-8x-12y-9=0$

Q 16 Find the image of the point (3,8) with respect to the line $x+3y=7$ assuming the line to be a plane mirror.

Q 17. Find n, if ${}^{2n-1}P_n : {}^{2n+1}P_{n-1} = 22:7$

Q18. One number is drawn from number 1 to 150 . find the probability that it is either divisible by 3 or 5

Q19 The A.M. of two positive numbers a and b ($a > b$) is twice their G.M prove that $a:b=2+\sqrt{3} : 2-\sqrt{3}$

Q 20. If p be the length of perpendicular drawn from the origin to the line $bx+ay=ab$. Show that $\frac{1}{a^2} + \frac{1}{b^2} = \frac{1}{p^2}$

Q21. Find four numbers in AP whose sum is 20 and the sum of whose square is 120.

Q22. The product of three numbers in GP is 1000. If we add 6 to its second number and 7 to its third number, the resulting three numbers form an AP. Find the numbers in GP.

Q23. Find the sum of the sequence 7,77,777,7777,----- to n terms.

SECTION D

Q24. If the coefficient of the $(r-1)^{th}$ and $(r+1)^{th}$ term in the expansion of $(1+x)^n$ are in the ratio 1:7:42 , find n and r

Q25. If s_n denotes the sum of an Ap and $s_1 = 6$ and $s_7=105$, then show that $s_n : s_{n-3} = (n+3) : (n-3)$

Q26. Find the equation of straight line which passes through (3,4) and the sum of whose intercepts on the coordinate axes is 14.

Q27. The ratio of A.M and G.M of two positive number a and b is m:n show that

$$a:b = (m + \sqrt{m^2 - n^2}) : (m - \sqrt{m^2 - n^2})$$

Q28. . Find the sum of the following series up to n terms

$$\frac{1^3}{1} + \frac{1^3+2^3}{1+3} + \frac{1^3+2^3+3^3}{1+3+5} + \dots$$

Q 29. If the sum of the first m terms of an AP is equal to the sum of the next p terms and also to the sum of the next q terms, prove that $(m+p)\left(\frac{1}{m} - \frac{1}{q}\right) = (m+q)\left(\frac{1}{m} - \frac{1}{p}\right)$

