



Q.1. Answers the following:

(5x6=30)

- (i) Solve $\frac{1}{x+4} + \frac{3}{x-4} = \frac{3x+8}{x^2-16}$.
- (ii) Solve graphically and simultaneously the equations $2x + y = 8$ and $x + 2y = 14$.
- (iii) A shopping mall at Lahore holding a clearance sale advertises that all prices have been discounted 15%. If a shirt is on sale for Rs. 1317.50. What was its presale (actual) price.
- (iv) The first three terms of an arithmetic sequence are 20, 16.5, and 13. Find the fifteenth term and the sum of first fifteen terms of arithmetic sequence.
- (v) A carpenter wishes to construct a ladder with nine rungs whose lengths decrease uniformly from 24 inches at the base to 18 inches at the top. Determine the lengths of the seven intermediate rungs.

Q.2. Solve the following.

(6x5=30)

- (a) Show that $\begin{vmatrix} a+l & a & a \\ a & a+l & a \\ a & a & a+l \end{vmatrix} = l^2(3a+l)$
- (b) Solve the following system of linear equations.
 $x - 2y + z = -1$
 $3x + y - 2z = 4$
 $y - z = 1$
- (c) If $\frac{1}{a}, \frac{1}{b}$ and $\frac{1}{c}$ are in G.P. Show that common ratio is $\pm\sqrt{\frac{a}{c}}$.
- (d) How many arrangements of the letters of the word STATISTICS can be made using all letters.
- (e) A couple does not wish to spend more than \$70 for dinner at a restaurant. If a sales tax of 6% is added to the bill and they plan to tip 15% after the tax has been added, what is the most they can spend for the meal.