REGRESSION

1. **State true or false with justification. If two lines of regression are x+3y-5=0 and 4x+3y-8=0 then the correlation coefficient is 0.5.**
2. **A panel of two judges A and B graded dramatic performances by independently awarding marks as follows:**

Performance No	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Marks by A	**36**	**32**	**34**	**3**	**32**	**32**	**34**
Marks by B	**35**	**33**	**3**	**30**	**34**	**32**	**36**

The eighth performance however judge B could not attend, got 38 marks by judge A. If judge B had also present, how many marks would he be expected to have awarded to the eighth performance.

3. **Find the equations of lines of regression to the following data.**

X	**5**	**6**	**7**	**8**	**9**	**10**	**11**
Y	**11**	**14**	**14**	**15**	**12**	**17**	**16**

4. **A chemical engineer is investigating the effect of process operating temperature X on product yield Y. The study results in following data.**

X	**100**	**110**	**120**	**130**	**140**	**150**	**160**	**170**	**180**	**190**
Y	**45**	**51**	**54**	**61**	**66**	**70**	**74**	**78**	**85**	**89**

Find the equation of the least square line which will enable to predict yield on the basis of temperature. Find also the degree of relationship between temperature and the yield.

5. **Given 6Y= 5X+90, 15X=8Y+130. $\sigma_x^2 = 16$. $Find\ (i)\bar{X}, \bar{Y}\ \ (ii)\ r\ \ (iii)\ \ \sigma_y^2$.**

6. **The equations of two l;ines of regression are 3x+2y=26 and 6x+y=3. Find (i) the means of X and Y (ii) the correlation between X and Y (iii) $\sigma_y\ if\ \ \sigma_x = 3$.**

7. **It is given that the means of X and Y are 5 and 10. If the line of regression of y on x is parallel to the line 20y=9x+40, estimate the value of y for x=30.**

8. **Find the equations of lines of regression and the coefficient of correlation for the following data.**

X	**65**	**66**	**67**	**67**	**68**	**69**	**70**	**72**
Y	**67**	**68**	**65**	**66**	**72**	**72**	**69**	**71**