Homework :- 5

CIN:- 30661270

[a]

Here is the above regression model after replacing the coefficients:

$$\text{Salary} = 30 + 20X_1 + 0.07X_2 - 30X_3 + 0.01X_1X_2 + 10X_1X_3$$

For non-technical positions, $X_3 = 0$, so the 4th term of the equation $(-30X_3)$ and 6th term of the above equation $(10X_1X_3)$ are zero.

$$\text{Salary} = 30 + 20X_1 + 0.07X_2 + 0.01X_1X_2$$

However, for technical positions, $X_1 = 1$, so the 4th term in the equation is 30, and 6th term is $10X_1$. So, for technical positions the salary will be:

$$\text{Salary} = 30 + 20X_1 + 0.07X_2 + 0.01X_1X_2 + 10X_1 - 30$$

Now, it all depends on X_1 : if X_1 (CGPA) is more th 3, then $10X_1 - 30 > 0$, thus the total salary of

technical is higher than non-technical. But if x_1 (GPA) is less than 3, then $10x_1 - 30 < 0$, thus the total salary of technical positions is less than non-technical.

Thus, the correct answer is (iii)

(b)

Salary non-technical = 30 + 20 + 4 + 0.07 + 27 + 0.01 + 4 + 27

= 112.97 K $

Salary technical = 30 + 20 + 4 + + 0.07 + 27 + 0.01 + 4 + 27 + 10 + 4 - 30

= 122.97 K $

Q3

As for each mapper can take care of one column of the first matrix

Mapper: $((i,j), m_{ij}) \; \forall (j, v_j) \Rightarrow (i, m_{ij} \times v_j)$

Thus, we have:

Mapper 1:
((1,1),2) & (1,3) → 6 and ((2,1),7) & (1,3) = 21

Mapper 2:
((1,2),-3) & (2,5) → -15 and ((2,2),2) & (2,5) = 10

Mapper 3:
((1,3),1) & (3,-6) → -6 and ((2,3),-1) & (3,-6) = 6

Mapper 4:
((1,4),5) & (4,9) → 45 and ((2,4),0) & (4,9) = 0

Reducer 1:
[1, (6,-15,-6,45)) → (1, (6-15-6+45)] = 30

Reduce 2:
[2, (21,10,6,0)) → (2, (21+10+6+0) = 37