**Problem 4 (10 points)**

Southern Textiles wishes to predict employee wages by using the employee’s experience X1 and the employee’s education X2. Employees are categorized as having a college degree or not having a college degree in their personnel files, so the variable “education” is a qualitative variable. Thus, X2 is an indicator (0, 1) variable. Data for the employees are given below:

|  |  |  |
| --- | --- | --- |
| Wages Y (Thousands of dollars) | Experience X1 (Months) | Education (College Degree = 1, No College Degree = 0) |
| 27.1 | 47.2 | 1 |
| 20.1 | 40.1 | 0 |
| 25.1 | 37.1 | 1 |
| 22.3 | 44.7 | 0 |
| 25.2 | 41.9 | 1 |
| 27.4 | 46.1 | 1 |
| 13.8 | 17.0 | 1 |
| 11.0 | 29.2 | 0 |
| 22.4 | 30.7 | 1 |
| 30.3 | 59.8 | 0 |
| 28.5 | 48.0 | 1 |
| 26.7 | 55.3 | 0 |
| 21.9 | 42.9 | 0 |
| 22.1 | 47.2 | 0 |
| 18.7 | 40.1 | 0 |
| 21.8 | 36.5 | 1 |
| 11.8 | 20.0 | 0 |
| 14.1 | 30.7 | 0 |
| 23.1 | 36.8 | 1 |
| 30.8 | 49.9 | 1 |

(Economics for Management and Economics, Watson, Billingsley, Croft and Huntsberger, Fifth Edition, 1993, Page 685)

1. Copy and paste the data from this document to an Excel file. Select Wages as the dependent variable and experience and education as the independent variables. Conduct multiple regression using Excel. Paste the output report below. Note: Follow the instructions given in module 5 to conduct simple regression. At the step where you specify the input data range, instead of selecting the data for one independent variable, select data for all the independent variables.
2. Write the equation from the regression output report. If you are using symbols in the equation for the variables, do define the symbols before using the symbols in the equation.
3. Provide a clear and complete interpretation of the coefficients b1 and b2 in the equation. There is no need to interpret b0. Note: Use actual variable names and numbers in answering your question. b1 and b2 are slopes is not a sufficient answer.
4. What is the value of R2 for this model? Do you think that the model does a good job of explaining the variation in wages? Why or why not?
5. Set up the hypotheses to test whether the model is significant. Is the regression model significant at 0.05 as the level of significance? What does this mean?
6. Set up the hypotheses to test for each of the regression coefficients individually and perform the test at the 0.05 level of significance.
7. What average wages do you predict for employees with college degrees and experience = 40 months? Interpret your prediction.