Sample Questions for Hypothesis Testing

Your company is about to hire a number of new employees, and wants guidance about the factors that are important for determining worker productivity. To that end, they provide you with data on workers that they've hired in the past, including: their productivity a year after they were hired, and some of their characteristics at the time at which they were hired. You use this data to estimate the following regression:

$$Productivity = \beta_0 + \beta_1(Age) + \beta_2(Experience\ in\ the\ Industry) + \beta_3(Education) + \beta_4(Positive\ Letter\ of\ Recommendation) + \beta_5(Any\ Dismissals)$$

Where:

(i) "Productivity" measures the average weekly productivity of the worker, in dollars, one year after being hired;
(ii) "Age" is the worker's age in years;
(iii) "Experience in the Industry" is the number of years the worker had been employed in the industry prior to being hired;
(iv) "Education" is the worker's total number of years of educational training;
(v) "Positive Letter of Recommendation" is a dummy variable equal to one if the worker had a positive letter of recommendation from their previous employer at the time they applied for a job at the current firm;
(vi) "Any Dismissals" is a dummy variable equal to one if the worker had been involuntarily dismissed from any prior job.

Your company would like you to use this data on workers hired in the past to make inferences about workers that will be hired in the future. Your regression output is displayed below; please use it to answer the following questions, which require you to perform various hypothesis tests with this data.

	Coefficients	Standard Error
Intercept		
Age	50	100
Experience in the Industry	200	40
Education	400	100
Positive Letter of Recommendation	150	200
Any Dismissals	–250	100

The questions related to this output are listed on the following page.

(a) Your company has the choice to hire two workers who have the same characteristics, except that one worker is a year older than the other one. How could you use your regression output to advise them about the relative productivity of the two workers?

(b) Your company is thinking about raiding workers from other companies that have significant experience in the industry. Would your regression suggest that this could be a worthwhile strategy? Why or why not?

(c) If your company is thinking about increasing the educational requirements for job applications. Does your regression have any meaningful results that would suggest that this change would alter the productivity of applicants?

(d) An HR manager dismisses the idea that performance at prior firms, such as dismissals or positive letters of recommendation, are irrelevant for performance at the current firm. Do your regression results suggest that either of these opinions are legitimate?