1. ***Appendix 2***

(1) 

| **Exam \* Answer Crosstabulation** | | | | |
| --- | --- | --- | --- | --- |
| Count | | | | |
|  | | Answer | | Total |
| right | wrong |
| Exam | Exam\_Q21\_28 | 57 | 35 | 92 |
| Exam\_Q22\_33 | 28 | 61 | 89 |
| Total | | 85 | 96 | 181 |

| **Chi-Square Tests** | | | | | |
| --- | --- | --- | --- | --- | --- |
|  | Value | df | Asymp. Sig. (2-sided) | Exact Sig. (2-sided) | Exact Sig. (1-sided) |
| Pearson Chi-Square | 16.891a | 1 | .000 |  |  |
| Continuity Correctionb | 15.689 | 1 | .000 |  |  |
| Likelihood Ratio | 17.176 | 1 | .000 |  |  |
| Fisher's Exact Test |  |  |  | .000 | .000 |
| Linear-by-Linear Association | 16.797 | 1 | .000 |  |  |
| N of Valid Cases | 181 |  |  |  |  |
| a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 41.80.  b. Computed only for a 2x2 table  Because of P=0.000<0.05, there is significant difference.  (2)   | **Exam \* Answer Crosstabulation** | | | | | | --- | --- | --- | --- | --- | | Count | | | | | |  | | Answer | | Total | | right | wrong | | Exam | Exam\_Q21\_28 | 57 | 25 | 82 | | Exam\_Q22\_33 | 33 | 42 | 75 | | Total | | 90 | 67 | 157 | | | | | | |
| **Chi-Square Tests** | | | | | |
|  | Value | df | Asymp. Sig. (2-sided) | Exact Sig. (2-sided) | Exact Sig. (1-sided) |
| Pearson Chi-Square | 10.422a | 1 | .001 |  |  |
| Continuity Correctionb | 9.405 | 1 | .002 |  |  |
| Likelihood Ratio | 10.527 | 1 | .001 |  |  |
| Fisher's Exact Test |  |  |  | .002 | .001 |
| Linear-by-Linear Association | 10.356 | 1 | .001 |  |  |
| N of Valid Cases | 157 |  |  |  |  |
| a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 32.01.  b. Computed only for a 2x2 table | | | | | |

Because of P=0.001<0.05, there is significant difference.

(3) 

| **Exam \* Answer Crosstabulation** | | | | | |
| --- | --- | --- | --- | --- | --- |
| **Count** | | | | | |
|  | | Answer | | Total |
| right | wrong |
| Exam | Exam\_Q21\_28 | 60 | 29 | 89 |
| Exam\_Q22\_33 | 28 | 52 | 80 |
| Total | | 88 | 81 | 169 |

| **Chi-Square Tests** | | | | | |
| --- | --- | --- | --- | --- | --- |
|  | Value | df | Asymp. Sig. (2-sided) | Exact Sig. (2-sided) | Exact Sig. (1-sided) |
| Pearson Chi-Square | 17.738a | 1 | .000 |  |  |
| Continuity Correctionb | 16.463 | 1 | .000 |  |  |
| Likelihood Ratio | 18.049 | 1 | .000 |  |  |
| Fisher's Exact Test |  |  |  | .000 | .000 |
| Linear-by-Linear Association | 17.633 | 1 | .000 |  |  |
| N of Valid Cases | 169 |  |  |  |  |
| a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 38.34.  b. Computed only for a 2x2 table | | | | | |

Because of P=0.000<0.05, there is significant difference.

1. 

| **Exam \* Answer Crosstabulation** | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Count** | | | | | | | | | |
|  | | Answer | | | | Total | |
| right | | wrong | |
| Exam | Exam\_Q21\_28 | 174 | | 89 | | 263 | |
| Exam\_Q22\_33 | 89 | | 155 | | 244 | |
| Total | | 263 | | 244 | | 507 | |
| **Chi-Square Tests** | | | | | | | | | | | |
|  | | | Value | | df | | Asymp. Sig. (2-sided) | | Exact Sig. (2-sided) | | Exact Sig. (1-sided) |
| Pearson Chi-Square | | | 44.675a | | 1 | | .000 | |  | |  |
| Continuity Correctionb | | | 43.494 | | 1 | | .000 | |  | |  |
| Likelihood Ratio | | | 45.336 | | 1 | | .000 | |  | |  |
| Fisher's Exact Test | | |  | |  | |  | | .000 | | .000 |
| Linear-by-Linear Association | | | 44.587 | | 1 | | .000 | |  | |  |
| N of Valid Cases | | | 507 | |  | |  | |  | |  |
| a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 117.43.  b. Computed only for a 2x2 table | | | | | | | | | | | |

Because of P=0.000<0.05, there is significant difference.

1. 

| **Exam \* Answer Crosstabulation** | | | | |
| --- | --- | --- | --- | --- |
| Count | | | | |
|  | | Answer | | Total |
| right | wrong |
| Exam | Exam\_Q21 | 226 | 37 | 263 |
| Exam\_Q22 | 112 | 132 | 244 |
| Total | | 338 | 169 | 507 |

| **Chi-Square Tests** | | | | | |
| --- | --- | --- | --- | --- | --- |
|  | Value | df | Asymp. Sig. (2-sided) | Exact Sig. (2-sided) | Exact Sig. (1-sided) |
| Pearson Chi-Square | 91.268a | 1 | .000 |  |  |
| Continuity Correctionb | 89.476 | 1 | .000 |  |  |
| Likelihood Ratio | 95.147 | 1 | .000 |  |  |
| Fisher's Exact Test |  |  |  | .000 | .000 |
| Linear-by-Linear Association | 91.088 | 1 | .000 |  |  |
| N of Valid Cases | 507 |  |  |  |  |
| a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 81.33.  b. Computed only for a 2x2 table | | | | | |

Because of P=0.000<0.05, there is significant difference.