ANOVA Review Questions

The following is a one-way ANOVA.

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1. Find the grand mean (\( \bar{x} \)).
   a. 16.5 b. 16.7 *c. 17.0 d. 17.3 e. none of the above

2. Find the sum of squares of treatments.
   a. 34 *b. 36 c. 38 d. 40 e. none of the above

3. Find the sum of squares of errors.
   *a. 34 b. 36 c. 38 d. 40 e. none of the above

   a. 17 *b. 18 c. 19 d. 20 e. none of the above

5. Find the mean squares of errors.
   *a. 3.778 b. 4 c. 4.222 d. 4.444 e. none of the above

6. Find the statistic.
   a. 4.14 b. 4.50 *c. 4.76 d. 5.556 e. none of the above

7. Find the 95% confidence critical value.
   a. 3.01 *b. 4.26 c. 5.71 d. 8.02 e. none of the above

8. Are at least two means different from one another with 95% confidence?
   *a. Yes b. No c. Inconclusive d. None of the above

9. Find the 99% confidence critical value.
   a. 3.01 b. 4.26 c. 5.71 *d. 8.02 e. none of the above

10. Are at least two means different from one another with 99% confidence?
    a. Yes *b. No c. Inconclusive d. None of the above
The following table includes data about three experiments. You are requested to perform a two-way ANOVA test.

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11. Find the grand mean ($\bar{x}$).
   a. 16 b. 17 *c. 18 d. 19 e. none of the above
12. Find the sum of squares of treatments.
    *a. 288 b. 162 c. 156 d. 178 e. none of the above
13. Find the sum of squares of errors.
    a. 288 b. 162 *c. 180 d. 178 e. none of the above
    a. 27 b. 39 c. 48 *d. 144 e. none of the above
15. Find the mean squares of errors.
    a. 27 *b. 45 c. 48 d. 144 e. none of the above
16. Find the statistic.
    *a. 3.20 b. 5.14 c. 5.33 d. 6.94 e. none of the above
17. Find the 95% confidence critical value.
    a. 3.69 b. 5.14 c. 5.33 *d. 6.94 e. none of the above
18. Are at least two means different from one another with 95% confidence?
    a. Yes *b. No c. Inconclusive d. None of the above
19. Find the 99% confidence critical value.
    a. 10.92 b. 9.55 c. 13.27 *d. 18.00 e. none of the above
20. Are at least two means different from one another with 99% confidence?
    a. Yes *b. No c. Inconclusive d. None of the above
The following table includes data about three products. You are requested to perform a one-way ANOVA test.

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21. Find the grand mean (\(\overline{x}\)).
   *a. 22.8 b. 21.8 c. 21.5 d. 22.2 e. none of the above

22. Find the sum of squares of treatments.
   *a. 213.6 b. 172.5 c. 207.6 d. 171.6 e. none of the above

23. Find the sum of squares of errors.
   a. 108 b. 138 c. 126 *d. 114 e. none of the above

24. Find the mean squares of treatments.
   a. 85.8 b. 86.25 *c. 106.8 d. 103.8 e. none of the above

25. Find the mean squares of errors.
   a. 15.43 *b. 16.29 c. 18.00 d. 19.71 e. none of the above

26. Find the statistic.
   a. 4.77 b. 5.59 c. 5.27 *d. 6.56 e. none of the above

27. Find the 95% confidence critical value.
   a. 4.26 *b. 4.74 c. 4.82 d. 4.43 e. none of the above

28. Are at least two means different from one another with 95% confidence?
   *a. Yes b. No c. Inconclusive d. None of the above