

# Upper Critical Values for the Friedman Test

( $k$  treatments and  $b$  blocks)

- Notes 1. In the table below, the critical values give significance levels as close as possible to, but not exceeding the nominal  $\alpha$ .
2. For values of  $k$  and  $b$  beyond the range of the table below, various approximations are available.

|     | $k = 3$ |       | $k = 4$ |       | $k = 5$ |       | $k = 6$ |       |
|-----|---------|-------|---------|-------|---------|-------|---------|-------|
| $b$ | 0.05    | 0.01  | 0.05    | 0.01  | 0.05    | 0.01  | 0.05    | 0.01  |
| 2   | -       | -     | 6.000   | -     | 7.600   | 8.000 | 9.143   | 9.714 |
| 3   | 6.000   | -     | 7.400   | 9.000 | 8.533   | 10.13 | 9.857   | 11.76 |
| 4   | 6.500   | 8.000 | 7.800   | 9.600 | 8.800   | 11.20 | 10.29   | 12.71 |
| 5   | 6.400   | 8.400 | 7.800   | 9.960 | 8.960   | 11.68 | 10.49   | 13.23 |
| 6   | 7.000   | 9.000 | 7.600   | 10.20 | 9.067   | 11.87 | 10.57   | 13.62 |
| 7   | 7.143   | 8.857 | 7.800   | 10.54 | 9.143   | 12.11 |         |       |
| 8   | 6.250   | 9.000 | 7.650   | 10.50 | 9.200   | 12.30 |         |       |
| 9   | 6.222   | 9.556 | 7.667   | 10.73 | 9.244   | 12.44 |         |       |
| 10  | 6.200   | 9.600 | 7.680   | 10.68 |         |       |         |       |
| 11  | 6.545   | 9.455 | 7.691   | 10.75 |         |       |         |       |
| 12  | 6.500   | 9.500 | 7.700   | 10.80 |         |       |         |       |
| 13  | 6.615   | 9.385 | 7.800   | 10.85 |         |       |         |       |
| 14  | 6.143   | 9.143 | 7.714   | 10.89 |         |       |         |       |
| 15  | 6.400   | 8.933 | 7.720   | 10.92 |         |       |         |       |
| 16  | 6.500   | 9.375 | 7.800   | 10.95 |         |       |         |       |
| 17  | 6.118   | 9.294 | 7.800   | 11.05 |         |       |         |       |
| 18  | 6.333   | 9.000 | 7.733   | 10.93 |         |       |         |       |
| 19  | 6.421   | 9.579 | 7.863   | 11.02 |         |       |         |       |
| 20  | 6.300   | 9.300 | 7.800   | 11.10 |         |       |         |       |
| 21  | 6.095   | 9.238 | 7.800   | 11.06 |         |       |         |       |
| 22  | 6.091   | 9.091 | 7.800   | 11.07 |         |       |         |       |
| 23  | 6.348   | 9.391 |         |       |         |       |         |       |
| 24  | 6.250   | 9.250 |         |       |         |       |         |       |

|     | $k = 3$ |       | $k = 4$ |      | $k = 5$ |      | $k = 6$ |      |
|-----|---------|-------|---------|------|---------|------|---------|------|
| $b$ | 0.05    | 0.01  | 0.05    | 0.01 | 0.05    | 0.01 | 0.05    | 0.01 |
| 25  | 6.080   | 8.960 |         |      |         |      |         |      |
| 26  | 6.077   | 9.308 |         |      |         |      |         |      |
| 27  | 6.000   | 9.407 |         |      |         |      |         |      |
| 28  | 6.500   | 9.214 |         |      |         |      |         |      |
| 29  | 6.276   | 9.172 |         |      |         |      |         |      |
| 30  | 6.200   | 9.267 |         |      |         |      |         |      |
| 31  | 6.000   | 9.290 |         |      |         |      |         |      |
| 32  | 6.063   | 9.250 |         |      |         |      |         |      |
| 33  | 6.061   | 9.152 |         |      |         |      |         |      |
| 34  | 6.059   | 9.176 |         |      |         |      |         |      |
| 35  | 6.171   | 9.314 |         |      |         |      |         |      |
| 36  | 6.167   | 9.389 |         |      |         |      |         |      |
| 37  | 6.054   | 9.243 |         |      |         |      |         |      |
| 38  | 6.158   | 9.053 |         |      |         |      |         |      |
| 39  | 6.000   | 9.282 |         |      |         |      |         |      |
| 40  | 6.050   | 9.150 |         |      |         |      |         |      |
| 41  | 6.195   | 9.366 |         |      |         |      |         |      |
| 42  | 6.143   | 9.190 |         |      |         |      |         |      |
| 43  | 6.186   | 9.256 |         |      |         |      |         |      |
| 44  | 6.318   | 9.136 |         |      |         |      |         |      |
| 45  | 6.178   | 9.244 |         |      |         |      |         |      |
| 46  | 6.043   | 9.435 |         |      |         |      |         |      |
| 47  | 6.128   | 9.319 |         |      |         |      |         |      |
| 48  | 6.167   | 9.125 |         |      |         |      |         |      |
| 49  | 6.041   | 9.184 |         |      |         |      |         |      |
| 50  | 6.040   | 9.160 |         |      |         |      |         |      |