

TABLE B.10A

Critical Values of the Mann-Whitney  $U$  for  $\alpha = .05^*$ 

\*Critical values are provided for a one-tailed test at  $\alpha = .05$  (lightface type) and for a two-tailed test at  $\alpha = .05$  (boldface type). To be significant for any given  $n_A$  and  $n_B$ , the obtained  $U$  must be equal to or less than the critical value in the table. Dashes (–) in the body of the table indicate that no decision is possible at the stated level of significance and values of  $n_A$  and  $n_B$ .

| $n_B \backslash n_A$ | 1 | 2 | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15  | 16  | 17  | 18  | 19  | 20  |
|----------------------|---|---|----|----|----|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|
| 1                    | – | – | –  | –  | –  | –  | –  | –  | –  | –  | –  | –  | –  | –  | –   | –   | –   | –   | 0   | 0   |
| 2                    | – | – | –  | –  | 0  | 0  | 0  | 1  | 1  | 1  | 1  | 2  | 2  | 2  | 3   | 3   | 3   | 4   | 4   | 4   |
| 3                    | – | – | 0  | 0  | 1  | 2  | 2  | 3  | 3  | 4  | 5  | 5  | 6  | 7  | 7   | 8   | 9   | 9   | 10  | 11  |
| 4                    | – | – | 0  | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12  | 14  | 15  | 16  | 17  | 18  |
| 5                    | – | 0 | 1  | 2  | 4  | 5  | 6  | 8  | 9  | 11 | 12 | 13 | 15 | 16 | 18  | 19  | 20  | 22  | 23  | 25  |
| 6                    | – | 0 | 2  | 3  | 5  | 7  | 8  | 10 | 12 | 14 | 16 | 17 | 19 | 21 | 23  | 25  | 26  | 28  | 30  | 32  |
| 7                    | – | 0 | 2  | 4  | 6  | 8  | 11 | 13 | 15 | 17 | 19 | 21 | 24 | 26 | 28  | 30  | 33  | 35  | 37  | 39  |
| 8                    | – | 1 | 3  | 5  | 8  | 10 | 13 | 15 | 18 | 20 | 23 | 26 | 28 | 31 | 33  | 36  | 39  | 41  | 44  | 47  |
| 9                    | – | 1 | 3  | 6  | 9  | 12 | 15 | 18 | 21 | 24 | 27 | 30 | 33 | 36 | 39  | 42  | 45  | 48  | 51  | 54  |
| 10                   | – | 1 | 4  | 7  | 11 | 14 | 17 | 20 | 24 | 27 | 31 | 34 | 37 | 41 | 44  | 48  | 51  | 55  | 58  | 62  |
| 11                   | – | 1 | 5  | 8  | 12 | 16 | 19 | 23 | 27 | 31 | 34 | 38 | 42 | 46 | 50  | 54  | 57  | 61  | 65  | 69  |
| 12                   | – | 2 | 5  | 9  | 13 | 17 | 21 | 26 | 30 | 34 | 38 | 42 | 47 | 51 | 55  | 60  | 64  | 68  | 72  | 77  |
| 13                   | – | 2 | 6  | 10 | 15 | 19 | 24 | 28 | 33 | 37 | 42 | 47 | 51 | 56 | 61  | 65  | 79  | 75  | 80  | 84  |
| 14                   | – | 2 | 7  | 11 | 16 | 21 | 26 | 31 | 36 | 41 | 46 | 51 | 56 | 61 | 66  | 71  | 77  | 82  | 87  | 92  |
| 15                   | – | 3 | 7  | 12 | 18 | 23 | 28 | 33 | 39 | 44 | 50 | 55 | 61 | 66 | 72  | 77  | 83  | 88  | 94  | 100 |
| 16                   | – | 3 | 8  | 14 | 19 | 25 | 30 | 36 | 42 | 48 | 54 | 60 | 65 | 71 | 77  | 83  | 89  | 95  | 101 | 107 |
| 17                   | – | 3 | 9  | 15 | 20 | 26 | 33 | 39 | 45 | 51 | 57 | 64 | 70 | 77 | 83  | 89  | 96  | 102 | 109 | 115 |
| 18                   | – | 4 | 9  | 16 | 22 | 28 | 35 | 41 | 48 | 55 | 61 | 68 | 75 | 82 | 88  | 95  | 102 | 109 | 116 | 123 |
| 19                   | 0 | 4 | 11 | 18 | 25 | 32 | 39 | 47 | 54 | 62 | 69 | 77 | 84 | 92 | 100 | 107 | 115 | 123 | 130 | 138 |
| 20                   | 0 | 4 | 11 | 18 | 25 | 32 | 39 | 47 | 54 | 62 | 69 | 77 | 84 | 92 | 100 | 107 | 115 | 123 | 130 | 138 |