

metres. The range will actually depend upon the length (height) of the antenna.

A regulated 9-volt supply using IC

7809 should be used. Otherwise, a little hum will be generated. Pin configuration of transistor BD139, being differ-

ent from that of ordinary transistors, is shown in the diagram.

Quiz Display with Seven-Segment Indication

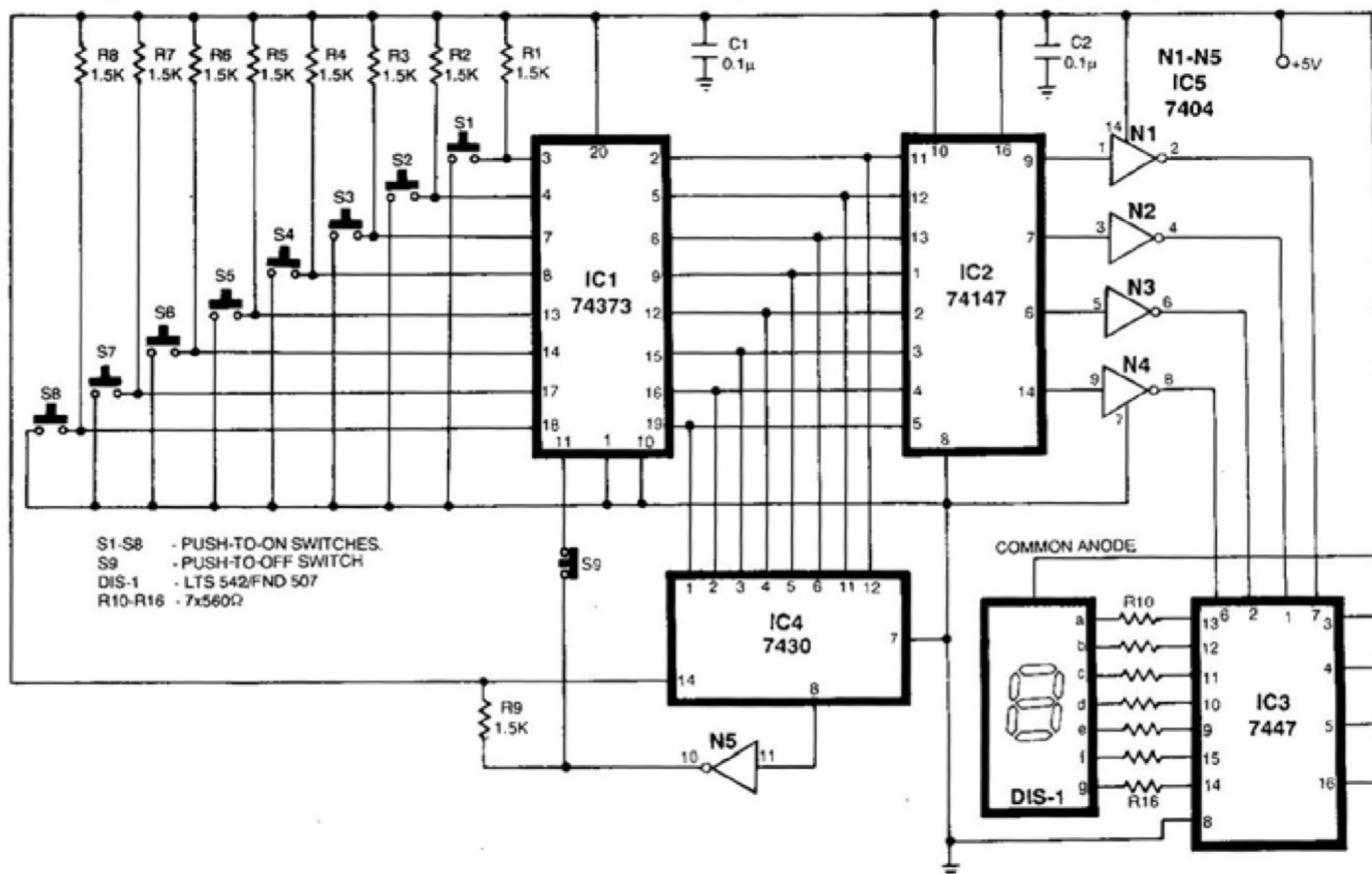
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Quiz contests are becoming increasingly popular and the so-called 'buzzer' rounds are now an integral part of such contests. In such rounds each team is provided with a pushbutton switch and questions are addressed to all the participating teams. The team that presses

connected to the push-to-on switches and outputs to the inputs of IC2 which is a priority encoder. IC2 is used in this circuit to convert the data latched on IC1 to BCD. The outputs of IC2 are inverted by N1-N4 which are inverters. The complemented outputs are fed to

cause whenever any one of the switches is pressed, the output of IC4 goes high. The complement of this input is fed to the enable input of IC1, disabling the latches until the reset switch is pressed.

The circuit must be powered by a 5-volt $\pm 5\%$ power supply. Current limit-



the buzzer first is allowed to answer the question. A circuit that can be used for this purpose is shown in the figure. It can accommodate up to eight teams. It makes use of a 7-segment display to indicate the team that pressed the switch first.

The circuit is based on TTL ICs. IC1 is an 8-bit latch whose inputs are

the inputs of IC3 which is a BCD to 7-segment display decoder. This device's outputs drive a common-anode, 7-segment display. Current limiting resistors R10 to R17 limit the current available to the display. IC4 is used to prevent the latches from registering more than one team's input, i.e. only the first team's input is registered. This happens be-

ing resistors (R10-R16) values may be increased to decrease brightness of the display and vice-versa. The whole circuit may be built on a veroboard. Until the switches are pressed, the display will show zero. When a zero is displayed, it means that the circuit has been reset and that it is ready to accept data from the switches.