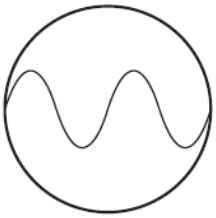
Electronics – 2021 O Level 5054

1. Nov/2021/Paper_11/No.36

A microphone detects a musical sound and the signal is fed into an oscilloscope. The diagram shows the trace which appears on the screen.



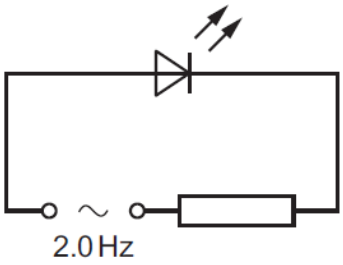
The spot of light on the oscilloscope screen takes 1.2 ms to travel across the screen.

What is the frequency of the musical sound?

A 170 Hz **B** 330 Hz **C** 1700 Hz **D** 3300 Hz

2. Nov/2021/Paper_12/No.36

The diagram shows an LED connected in a circuit with a resistor and an a.c. power supply of frequency 2.0 Hz.



Which statement is correct?

A The LED does not light.

B The LED flashes on twice each second and off twice each second.

C The LED flashes on four times each second and off four times each second.

D The LED stays on all the time.

3. Nov/2021/Paper_21/No.7(or)

Fig. 7.2 shows the symbol for a logic gate and its truth table.

input		output
0	0	1
0	1	0
1	0	0
1	1	0

Fig. 7.2

(a) State the name of the logic gate shown in Fig. 7.2.

..... [1]

(b) Fig. 7.3 shows two of these logic gates connected to make a bistable circuit.

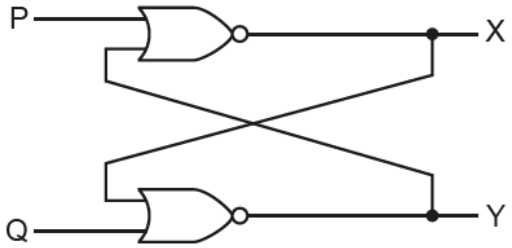


Fig. 7.3

Terminals P and Q each have the logic level 0.

Terminal X has the logic level 1.

(i) Explain why terminal Y has the logic level 0.

.....

..... [1]

(ii) Terminal P is briefly connected to a supply of logic level 1.

State the effect of this on the logic level of terminal X and the logic level of terminal Y.

.....

..... [1]

(iii) Terminal P returns to logic level 0 again.

State the effect of this return to value 0 on the logic level of terminal X and on the logic level of terminal Y.

.....

..... [1]

(iv) State how this circuit exhibits the property of memory.

.....

..... [1]

[Total: 5]

4. Nov/2021/Paper_22/No.5(or)

Fig. 5.2 shows the symbol for an electronic circuit component.

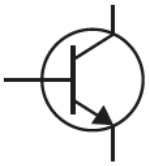


Fig. 5.2

(a) State the name of the component shown in Fig. 5.2.

..... [1]

(b) Fig. 5.3 is the diagram of a circuit that includes this component, a light-dependent resistor (LDR) and a relay.

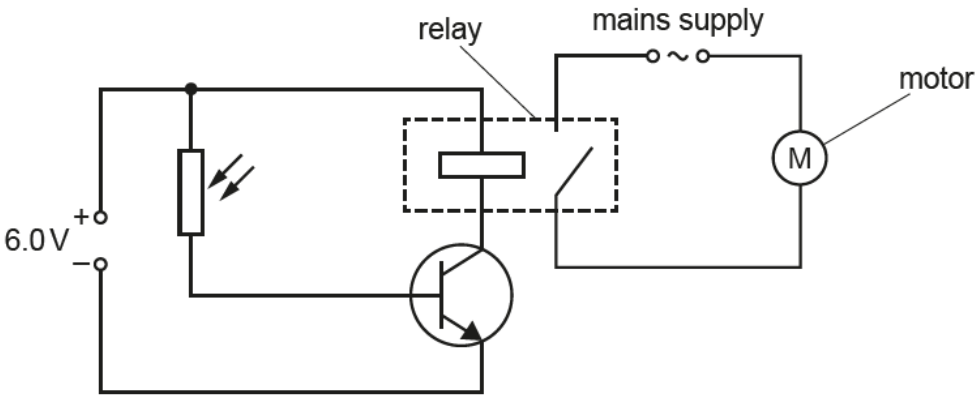


Fig. 5.3

The motor in Fig. 5.3 is part of the pump in a garden fountain. In the dark, the pump does not work.

In the morning, the brightness of the light incident on the LDR increases.

(i) State what happens to the LDR.

..... [1]

(ii) Explain why the motor switches on.

.....

.....

.....

..... [3]

[Total: 5]

5. June/2021/Paper_22/No.8b(or)

(b) A simple bistable circuit contains NOR gates.

(i) In the space below, draw the circuit symbol of a NOR gate.

[1]

(ii) Describe what is meant by a *bistable circuit*.

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..... [2]