CHAPTER 9 : ELECTRONIC

14. Diagram 13 shows a circuit with a transistor that act an automatic switch.
Rajah menunjukkan satu litar bertransistor yang berfungsi sebagai suis automatik.

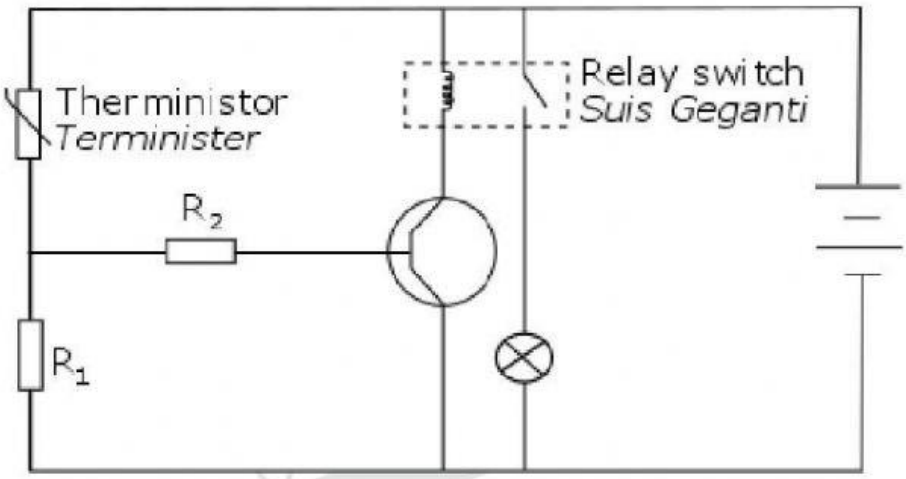

Diagram 13
Rajah 13

The transistor in the circuit causes the relay switch to turn on when the ambient temperature is hot.
Transistor pada litar di atas menyebabkan suis geganti dipasang apabila suhu persekitaran panas.

Table 13 shows specifications of resistors, thermistor and transistor used in the circuit.
Jadual 13 menunjukkan spesifikasi perintang-perintang, termistor dan transistor yang terdapat pada litar tersebut.

Circuit *Litar*	**Resistor, R_1** *Perintang*, R_1	**Resistor, R_2** *Perintang*, R_2	**Thermistor** *Termister*	**Transistor** *Transistor*
P	10kΩ	1kΩ	25 – 100^{0}C	p-n-p
Q	100kΩ	10Ω	30 – 80^{0}C	p-n-p
R	1kΩ	1kΩ	25 – 100^{0}C	n-p-n
S	10Ω	100kΩ	30 – 80^{0}C	n-p-n

Table 13

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You are required to determine the most suitable circuit. Study the specifications of all four circuit based on the following aspects:
Anda dikehendaki mengenalpasti litar yang paling sesuai. Kaji spesifikasi keempat-empat litar itu berdasarkan aspek yang berikut:

- Resistance of resistor R_1
  Rintangan perintang R_1
- Resistance of resistor R_2
  Rintangan perintang R_2
- Base themperature of the thermistor.
  Suhu dasar termistor
- Type of transistor
  Jenis transistor

Explain the suitability of each characteristic of the circuit.
Terangkan kesesuaian setiap ciri litar itu.
Determine the most suitable circuit. Give reasons for your choice.
Tentukan litar yang paling sesuai. Berikan sebab-sebab untuk pilihan anda.

Characteristics *Ciri-ciri*	Explanation *Keterangan*

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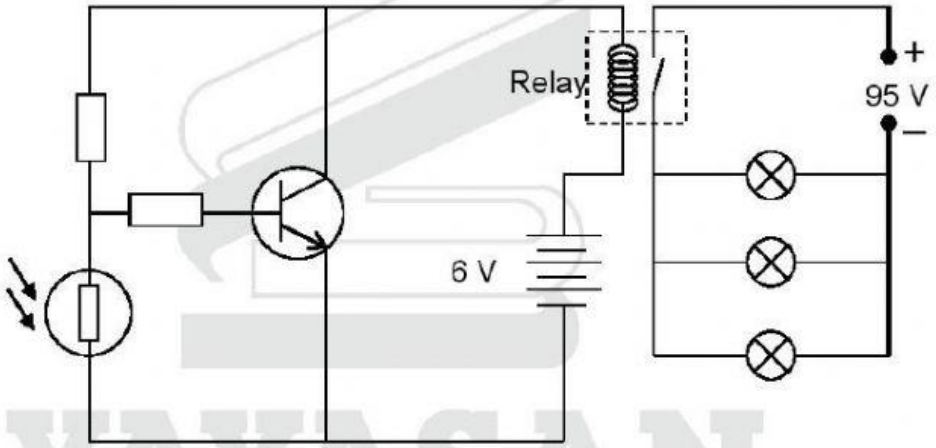
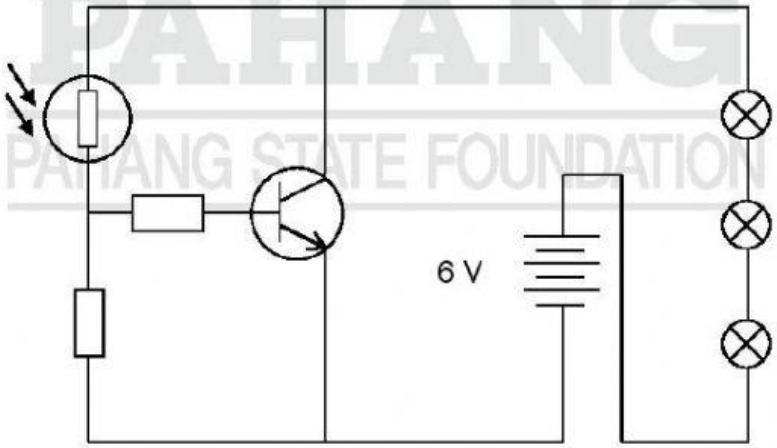
14. Diagram 14 shows four electronic circuits R, S, T and U with different specifications. You are required to determine the most suitable electronic circuit to light up three street lights 95 V, 65 W automatically with normal brightness when it is dark.

Rajah 14 menunjukkan empat litar elektronik R, S, T dan U dengan spesifikasi yang berbeza. Anda dikehendaki menentukan litar elektronik yang paling sesuai untuk menyalakan ketiga-tiga lampu jalan 95 V, 65 W secara automatik dengan kecerahan normal apabila keadaan gelap.

Circuit *Litar*	Circuit diagrams *Rajah litar*
R	
S	

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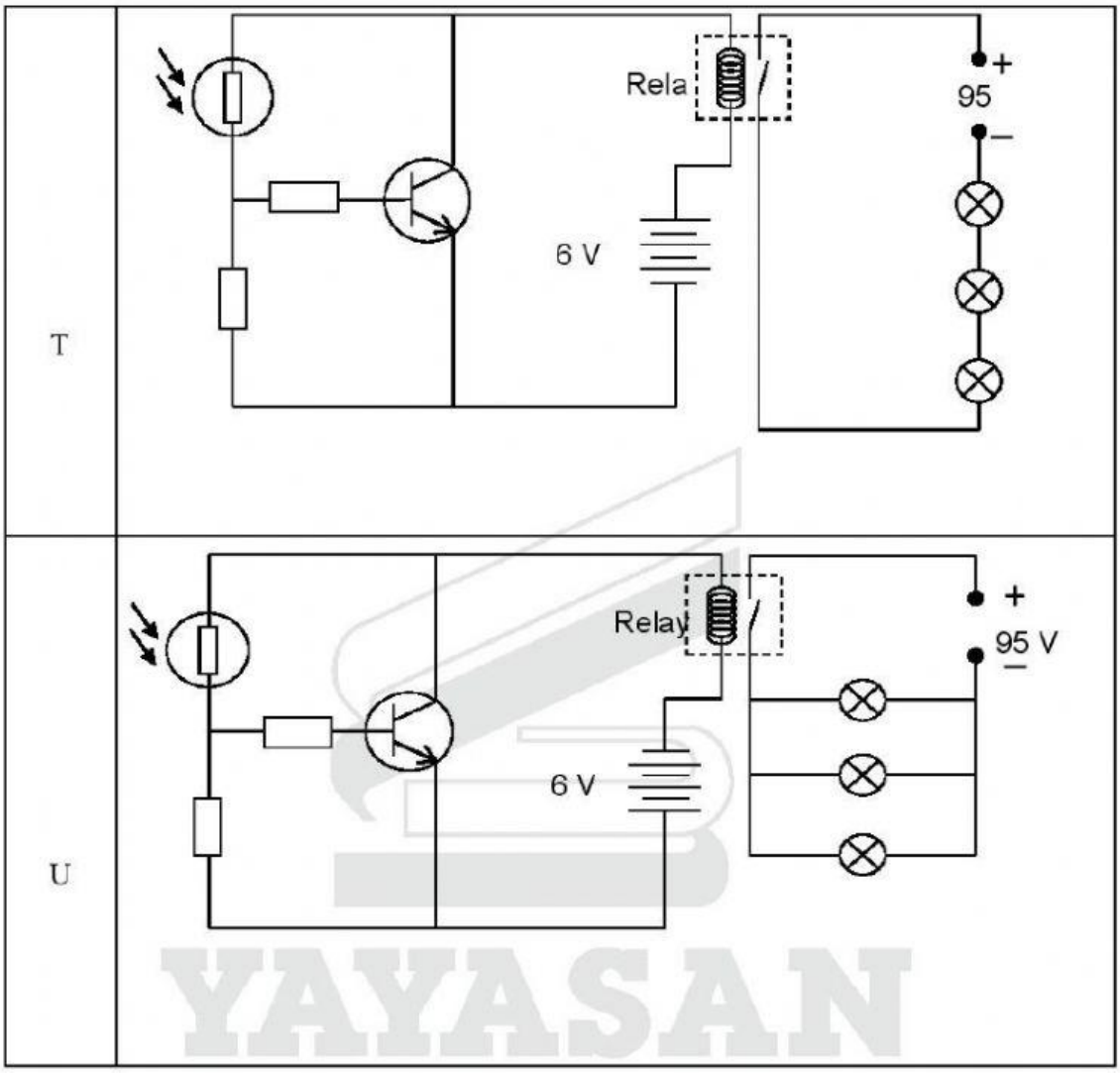

Diagram 14
Rajah 14

Study the specifications of all of the four circuits based on the following aspects:
Kaji semua spesifikasi tersebut berdasarkan aspek-aspek berikut:

- The position of the light dependent resistor (LDR).
  Kedudukan perintang peka cahaya (PPC).
- The connection of the batteries.
  Penyambungan bateri.
- The arrangement of the street lights circuit.
  Susunan litar lampu-lampu jalan
- The use of a relay switch in the circuit.
  Penggunaan suis geganti dalam litar.

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Determine the most suitable circuit diagram to be chosen and give reasons for your choice.
Tentukan gambarajah litar yang paling sesuai dipilih dan berikan sebab bagi pilihan anda.

[10 marks /*markah*]

Characteristics *Ciri-ciri*	Explanation *Keterangan*

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