Answer

FORM 5

CHAPTER 5

Paper 1

1	B	**2**	A	**3**	B	**4**	D	**5**	D
6	C	**7**	B	**8**	D	**9**	D	**10**	A

Paper 2

Structured Question

1 (a) pnp type transistor.

(b) (i) 4.2 V

(ii) 6×10^{-5} A

(c) When the LDR is in the bright state, the base circuit will be activated. A larger current flow in the collector circuit and causes the light emitting diode to light up.

2 (a) To accelerate electrons from the cathode to the anode.

(b) (i) Heating the cathode so that electrons are released.

(ii) Produces light when struck by electrons.

(c) 2.98×10^{7} m s^{-1}

(d) (i) The green light area dimmed.

(ii) Electrons are less energetic due to the lower acceleration potential difference and this causes the brightness of the green light to decrease.

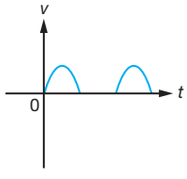
3 (a) Silicon

(b) (i) The diode in the circuit *P* is connected in reverse bias while the diode in the circuit *Q* is connected in forward bias.

(ii) The bulb in the circuit *P* does not light up while the bulb in the circuit *Q* lights up.

(c) The bulb only lights up when the diode is forward biased.

(d) (i)



(ii) Rectification

Essay Questions

4 (a) The process of inserting a small, controlled number of impurities into the lattice of a pure semiconductor crystal.

(b)

Material	Conductivity
Conductor	Height
Insulation	Low
Semiconductor	Low at low temperature, high at high temperature

(c)

	Majority charge carriers	Minority charge carriers
Semiconductor type *p*	Hollow	Free electrons
Semiconductor type *n*	Free electrons	Hollow

(d)

Appropriate features	Reason
A substance with 4 valence electrons	Pentavalent or trivalent elements can be easily doped into them to form *p* type or *n* type semiconductors
Highest melting point	So that the material does not melt at high temperatures
Solid state	Materials can be easily formed into various types of components
Resistivity at room temperature	Current can flow through it easily
Material *C* is the most suitable	Because it has 4 valence electrons, its highest melting point, in the solid state and low resistivity at room temperature

(e) (i) A diode only allows current to flow in one direction only

(ii)