

Engineering Studies

Section II (continued)

Marks

Question 16 — Telecommunication (15 marks)

- (a) (i) The telecommunications industry uses copper and fibre optics for transmission of data. State a different application for each of these materials, and explain, in terms of their properties, why they are used for this application. 4

...Copper wires are oxygen free, ~~have~~ high resistivity which are used in telegraphs from the house to the main power source so that electrical signals can be sent clearly. Fibre optic cables are taken over due to the increased bandwidth of the material. Thus making it an efficient way in communication uses being able to transmit greater amounts of information without be infered by other transmission mediums.

- (ii) Cold drawing is used to form copper into electrical wire. Describe TWO problems associated with the use of the process. Describe a subsequent process that will reduce these problems. 3

① Relative poor grain structure, squashing the molecules
 ② Slower process of drawing the material into wire, decreasing its ductility state.
~~that~~ Cold rolling increase the intensity of the grain structure

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Question 16 (continued)

- (b) Identify TWO technological changes in the telecommunications industry. 4
 Discuss the effects that these changes have had on society.

One technological change in the telecommunication signal is the changing pattern of communication from binary morse code invented by Samuel Morse in 1838 to transmitting the information by electronic medium such as the telephone. The other technological is the invention of the mobile telephone allowing a change in communicating by the use of symbols such as a text message. It is a more private means of communication.

But the negative issue about mobile phones is the lack of connection in rural areas. With a telephone it is a common means of communication quickly from the telegraph by mail.

- (c) (i) Describe the transmission of data from a mobile phone to another mobile phone. 2

Sound signals are converted into electrical signals are converted into a transmission medium to sound signals to the duode ear. It is simply and efficient means of communication.

- (ii) Explain the effect that mobile phone communications may have on other electronic systems. State TWO situations where this effect could endanger lives. 2

It can affect many electronic devices. Such as in hospitals and doctor surgery where it can interfere with the transmission of medium of life supporting devices, which could endanger the lives of human beings.

End of Question 16