

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

A big difference is 5mm of the copper cable can handle around 600 conversations at once, while a fibre optic cable with the same thickness can handle around 20,000 conversations. Another great advantage with fibre optics, is how it doesn't get effected by any magnetic field, while copper wiring can lead to distortion.

- (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

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Question 16 (continued)

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

* We are in the era now in which we can contact someone from anywhere in the world. Thanks to mobile phones, which gives off a digital signal which to satellites which can be received by another phone ~~any~~ in even the most remote locations. ~~the~~ ~~zimbabwe~~ phone lines are now connected to every part of the world. This is done by submarine cables. We now can have conversations with people overseas without having to be connected to a phone operator.

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

Speaking into the phone is a Analogy signal transmitted in to digital form. It then ~~is~~ is received by a satellite to the receiver which then is converted back to analogy so the person hears you.

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

Mobile phone are very prone to interfering with hospital signals, which could prevent a emergency call from being received. it also ~~interferes~~ interferes with the plane signals, so talking on a mobile while flying, could make the plane malfunction, and crash

End of Question 16