Information and Communication Technology
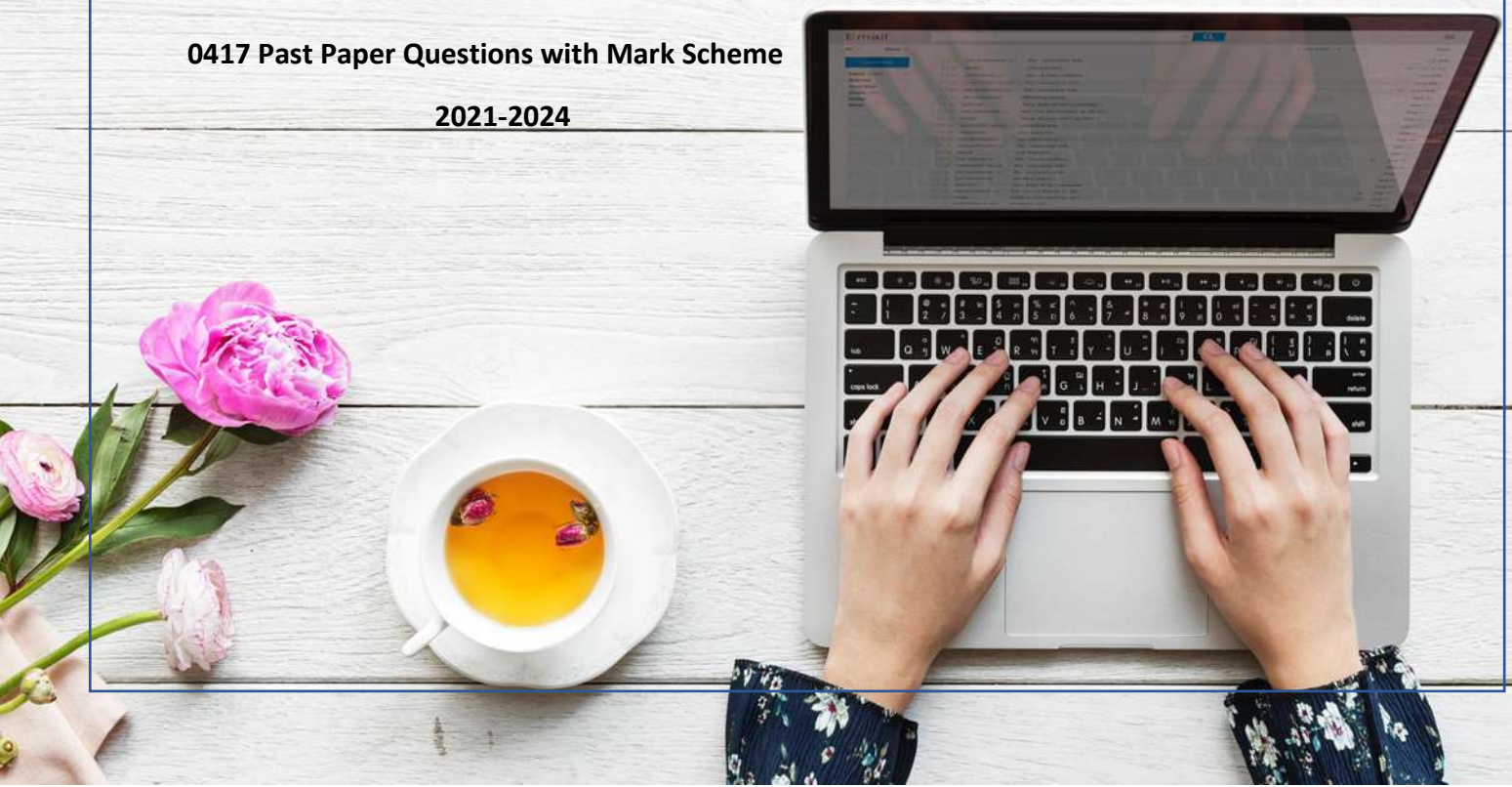# -0417-

Chapter Five: The Effects of Using IT

0417 Past Paper Questions with Mark Scheme

2021-2024

1   Geeta spends a great deal of time at work entering data into her computer.

State **three** items of hardware that Geeta should be provided with to help avoid RSI when she enters data into the computer.

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2 ....

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3 ....

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[3]

2   Describe the computer processing involved in the use of a microprocessor-controlled fitness tracker when displaying and monitoring the blood pressure of the user.

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.... [4]

3   As a student you often use a computer screen. This could be a screen on a desktop computer, a laptop computer or even a smartphone.

Evaluate your use of computer screens, in terms of health risks, and explain any strategies you use to minimise these health risks.

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.... [6]

4   As a student you often use a computer keyboard. This could be a virtual keyboard or a physical keyboard on a desktop computer, a laptop computer or even a smartphone.

Evaluate your use of computer keyboards in terms of health risks, and explain any strategies you use to minimise these health risks.

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5   When using computers people can suffer from Repetitive Strain Injury (RSI).

   (a) Describe the term RSI. Include in your answer the causes of RSI.

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   ....   [3]

   (b) Identify **three** methods of reducing the effects of RSI.

   1 ....

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   2 ....

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   3 ....

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                                                                                                                  [3]

6 The prolonged use of computers can cause several health problems particularly when sitting down and using monitors.

Discuss the strategies that you have developed to minimise health risks which only relate to sitting down and using a monitor.

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.... [8]

7   Eye strain is one of the health issues associated with using computers.

   (a)   Explain **three** causes of eye strain when using computers.

       1 ....

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       2 ....

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       3 ....

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                                                                                          [3]

   (b)   Identify **four** methods of reducing the effects of eye strain.

       1 ....

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       2 ....

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       3 ....

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       4 ....

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                                                                                          [4]

8 The secretary of Tawara University has created web pages for former students. The former students are adults.

   (a) State the design features of the web pages that would meet the needs of this target audience.

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   .... [6]

   (b) The web pages conform to the university's corporate house style.

   Describe why a corporate house style is used.

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   .... [3]

   (c) Give **four** design features of a corporate house style.

   1 ....

   2 ....

   3 ....

   4 ....

   [4]

9   Smart devices and microprocessors can monitor and control devices in the home.

Describe, giving examples, the negative effects of using these smart devices.

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....   [4]

10 Complete each of the following sentences which relate to health and safety issues when using ICT equipment.

(a) Trailing leads in a computer room can cause

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[1]

(b) Continual typing on a keyboard can cause

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[1]

(c) Staring at a computer screen for long periods of time can cause

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[1]

(d) Spilling water onto computer equipment can cause

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[1]

11 Vehicles can contain microprocessor controlled devices to improve transport safety. For example when a vehicle approaches a road speed sign the microprocessor sends an alert to the driver.

Discuss the positive and negative effects of using microprocessor controlled devices in transport safety.

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[6]

12 Discuss the positive and negative effects of using microprocessor-controlled devices in autonomous vehicles.

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.... [6]

13 (a) State **three** health problems that can be caused by entering data for a long period of time.

1 ....

2 ....

3 ....

[3]

Ch.8 (b) State **three** physical safety issues that can be caused by using a computer.

1 ....

2 ....

3 ....

[3]

14 Repetitive strain injury (RSI) and eye strain can be caused by using a computer. Taking breaks is one strategy for reducing these health issues.

(a) State **two** causes of repetitive strain injury (RSI) and give **two** other strategies for preventing it.

Cause 1 ....

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Cause 2 ....

....

Strategy 1 ....

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Strategy 2 ....

....

[4]

(b) State **two** causes of eye strain and give **two** other strategies for preventing it.

Cause 1 ....

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Cause 2 ....

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Strategy 1 ....

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Strategy 2 ....

....

[4]

Mark Scheme

Question	Answer	Marks
1	**Three** from: Ergonomic keyboard Ergonomic mouse Microphone Wrist rest	3

Question	Answer	Marks
2	**Four** from: The data is sent to/read by the microprocessor The data is stored by the tracker Convert the raw data into blood pressure data Compare the data with pre-set values If out of range <u>send data</u> to an alert system The data is <u>sent to</u> the screen	4

Question	Answer	Marks
3	**Problem:** **Award a mark for each problem identified** I avoid back and neck problems I avoid eye strain I avoid getting headaches I avoid epilepsy **Strategies:** Max **four** from: Make sure the top of the screen is at eye level Make sure that I adjust the tilting screen correctly Take regular breaks Do neck/back exercises Make sure I use blue lens spectacles Use a screen filter Use a matt/anti-glare screen Turn the screen away from the window Use a computer screen for a short time/take regular breaks Have my eyes tested regularly Improve the lighting in the room Sitting further away from the screen Keeping the screen clean Position the screen to reduce glare Use a non-flickering screen/LED/LCD Turn the brightness down on the screen	6

Question	Answer	Marks
4	**Health problem:** Award **one** mark for each problem identified I can reduce Carpel Tunnel Syndrome I can reduce Cubital Tunnel Syndrome I can reduce neck/back pain **Strategies:** Max **six** strategies Take frequent breaks Use hand exercises Not pressing the keyboard too hard Use software to reduce the pressure on the keys Use voice recognition/microphone Use predictive text//shortcuts Use ergonomic keyboards Use a wrist rest Lift the wrists up when typing Maintain a correct posture	8

Question	Answer	Marks
5a	**One** from: Aches and pains in the hands and fingers Painful swelling of the wrist and fingers **Two** from: Caused by repetitive movements Caused by holding a mouse and clicking the buttons repetitively Caused by constant typing on a keyboard Caused by sitting in a poor posture for a long period of time	3
5b	**Three** from: Use of a wrist rest Use of a mouse rest Take regular breaks Exercise the hand and fingers Use an ergonomic keyboard/ergonomic mouse Arrange workspace so that it is not cramped Using an ergonomic chair	3

Question	Answer	Marks
6	**Eight** from: **Use of the monitor** Using a flat screen monitor can reduce eye strain and headaches I turn the monitor 90 deg to the window to reduce the glare on the screen If I turn the monitor this can cause problems with the layout of the room I need to buy a monitor that could tilt to reduce neck ache I close the window blinds to avoid glare on monitor/headaches I should not use rooms with more than one window but this could be difficult I could use a matt screen to prevent glare/headaches I use a flat screen monitor as there is less flicker therefore reduces the chance of an epileptic seizure/eye strain/headaches I keep the screen clear of dust to reduce static and eye strain I could have my eyesight tested regularly Brightness of the room should equal the brightness of the screen to prevent eye strain Enable blue light filter/blue light glasses to prevent eye strain I could set night light on the computer to prevent eye strain I sit at arms length from the screen to prevent eye strain **Sitting down** I use an ergonomic chair/standing desk to reduce back and neck pains I sit with correct posture to help reduce back and neck pain I use a footrest to reduce DVT/improve posture If there are wheels on the chair for easy movement I should be careful to avoid injury problems with the chair moving backwards **Maximum of six marks if candidate only mention strategies for either sitting down or using a monitor**	8

Question	Answer	Marks
7a	**Three** from: Staring at a computer screen for prolonged periods of time Working in a room with poor lighting/Screen brightness too high/blue light of screen Wrong setting on contrast Glare from windows Flickering screens Dirty screens Sitting too close to a screen Text too small/font colour is contrasting with background/incorrect resolution/screen too small	3
7b	**Four** from: Take regular breaks/look into the distance to relax the eyes/look at green objects Use TFT/LCD/LED/flat screens to reduce the flicker Use anti-glare screens/TFT/matt screens/window blinds to reduce the glare Match the lighting in the room with the brightness of the computer screen Turn the screens 90 degrees to the window to reduce the glare on the screen Enable blue light filter/wear blue light glasses Use night screen light on the computer Have eyes tested regularly Use a LED/LCD/flat screen monitor can reduce eye strain and headaches Keep the screen clear of dust/dirt	4

Question	Answer	Marks
8a	**Six** from: *Age:* • Balance of text and images to attract older audience • Uncluttered // Use of white space // Organised layout • Don't use childish language **Consistent design** *Interests:* • Interesting content • Keep on topic • Knowing the audience's interests and writing about them *Accessibility:* • Contrasting colours to make it easier to read • Clear (readable) fonts • Larger fonts to help those with visual impairments • Keep the content simple • Interactivity • Don't use red and green due to colour blindness	6
8b	**Three** from: • Provides consistency • Allows all documentation to contain the same header/footer information • Saves money/time on producing new documentation details • People using the web pages know it is part of the university website • Relates to the university identity/brand image	3
8c	**Four** from: • Corporate colours used • Corporate font style • Corporate font size • Inclusion of the logo • Position of the logo • Position of text • Layout of address	4

Question	Answer	Marks
9	Max **three** from, for example: The device can prevent users from leaving the house Use of this device leads to the user becoming lazy Using this device user becomes obese Using this device the user becomes de-skilled Using this device it affects well-being/mental health The device may stop working/malfunction The device leads to over reliance The device leads to false alarms The device could be over-sensitive The device can order items that you do not want/need Max **two** for naming valid smart devices	4

Question	Answer	Marks
10a	Injuries from trip hazard	1
10b	RSI/Repetitive Strain Injury	1
10c	**One** from: Eye strain Headache	1
10d	Electrocution	1

Question	Answer	Marks
11	Max **five** from: **Positive** Travel becomes safer Allows the driver to concentrate more on the driving Helps to prevent human error Keeps pedestrians and other people safe Can avoid accidents Max **five** from: **Negative** Become very reliant on the technology Very costly to repair/maintain Makes the vehicle more expensive The device/microprocessor could stop working/misread causing injuries Error messages/alerts could distract the driver	6

Question	Answer	Marks
12	Max **five** from: ***Positive*** Driving/travel becomes safer as the vehicle can react faster to situations Fuel/driving becomes more efficient as the vehicle finds the best way of getting from A to B Prevents human error Keeps drivers/others safe Can avoid accidents Max **five** from: ***Negative*** The vehicle/driver is totally dependent on the technology Very costly to repair/maintain Makes the vehicle more expensive to build/buy as it needs complex systems The device could stop working/misread/disconnect causing accidents/distractions for people Security problem of others/hackers gaining access to the vehicle can control its operation example: slam on the brakes Interference with the signal can stop the vehicle weather can interfere with the signal The driver must remain alert to override the system if needed Humans lose driving skills as no need to learn how to drive (1) Not as safe as the driver is less focused on the road	6

Question	Answer	Marks
13a	Three from: Eye strain Repetitive Strain Injury Back ache / Neck ache Headache	3
13b	Three from: Tripping over trailing leads Fire Electrocution Injuries caused by equipment falling	3

Question	Answer	Marks
14a	***Causes*** **Two** from: Typing on a computer keyboard for a long period of time Excessive use of a mouse Holding a mouse incorrectly Working in a cramped workspace Resting the wrists on the desk when typing ***Strategies*** **Two** from: Use an ergonomic keyboard Use an ergonomic mouse Use a wrist rest Arrange the workspace Use voice recognition Exercise hands	4
14b	***Causes*** **Two** from: Staring at a computer screen for a long period of time Sitting too close to the screen Working in inappropriate lighting Glare on the computer screen Dirt on the screens Blue light affecting the eyes ***Strategies*** **Two** from: Turn down / up the brightness of the screen to match the room lighting Use flicker free screens Use blue light filters / glasses Turn the screen 90 degrees to the window Use an adjustable screen Keep the screens clear of dust Have eyes tested regularly Use night screen mode	4