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**Psychology**  
**Higher level**  
**Paper 3**

Monday 13 May 2019 (morning)

1 hour

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**Instructions to candidates**

- Do not open this examination paper until instructed to do so.
- Read the passage carefully and then answer all the questions.
- The maximum mark for this examination paper is **[24 marks]**.

The stimulus material below is based on a study on the influence of multitasking on student learning.

5 Multitasking (doing more than one task at a time) and its consequences on learning has become a growing concern in education because students are increasingly engaged with their laptops or smartphones. In classrooms, students tend to switch between academic and non-academic tasks. Research indicates that this multitasking results in cognitive overload and weaker encoding of primary information into long-term memory.

10 The aim of the study was to investigate if multitasking on a laptop would impair learning as measured by the number of correct scores on a comprehension test. The participants were forty undergraduate students from a university in North America (N=40). There were even numbers of males and females and the mean age was 18.9 years. A convenience sample of students enrolled in an introductory psychology course received course credit for participating. They were recruited from a psychology research website. It was only explained that the study involved listening to a class lecture and filling out a multiple-choice quiz.

15 All participants attended a 45-minute lecture on meteorology in a traditional college classroom. Their primary task was to take notes using their laptops. The 20 participants in the multitasking condition were also asked to complete 12 online tasks during the lecture. The participants were randomly allocated a seat number as they entered the classroom. The researchers told participants that their individual instruction sheet and consent form were placed on their seat. After the lecture, all participants completed a 40-question multiple-choice quiz on the lecture content in order to check their comprehension. Finally, they were debriefed.

20 The results showed that participants who multitasked during the lecture scored 11 % lower than participants who did not multitask. The result was significant and consistent with previous studies showing that multitasking during learning negatively affects encoding and transfer of information to long-term memory.

[Source 1: Faria Sana, Melody Wiseheart and Tina Weston (2014). 'The direct and indirect effects of laptop multitasking in higher education.' *Pédagogie Collégiale*, vol. 27, no. 2, Winter 2014; [http://aqpc.qc.ca/sites/default/files/revue/Weston-Vol\\_27-2%2520%28A%29%2520.pdf](http://aqpc.qc.ca/sites/default/files/revue/Weston-Vol_27-2%2520%28A%29%2520.pdf)

Source 2: adapted from *Computers & Education*, Vol. 62, March 2013, Faria Sana, Tina Weston and Nicholas J. Cepeda, 'Laptop multitasking hinders classroom learning for both users and nearby peers', pp. 24–31, copyright 2012, with permission from Elsevier; <https://www.sciencedirect.com/science/article/pii/S0360131512002254?via%3Dihub>

Answer **all** of the following three questions, referring to the stimulus material in your answers. Marks will be awarded for demonstration of knowledge and understanding of research methodology.

1. (a) Identify the research method used and outline **two** characteristics of the method. [3]  
(b) Describe the sampling method used in the study. [3]  
(c) Suggest an alternative or additional research method giving **one** reason for your choice. [3]
  2. Describe the ethical considerations that were applied in the study and explain if further ethical considerations could be applied. [6]
  3. Discuss the possibility of generalizing/transferring the findings of the study. [9]
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