Candidate Name:	
Registration Number:	Tutor's Code:

NATIONAL JUNIOR COLLEGE

SH2 Preliminary Examination

GENERAL PAPER **8806/02**

Paper 2 **2nd September 2010**

1 hour 30 minutes

INSERT

READ THESE INSTRUCTIONS FIRST

This Insert contains the passages for comprehension.

Intelligence, Technology & the Mind

Passage 1: *Steven Pinker writes about the mind.*

1 New forms of media have always caused panic: the printing press, newspapers, paperbacks and television were all once denounced as threats to consumers' brainpower and moral fibre. This is also true of electronic technology. PowerPoint, we are told, is reducing potentially intelligent discussion to bullet points. Search engines lower our intelligence because we now skim on the surface of knowledge and social networking platforms are shrinking our attention spans.

2 For a reality check today, take for instance, the state of science, which demands high levels of brainwork and is measured by clear benchmarks of discovery. These days, scientists are never far from their e-mail, rarely touch paper and cannot lecture without PowerPoint. If electronic media were hazardous to intelligence, the quality of science would be plummeting. Yet discoveries are multiplying like fruit flies, and progress is dizzying. Other activities in the life of the mind, like philosophy, history and cultural criticism, are likewise flourishing.

3 Casual critics of new media use science itself to press their case, citing research that shows how "experience can change the brain." However, experience does not fundamentally change the basic capabilities of the brain. Speed-reading programmes have long claimed to do just that, but the verdict delivered by brain experts is that these claims are total lies as they encourage reading without deep understanding. Genuine multitasking, too, is clearly a fiction, as evidenced by the familiar sight of cars undulating between lanes as the driver negotiates business deals on his mobile phone. The fact remains that we cannot change the way the brain operates.

4 The panic surrounding the so-called effects of consuming electronic media is unfounded. The same critics write as if the brain takes on the qualities of whatever information it consumes; this is an ill-informed extension of the well-known saying, "you are what you eat." As with primitive peoples who believe that eating fierce animals will make them fierce, they assume that reading bullet points and Twitter postings turns your thoughts into unconnected, incoherent statements.

5 Yes, the constant arrival of information packets can be distracting or addictive, especially to people with attention deficit disorder. But distraction is not a new phenomenon. The solution is not to bemoan technology but to develop strategies of self-control, as we do with every other temptation in life. Turn off e-mail or Twitter when you work, put away your Blackberry during meals and set designated times for activities.

6 And to encourage intellectual depth, don't blame PowerPoint or Google. Habits of deep reflection, thorough research and rigorous reasoning do not come naturally to people. They must be acquired at school, and maintained with constant analysis, criticism and debate. They are not granted by sleeping on encyclopaedias, nor are they taken away by efficient access to information on the Internet.

7 The new media thrive for a reason. Knowledge is increasing exponentially; human brainpower and waking hours are not. Clearly, the Internet and information technologies are helping us manage and search all the information available to us, which we conveniently retrieve from Twitter, e-books and online encyclopedias. Far from making us stupid, these technologies are the only things that will keep us smart.

Selectively edited from The New York Times, 10 June 2010
Professor Steven Pinker, 'Mind Over Mass Media'

Passage 2: *Carl Zimmer writes about the 'extended mind'.*

1 Our minds are under attack. Text messages make us illiterate. Blogs make us coarse, YouTube makes us shallow. Author Nicholas Carr has argued that the Internet is damaging our brains, robbing us of our memories and deep thoughts. "As we come to rely on computers to mediate our understanding of the world," he wrote, "it is our own intelligence that flattens into artificial intelligence."

2 More significantly, the ominous warnings feed on a popular misconception of how the mind works. We tend to think of the mind as separated from the world; we imagine information trickling into our senses and reaching our isolated brains. As plausible as this picture may seem, it does not explain a lot of recent scientific research. In fact, the mind appears to be adapted for reaching out from our heads and making the world, including our machines, an extension of itself. This concept of the extended mind was first raised in 1998, by two philosophers, who believe that the mind is a system made up of the brain plus parts of its environment. The mind appears to be adapted for reaching out and making the world, including our machines, an extension of itself.

3 Essentially, some argue that there is no difference between the information that we store in our minds and that which is written into our notebooks, saved on our laptops or mobile phones – these are part of our 'extended mind'. Hence, it follows that we all have minds that extend out into our environments, rather than being entirely self-contained.

4 Our memory holds a great deal of information. But the extended mind moves swiftly between outside and inside sources, showing little regard for where its information comes from. However, it does more than take in information, of course! It also makes decisions and sends out commands—and those commands certainly don't stay inside the mind. Our hands and eyes constantly send signals to the brain, and that feedback alters the signals coming back out. What's even more remarkable about our brains is that they actually search for new things to make part of this feedback system. The eagerness with which the brain merges with tools has made it possible to create some stunning mind-machine interfaces. The U.S. Navy has developed a flight suit which links the pilot's body to the helicopter's mechanisms – this technology will allow pilots to learn to fly blindfolded or to carry out complex manoeuvres. The helicopter becomes, in effect, part of the pilot's body, linked back to his mind.

5 The extended mind will change how we judge what's good and bad about today's mind-altering technologies. There's nothing unnatural about relying on the Internet for information. After all, we are constantly consulting the world around us like a kind of visual Wikipedia. Nor is there anything bad about our brains' being altered by these new technologies, any more than there is something bad about a monkey's brain changing as it learns how to play with a rake.

6 Neuroscientists will soon be able to offer fresh ways to enhance our brains, whether with drugs or with implants. To say that these are immoral because they defile our true selves—our isolated, distinct minds—is to ignore biology. Our minds already extend out into the environment, and the changes we make to the environment already alter our minds. There's no point in trying to take apart the connections between the inside and the outside of the mind. Instead we ought to focus on managing and improving those connections. We need more powerful ways to filter the information we get online, so that we don't get a mass case of distractibility. Some people fear that trying to fine-tune the brain-Internet connection is an impossible task. But if we've learned anything it's not to underestimate the mind's ability to adapt to the changing world.

Selectively edited from Discover Magazine, 15 January 2009
Carl Zimmer, 'How Google Is Making Us Smarter'