Passage 1: Ed Tech

A. Education as a field has been massively and positively influenced by technology. And this influence will be even greater by 2030. In recent times, technology has influenced how businesses are operating from last few decades by Pankaj Samantray of Elets News Network.

B. Education technology is already part of our lives when it comes to learning, thanks to Coronavirus pandemic. It is difficult to find a part of our lives that technology hasn't influenced fundamentally. Educational technology is here for facilitating learning and improving academic performance.

C. Education is as old as humanity itself. Our ancestors were educated within the family or tribe on how to farm, use tools, make fire, and hunt. Eventually, education became confined within the various priesthoods of ancient civilisations until the Greeks established the likes of philosophical mentorship.

D. In the last 2,000 years, there have been an array of education options, such as tutorship, apprenticeship, and seminary school, up until the 19th century when the concept of K-12 (publicly-supported school grades prior to tertiary education) took hold, existing alongside private, higher education institutions to this day.

E. Now, with the advent of sophisticated digital technologies, EdTech is empowering educators to expand their reach, while also empowering students to be able to learn independently via educational software.

F. There are, also, many online libraries that assist teachers and students with comprehensive reading material. Teachers and lecturers are also given the opportunity to post their teaching material online for their students to study.

G. Digital transformation of many educational functions will happen incredibly fast. This transformation can be managed in-house or by outsourcing it to third-party service providers with expertise in specific industries. It's already a fact that many educational organisations are adopting cloud-based technologies for marketing and recruiting, as the competition for attracting the best students is increasing.

H. Multi-channel admissions experiences, where prospective students can interact not only by phone and email but also via social networks, video chat, and other similar technologies, will soon be the norm.

Match the following headings with the paragraphs:

1. Access through multiple devices
2. Education Options
3. Influence of Technology
4. Digitisation
5. Purpose of Education Technology
6. Empowerment of students and teachers
7. Evolution of Education
8. Online reading repository

Passage 2: Brain Computing Interface

A. Imagine if your manager could know whether you actually paid attention in your last Zoom meeting. Or, imagine if you could prepare your next presentation using only your thoughts. These scenarios might soon become a reality thanks to the development of brain-computer interfaces (BCIs).

B. To put it in the simplest terms, think of a BCI as a bridge between your brain and an external device. As of today, we mostly rely on electroencephalography (EEG) — a collection of methods for monitoring the electrical activity of the brain — to do this. But, that's changing. By leveraging multiple sensors and complex algorithms, it's now becoming possible to analyse brain signals and extract relevant brain patterns. Brain activity can then be recorded by a non-invasive device — no surgical intervention needed. In fact, the majority of existing and mainstream BCIs are non-invasive, such as wearable headbands and earbuds.

C. The development of BCI technology was initially focused on helping paralysed people control assistive devices using their thoughts. But new use cases are being identified all the time. For example, BCIs can now be used as a neurofeedback training tool to improve cognitive performance. I expect to see a growing number of professionals leveraging BCI tools to improve their performance at work. For example, your BCI could detect that your attention level is too low compared with the importance of a given meeting or task and trigger an alert. It could also adapt the lighting of your office based on how stressed you are, or prevent you from using your company car if drowsiness is detected.

D. A Toronto-based startup called "Muse" has developed a sensing headband that gives real-time information about what's going on in your brain. As you can imagine, the startup already has a "Corporate Wellness Program" to "help your employees lower stress, increase resilience, and improve their engagement." Other headbands on the market also use proprietary sensors to detect brain signals and leverage machine learning algorithms to provide insights into the engagement levels of users/workers. They can track whether someone is focused or distracted. Theoretically, this could help individuals in their day-to-day tasks, by evaluating which tasks should be tackled first based on your attention level. But, there's also huge potential for abuse (more on this below).

E. This ability to monitor (and potentially control) attention levels creates new possibilities for managers. For example, companies could have access to a specific "BCI HR dashboard" in which all employees' brain data would be displayed, in real-time. Are we going to see supervisors monitoring the attention levels of their colleagues? At the end of each annual performance review, are we going to also analyse and compare attention levels thanks to our BCIs? Your brain information may be of interest to your employers, allowing them to keep an eye on how focused you are, and allowing them to adapt employees' workloads accordingly. Again, there is much potential for abuse.

F. I also expect more professional events to leverage BCIs in the near future. Indeed, research has shown that brain data can help predict which booths and activities people would visit. In the future, are we going to need BCIs to participate in business events?

G. Beyond the analysis of brain signals, some companies are already working on solutions that can actually modulate your brain activity. Researchers at Columbia University have shown how neurofeedback using an EEG-based BCI could be used to affect alertness and to improve subjects'

performance in a cognitively-demanding task. Despite these promising results, some experts, such as Theodore Zanto, a director of the UCSF neuroscience program, say that while BCIs based on EEG scans can determine a user's attention levels, they are as of yet still incapable of differentiating what the user is actually focused on. In a January, 2019 Medium article, he says, "I haven't seen any data indicating you can dissociate if someone is paying attention to the teacher or their phone or just their own internal thoughts and daydreaming." Moreover, I realised through my own work that BCIs are also affected by user's specific characteristics, such as gender, age, and lifestyle. Indeed, my team and I are trying to determine how brain activity can affect an athlete's performance. According to some research, "psychological factors including attention, memory load, fatigue, and competing cognitive processes, as well as users' basic characteristics such as lifestyle, gender, and age, influence instantaneous brain dynamics." Experts believe that around "15-30% of individuals are inherently not able to produce brain signals robust enough to operate a BCI." Obviously, this situation can lead to wrong results and ultimately bad decisions from companies. BCIs still have a long way to go, and much improvement is needed.

H. Another use case for BCIs at work is related to the ways we interact with machines and devices. Indeed, I predict that in the future, the most "dangerous" jobs will require the use of BCIs. For example, some BCI companies have already used EEG to analyse signals of drowsy driving. Companies with workers who operate dangerous machinery may require their workers to be monitored in the same ways. I believe that someday, it will be mandatory for pilots and surgeons to wear a BCI while working.

Match the following headings with the paragraphs:

1. Increasing Brain ability

2. BCI and future business events

3. Possibilities of BCI

4. Sensing Headbands

5. Use of BCI to perform the most challenging jobs

6. Gradual expansion of BCI's functions

7. Analysing the attention level of employees

8. Definition of BCI