**IBE505 Exam**

**Question 1:**

**a)**

The best option would be having robots/AIs delivering all or most of the packages, AIs can really make the future a lot easier for us humans. Compared to us, they don't have to be paid, or take breaks and if they are connected to the internet, they could give us 24/7 updates. Having AIs deliver packages could really be beneficial for both UPS and the customers. These Robots could work both day and night and would not need breaks between delivering stuff, they online time they would not be delivering, would be to pick up more packages. Having these robots 24/7 would decrease in time it would take to get your delivery. These robots could also have in built in GPS that lets customers have a "live feed" of the exact location of their delivery, that would be a lot better than what we currently have where you only see if your package goes from one city to another. You would for example have one AI that drives the car and then a robot that takes the packages from the car to the customers house, and after delivery it would also send a notification that it has been delivered, you could also add smaller features like, you want to receive notification if they are like 30 mins away from your house.

**b)**

The emerging technologies you would need to achieve this would be IoT technology, for allowing push notification and customer help. You could also use that for live feed of where the delivery is. It could be as basic as a marker on a map that you can follow and see, or as complicated where you see how fast the car is driving and where you can see an estimated delivery time from its current location. Then we would obviously need AI and machine learning and robotics for making these robots AIs so that they can the entire process, picking up the package, drive, deliver and update the customer.

**c)**

As the Chief information officer for UPS my role would be to make sure that we are all on the same page, everybody from the leaders to workers and all the other people working at UPS. I would have to make sure that we are improving and getting further in terms of like getting to the finish line to for example making such technology as AIs and robots that can help us. I would also have to make sure that everybody involved in this proves are up to date so that one part of the process isn't way behind, so that we can deliver this solution as fast as possible.

**d)**

My way to gap a that problem would be to put more resources into that department/process, it could be to give them more resources; money, equipment or resources or having more people work/focus on that part. I would like that all steps are done about the same time, and not have one or two steps weeks or even months behind the others.

**e)**

The goals that would positively impact my goals would be, number 7: affordable and clean energy, number 9: industry, innovation and infrastructure and number 17: Partnerships for the goals. Having clean and affordable energy is good in all ways, using clean energy does not hurt the earth in the same way and it being affordable would help the company save money as well. Industry, innovation and infrastructure would also help because having a good infrastructure would help any company or business and could also help expand in the future, and with innovation we could improve on what we already have or try even make new or better technologies or process that would help. Partnership for the goals would make life a lot easier, most companies don't communicate together because they can see each other as rivals in a way but having them work or just communicate together could be good for both parties. UPS could for example partner or work with a company that has more experience than them or are more familiar with AIs and in return UPS could deliver for them.

**Question 2:**

**a)**

The best way would be to use VR (virtual reality) to these labs, you could either have where you see from the teacher's point of view or more like a video game where you are the one controlling everything. Using VR is a lot better than having student buy or possibly rent equipment. Having people share equipment might not be the best idea during covid and its not fair to have students buy equipment that could cost a lot of money and then never be used again after that semester. With VR you would only need a VR headset and a program on computer. This would be good in a lot of ways, students can redo the labs whenever they like and they don't have to be afraid to try certain things that would cost money in a real-life lab, like material and equipment, that would help a lot with mixing chemicals.

**b)**

There are a lot of ways to try to monitor students, but they would all have pros and cons. If you make them have a camera on, they could still cheat in a way, the teacher won't be able to see the entire room and there could even be someone in the student ear giving him information, also having one or a few teachers monitor possibly hundreds of students would not be a great idea and you can't really hire hundreds of people to each monitor a student. The best solution would be to make program or an AI that they have to download, that force closes everything on the computer that could help them cheat, like the internet and application that lets them communicate with other people, and that program could also add a feature that notifies the teachers if the students try to open a program or try to switch tabs to an already open application.

**c)**

I would use AI and machine leaning, to reach these goals with would either need a program or a set of eyes that can monitor them. Making a program could take a while and there is a chance that some of them can get past it, but with machine learning the program could be very effective over time. At first it might not catch people opening tabs or pulling out a phone, but it will learn that is suspicious activity and report and notify the teachers.

**d)**

The biggest thing is motivation, staring at a screen all day and listening to people talk gets really tiring, especially over time, so students are more likely to use their phone or browse the web while the teacher is talking, and the teacher can't really do anything even if they have their camera on, and they won't be able to see their screens anyways. They could possibly control in by asking question in a smaller class, but in a class with 50-100 people that would be challenging and a waste of time. Not paying attention in one or two classes could also make you way behind in classes and with no motivation to work they students might even fail the class or just end up with a bad grade.

**e)**

The one that would improve it positive way would be number 4: Quality education. During covid, and next time we must do remote learning, we need a way for students to stay motivated in class, either make the learning in a way that they want to learn and listen or make sure they are not on their phone while the teacher is talking. Having quality learning over quantity would be beneficial for students, maybe not have classes that are as long and make sure that students are working and talking together.

**Question 3:**

**a)**

You could have robots to specific tasks at the hospital, like delivering food and water, or if they patients need medication. Having robots to that job could free up the workers time to do other tasks. All patients could have a screen next to their bed and request certain things through it, if they want food and water, a robot come and gives in to them and you would not need a single human for that process, and if they want to go outside for a few mins, you could have a robot take them there and then back. Tasks like that could take up time for workers because they could end up talking with the patients for a few mins, and that time stack up over time. You could also request a real person if you need that, but most of this will be done through computers and AIs. Robot can not get sick as well, and that would be a huge benefit during a pandemic.

The obvious goal would be to have robots/AIs do surgeries. If we were able to make robots that could to all sorts of surgeries or certain parts of the surgery at pinpoint accuracy that would be the dream for hospitals and would also free up workers time and you most likely would not need people to work all day every day.

b)

Using AIs and machine learning would help, digitalizing certain parts of the process can free up time and would also make it safer during a pandemic. We could also use biotechnology and nanotechnology. Biotechnology is when you create products from biological systems and use living organisms or parts of organisms. It could be anything from how plants grow, modifying crops, developing biofuels and even making medicine that can save people like insulin. Nanotechnology is science and engineering at a very small level, nano level. And it is already being used in the medical field and still improves every day, it is used to get better medical imaging, to find out how much a patient needs of a certain drug or pill. It is also used to target tumors and other possibly deadly things.

**c)**

The advantage is that it would be easy to access for both doctors and patients, and they could possibly access it anywhere at any time, and the fact that you could update it whenever it needs to would help, it would also make it easier if a doctor has to find one particular thing about a patient and they would not need to go through a bunch of paper files. The disadvantages would be if it is on the cloud, the website can be breached and all that information could end up in the publics hand, and or hackers could remove or change whatever is on there. Hackers could also take down the database for a some time and that would make it impossible to access for some time, while the cloud is unsafe and offline. The 4 types of clouds are private, public, community and public clouds.

**d)**

Everybody needs hospitals so one way would be to have a certain percentage of taxes go towards that or being funded by the government, having that money go to a group of people that work with hospital but also have experience with such technology would be a huge help, the hospitals could communicate with them and give feedback or wishes. That team would be able to work on whatever, and they would have the time and resources to do so.

**e)**

Number 3: good health and well-being with helps people stay safe and be healthy, and number 17: partnership for the goals, having people work and talk together in the medical field is important and them getting help from outside of the medical field would benefit everybody.

Question 4

a)

Defensive strategy is when a company responding to what others do in a way, you want to catch your competitors off guard, if you are planning on making a new business model, you have to keep it close so that nobody finds out what you are doing a try to do it before you. Example, both you and another company is selling a very similar product, out of nowhere you could decrease the price to get more customers, that would force them to do something. You could also offer better service and warranty.

Offensive strategy is when you try to find an advantages, it can be anything from improving a field or making something from scratch. Car companies have started to digitalize more and more, from testing and buying cards to even being able to view cars online through a digital showroom. If you for example have to items to customers you could do that process your self instead of doing it through another company, that would make it faster and maybe even cheaper for the customer.

Its similar to a war between two or more companies, if you get hit you have to find something to hit back with, and when they are not expecting it you have to hit them with something brand new and very unexpected.

b)

Ever since the pandemic hit, companies have been force to adapt, people don't want to go out as much to stay safe but companies still have to make money, therefore they have to digitalize certain parts of their business. Before you would the entire process of buying a car in person and in would take quite a bit of time, companies have digitalized most of the process through and app or a website, so you do all that online and then you just go the dealership to pick up your new car. Same with food, ordering fast food and groceries have become very common the last few years because of the pandemic, you pic out what you need online and pay and then get your products delivered. You even need less workers as well. These services are not going to disappear once its 100% safe again, because of how easy it and convenient it is, and we will only see more and more business try to digitalize more or everything because of the convenience.

c)

Technical debt is when you do your job in a bad way, it can be taking shortcuts to save money and time in the development process or bad software and hardware. These days business struggle with resources, they do not have enough time and money to finish projects in time and will sometimes take shortcuts in the process and that will 100% lead to problems in the future tha have to be fixed and fixing those problems will cost money and time. You could even lose customers over bad products and not fixing them in time.

d)

Certain parts are still a bit too hard to digitalize and other parts get done in a lazy way. If there already is a company that delivers food for people for a small fee, and someone new comes around with zero new features and is all around worse than the competitors, nobody will use it, and the company will most likely just lose more and more money, with the already money they lost making this program/application.

e)

Lights out manufacturing is fully automated jobs that don't require a single human in the factory/workplace. The factories could technically fully work without even lights being on. Technology is only getting better and improving every single year and we have seen and increase in jobs that needed humans a few years ago, to being fully automated by robots/AIs now. Robots can do certain jobs the same way repeatedly without failing, we are humans, and we are bound to make mistakes. We also get tired over time and need breaks and can only work a certain number of hours every single day. Robots and AIs can work 24 hours every single day with stopping, if we don't take in count that they could break and such. Some of these robots don't need to be monitored as well, and that would make so that the company don't need to pay a single person at that factory, and businesses will save money over time.

Sources:

https://news.vmware.com/manufacturing/7-emerging-technologies-poised-to-power-the-factory-of-the-future

https://www.gartner.com/en/information-technology/glossary/cio-chief-information-officer

https://www.un.org/development/desa/disabilities/envision2030.html

https://www.ntnu.edu/ibt/about-us/what-is-biotechnology

https://www.nano.gov/node/1496

https://www.sciencedirect.com/topics/computer-science/cloud-deployment-model

https://www.uhu.es/45122/temas/P&SC/Theme3_1_P&SC.pdf

https://www.investopedia.com/terms/o/offensive_competitive_strategy.asp

https://smallbusiness.chron.com/offensive-strategies-business-23996.html

Industrial Digital Transformation: Accelerate digital transformation with business optimization, AI and Industry 4.0 (book)