

# CBCS SCHEME

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20MBA301

## Third Semester MBA Degree Examination, Jan./Feb. 2023 Emerging Exponential Technologies

Time: 3 hrs.

Max. Marks:100

**Note: 1. Answer any FOUR full questions from Q.No.1 to Q.No.7.  
2. Question No. 8 is compulsory.**

- 1 a. What is Artificial Intelligence [AI]? Give an example. (03 Marks)  
b. Explain the Historical Background of Industrial Revolution. (07 Marks)  
c. Discuss the future trends in Emerging Technologies. (10 Marks)
- 2 a. What do you mean by IOT? Give an example. (03 Marks)  
b. Differentiate between Data and Information. (07 Marks)  
c. Explain 'Big Data Value Chain' with a neat diagram. (10 Marks)
- 3 a. Enumerate any three Data types from computer programming perspective. Give an example for each. (03 Marks)  
b. Explain the different levels of Artificial Intelligence based on capabilities. (07 Marks)  
c. Elucidate the types of Artificial Intelligence based on functionality. (10 Marks)
- 4 a. Explain Augmented Reality. (03 Marks)  
b. Discuss various tools and platforms of IOT. (07 Marks)  
c. Explain the Architecture of IOT, with a neat block diagram. (10 Marks)
- 5 a. What is 3D Printing? (03 Marks)  
b. Briefly discuss about Human – Machine Interaction. (07 Marks)  
c. Discuss in detail the various applications of AI. (10 Marks)
- 6 a. Define Data Science. Mention an application. (03 Marks)  
b. Briefly explain 'Block Chain Technology'. (07 Marks)  
c. Explain in detail about Virtual Reality. (10 Marks)
- 7 a. What is Cloud Computing? (03 Marks)  
b. Briefly discuss the advantages of IOT. (07 Marks)  
c. Explain in detail the characteristics of Big Data. (10 Marks)

### 8 CASE STUDY :

Patras is Greece's third largest City and the regional capital is Western Greece. It is also a smart cities pioneer, with a dedicated smart cities hub located in Patras Science Part. This has led Patras to build a relationship with Deutsche Telecom and their local partners to investigate smart cities and how NB – IoT can help city deploy new services, including smart parking and smart street lighting.

Deutsche Telekom's local affiliate Cosmote has undertaken the first Greece implementation of NB – IoT in Patras along with their partners to prove that smart cities powered by NB – IoT are able to help the local municipality become more efficient and cut costs.

**NB – IoT Deployment :**

Patras have implemented NB – IoT to power two municipal services on the same network – smart parking and smart lighting.

**Smart Parking :** The NB – IoT smart parking services has initially been installed along Patras street , a long street running through the city centre that offers on – street parking. Sensors embedded into the street under parking spaces are able to sense when a space is free or empty by the presence of a vehicle above them. This status is then communicated through Cosmote’s NB – IoT radio access network, which was upgraded for this pilot by Huawei and linked to Deutsche Telekom’s core network. The parking data is then collected by a Cosmote’s local partner, who provides a parking app that residents can use to view where there are parking spaces available. The app is then able to guide the driver direct to available spot.

**Smart Lighting :** The smart lighting solution has been installed on Othonos Kai Amalias street, which runs along the seafront at Patras. The lighting system uses NB – IoT to control the street lighting , which is able to be adjusted to different light levels at different times of day reducing electricity consumption and improving safety in local area. The system again uses Cosmote’s NB IoT radio access network , linked to Deutsche Telekom’s core network. The lighting system uses LED technology and Flashnet smart lighting controllers, control of which is made available to the city through the partners applications.

**Single Network :** The NB IoT characteristics used by these two different services deployments demonstrate the flexibility inherit to the design of NB – IoT. The smart parking services requires real – time data to ensure that as a car leaves or arrives at a parking space, the status detailing availability is updated in real time. Vehicle may stay in place for minutes or hours, which prove that NB – IoT can cope with messages being sent instantly at any time. Where there is a high turnover of parking spots, the volume of message can be quite high. By contrast, the smart lighting services has different characteristics. The lighting service operates autonomously , but needs occasional large updates to its schedules and to transmit maintenance reports. The contract between these two services demonstrate that a single NB – IoT network can cope with applications that require either rapid messaging responses or large data downloads or both.

Questions :

- a. What is the role of IoT in smart city? (10 Marks)
- b. What are the benefits of city of Patras? (10 Marks)

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