

BACHELOR OF VOCATION
Automotive Manufacturing
Automotive Mechatronics
Subject: Industry 4.0
Subject Code: BBME-309
Semester: Fifth
January 2021
Theory (External): 35 Marks
Time: 03 Hours

Instructions to the Students

1. This Question paper consists of two Sections. All sections are compulsory.
2. Section A comprises 10 questions of objective type in nature. All questions are compulsory. Each question carries 1 mark.
3. Section B comprises 8 essay type questions out of which students need to do any 5. Each question carries 5 marks.
4. Read the questions carefully and write the answers in the answer sheets provided.
5. Do not write anything on the question paper.
6. Wherever necessary, the diagram drawn should be neat and properly labelled.

Roll Number											

SECTION –A (SHORT/OBJECTIVE TYPE QUESTIONS)
(10x1=10 Marks)

- A. Which of the followings is NOT best described about Industry 4.0?
- a) Analytics
 - b) Smart Factory
 - c) Speed
 - d) Prediction
- B. 5 steps to turn big data become smart data. Please choose the correct one.
- a) Data > Knowledge > Information > Wisdom > Decisions
 - b) Data > Information > Knowledge > Wisdom > Decisions
 - c) Data > Information > > Decisions > Wisdom > Knowledge
 - d) Data > Information > Wisdom > Knowledge > Decisions
- C. How many design principles are applied for Industry 4.0?
- a) 6
 - b) 4
 - c) 2
 - d) 5
- D. Internet of Things (IoT) can be integrated with which of these separate domains:
- a) Cloud-based storage and computing.
 - b) Cyber Physical Systems.
 - c) Big-data networks.
 - d) All of these.
- E. Which of the following is not a design consideration for 3D printing?
- a) Material
 - b) Tolerance
 - c) Size of build tray
 - d) CAD software
- F. Which of these statements regarding sensors is TRUE?
- a) Sensors are input devices.
 - b) Sensors can be analog as well as digital
 - c) Sensors respond to some external stimuli.
 - d) All of these.

- G. M2M stands for:
- a) Media access control (MAC) to MAC communication
 - b) Machine to MAC communication
 - c) Machine to machine communication
 - d) MAC to machine communication
- H. Which of these can be considered as the skeleton for smart cities?
- a) Buildings
 - b) Transportation
 - c) Banks
 - d) Sensors
- I. In a M2M ecosystem, Internet service providers:
- a) Provide their infrastructures for M2M device communications.
 - b) are responsible for devices providing raw data.
 - c) is an individual or company what utilizes M2M applications.
 - d) None of these
- J. What is a Smart Factory?
- a) Robots who will replace people
 - b) Factories and logistic systems that will operate and organize themselves without human interaction
 - c) Factories and logisitc systems that will organise themselves by human interaction
 - d) None of these

SECTION -B (ESSAY TYPE QUESTIONS)
(5x5=25 Marks)

1. (a) What is the difference between Industry 4.0 and the Internet of Things?
(b) What is the difference between lean manufacturing and industry 4.0?
2. What are the various challenges and risks of Industry 4.0?
3. Discuss various technologies of Industry 4.0.
4. Which Industry 4.0 technology will be used for “Driverless Trains”, Explain with diagram.
5. Explain Functional Blocks of IOT with diagram.
6. (a) Determine the IOT-levels to design home automation IOT system including smart lightning and intrusion detection.
(b) Discuss 3Vs in relation to Big Data.
7. (a) Which communication protocols are used for M2M local area networks?
(b) How do data collection and analysis approaches differ in M2M and IOT?
8. Discuss the following in Artificial Intelligence (AI):
 - a) Utility agents
 - b) Goal-Driven Agents
 - c) Learning Agents

*******END OF THE PAPER*******