

Name:
Enrolment No:



UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, June 2021

Course: IoT Controllers
Program: B. Tech All (SoE)
Course Code: MRIO0202

Semester: II
Time 03 hrs.
Max. Marks: 100

Instructions:

1. Kindly take the examination from Laptop + Mobile or Mobile only with recommended OS & Browser (mentioned in Exam manual)

2. Section A - Kindly type the answers in test box.

3. Section B & Section C - Scan and Upload question type.

4. Use Plain paper (A4 sheet) & Black Gel Pen

5. Kindly note that to avoid connectivity glitches while uploading your answer sheet, please try to finish earlier than the end time to ensure uploading. To Scan and Upload answers please make sure that when picture is being taken:

ensure that shadows do not fall on the paper

ensure that the camera is held stably above the answer sheet in parallel to it

ensure the frame of the picture includes the answer sheet and no surroundings

ensure sufficient lighting in the room

If your answer is more than 1 page for particular question, please scan all the pages of answer and then press the upload button

Same questions should be opened on laptop for which you are uploading scanned answer sheet from mobile

Example: If you are scanning answer sheet for Que No. 1 from Mobile, then Que No. 1 should be visible on your laptop screen.

SECTION A

S.No.	Answer All the questions	Marks	CO
1	With real-time examples, explain why layered protocol is considered over the traditional method of data transfer.	5	CO2
2	In a protocol, name the elements that takes care of i) Structure of data ii) Interprets meaning of data iii) Defines speed	5	CO2
3	With examples, define LAN, MAN and WAN, in one-line statement.	5	CO3
4	Differentiate between logical, physical addresses used in data communication	5	CO1
5	With examples, differentiate between guided and unguided transmission mediums.	5	CO4
6	In optical fiber communication, define reflection and refraction mechanism	5	CO2

SECTION B

S.No	Answer all the questions	Marks	CO
7	If eight devices arranged in a mesh topology, calculate the number of cables and the number of ports are needed for each device? Draw the complete structure of network.	10	CO1
8	Name the OSI layer that performs the following functions: a. Movement of individual bits from one hop to the next b. Has an address that was built in by the Ethernet LAN card manufacturer. c. Movement of packet from source host to destination host. d. Transmit and receive data signal information through an external connector. e. Provides standard services to various computer programs. f. It uses a hierarchical address assigned by the local network manager. g. Responsible for end-to-end connections across a multi-node switched network or router network.	10	CO3
9	In the architecture of IoT define and differentiate between perception, network and application box with examples	10	CO3
10	With a neat figure, indicate the placement of following sensors on human body to get accurate data a. Heart beat sensor b. Fat monitoring sensor c. Steps counting sensor d. Blood-pressure monitoring sensor e. Glucose-monitoring sensor	10	CO4
11	Compare the single-mode and multi-mode optical fibers	10	CO2

SECTION-C

S.No	Answer all the questions	Marks	CO
12	Design an IoT based Ubiquitous-health monitoring system that is suitable for remote health monitoring and provide aid in fighting against COVID-19. Consider suitable sensors, microcontrollers both at the patient side and doctor/hospital side. Draw a reference architecture for the same.	20	CO3