UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Term Examination, May- 2021

Programme Name: B.Tech CSE-Graphics and Gaming   **Semester** : IV
Course Name : Augmented and Virtual Reality Development   **Time** : 03 hrs
Course Code : CSGG3008   **Max. Marks: 100**
Nos. of page(s) :2
Instructions:

SECTION A
1. Each Question will carry 5 Marks
2. Instruction: Answer briefly

S. No.		CO
Q1	Differentiate between AR, VR and MR with two example each.	CO1
Q2	Discuss three pillars of virtual reality.	CO1
Q3	Give five type of virtual reality interaction devices.	CO1
Q4	Mention 5 development SDKs for Augmented reality.	CO1
Q5	Write short note on SLAM.	CO2
Q6	Mention five callback functions in OpenGL.	CO2

SECTION B
1. Each Question will carry 10 Marks
2. Instruction: Write short answers

Q7	How do lenses in a VR HMD effect the accommodation process of the human eye to allow users to focus on a HMDs display?	CO1
Q8	Write down the steps involved in running a marker based application using Vuforia Engine.	CO3
Q9	Discuss what are the various interaction medium available in AR. What all things to be taken care of while designing for multi user AR application?	CO3
Q10	Discuss the concept of ray casting; mention how it can be useful technique in AR/VR.	CO2
Q11	Explain the architecture of virtual reality and describe its various components?	CO2

SECTION C

1. Each Question carries 20 Marks.
2. Instruction: Write long answer

| Q12 | Consider you have to create an education based augmented reality application. Discuss which platform you will pick, marker or marker less; give justification to your choice. Discuss the various component in UI, which you will incorporate to make it a successful product. You can make necessary assumption about the content of product, which you wish to create; you can make use of wireframes for depicting the UI of the application.

Or

Assume that you have to design a virtual reality fps shooter game, discuss various components, which you will consider while designing the levels of the game ensuring that player doesn't feels fatigue while playing it in VR. | **CO3** |