UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, December 2018

Programme Name: B.Tech CSE-G&G   Semester   : VII
Course Name   : Virtual Reality   Time   : 03 hrs
Course Code   : CSGG4006   Max. Marks : 100
Nos. of page(s)   :1
Instructions:

SECTION A

S. No.		Marks	CO
Q 1	Define Virtual reality and its various application areas.	4	CO1
Q2	Discuss three pillars of virtual reality?	4	CO1
Q3	List two in game actions that can cause a feeling of acceleration for the player.	4	CO2
Q4	UE4s has a generic Motion Controller Interface, what does this mean in terms of developing motion controller experiences?	4	CO3
Q5	Give five type of virtual reality interaction devices.	4	CO1

SECTION B

Q6	What consequences are there for not considering the player's relative location in a room scale tracking environment when teleporting them in game?	10	CO3
Q7	Discuss the physical and medical hazards in VR, how they can be minimized.	10	CO2
Q8	Discuss the concept of ray casting, mention various limitations associated with it.	10	CO4
Q9	What is need for a rendering engine and is it essential for creating VR. **OR** Discuss various techniques, which are used for removing antialiasing in computer graphics.	10	CO1, CO2

SECTION-C

Q10	a. Discuss and draw the architecture of virtual reality and describe its various components? b. You are creating a slower paced game that uses Teleportation as its primary locomotion method. After testing you notice that some users are still getting motion sickness due teleporting in quick succession. What alterations to your teleport system may you try to reduce this problem?	15+5= 20	CO2, CO4
Q11	a. Discuss the concept of BRDFs and how they perceive the light, also discuss how they are different from Phong reflectance model.	10+10 =20	CO3,CO4

	b. How do lenses in a VR HMD effect the accommodation process of the human eye to allow users to focus on a HMDs display? **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.	**20**	**CO1, CO2,CO4**

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SECTION A

S. No.		Marks	CO
Q 1	List **two** in game actions that can cause a feeling of acceleration for the players.	4	CO2
Q2	What are the two built-in SDK choices for realistic sound specialization for VR in UE4?	4	CO2
Q3	Is screen space UI preferred over world space UI in VR? Why/why not?	4	CO4
Q4	What properties do you need to calculate the end position of a trace designed to find what a Motion Controller is pointing at?	4	CO4
Q5	Give five examples where virtual reality is used extensively.	4	CO3

SECTION B

Q6	Draw the architecture of interactive graphics system and differentiate how it is different from VR.	10	CO3
Q7	Which shading algorithm gives the best realistic effects; given the light has specular reflection.	10	CO2, CO3
Q8	Differentiate between the Unity and Unreal engine with respect to virtual reality	10	CO2,CO4
Q9	Human eye is very complicated machinery, Discuss the anatomy of eye and various biological functions are key part in VR. **OR** What is the difference between, ray tracing, ray casting and which one is more popular?	10	CO3

SECTION-C

Q10	a. What is the difference between Virtual reality and Augment reality, give examples for both of them. b. Draw the architecture of augment reality.	10+10	CO2 CO4

| Q11 | a. What are the various virtual reality based symptoms which impacts human when they immerse in virtual environment.
b. Discuss the architecture of CAVE, why and where it is used.

OR.

c. Discuss the evolution of Virtual reality, how it has attained such a great height in recent past. Mention all the different type of interaction devices, which are used in VR. | 14+6

20 | CO3, CO2

CO2,CO3 |