UTHM
Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER I
SESSION 2019/2020

COURSE NAME	:	3D MODELING AND ANIMATION
COURSE CODE	:	DAT 21403 / DAT 32203
PROGRAMME CODE	:	DAT
EXAMINATION DATE	:	DECEMBER 2019 / JANUARY 2020
DURATION	:	3 HOURS
INSTRUCTION	:	ANSWER **ALL** QUESTIONS IN PART A AND **ONE (1)** QUESTION IN PART B

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THIS QUESTION PAPERS CONSISTS OF **FIVE (5)** PAGES

PART A

Q1 (a) Briefly explain 3D modeling.

(4 marks)

(b) Explain the **THREE (3)** types of 3D modeling.

(6 marks)

(c) (i) Draw the NURB Curve based on control verticles (CVs).

(2 marks)

(ii) Explain the NURB Curve in **Q1(c)(i).**

(4 marks)

(iii) Differentiate between *Inset* and *Extrude* in 3D Max application software.

(4 marks)

Q2 (a) Explain the following 3D graphics principles:

(i) 3D Space.
(ii) Coordinates.
(iii) Axis.

(4 marks)

(b) 3D space coordinate is important to determine point of edge of any polygon

(i) Sketch and plot coordinate (1, 0, 2), (2, 0, 2), (2, 0, 1) and (1, 0, 1) using 3D coordinate system.

(4 marks)

(ii) **Figure Q2(b)** shows the perspective view of the objects. Sketch the top view, front view and the left view of the objects.

(12 marks)

Q3 (a) Explain **FOUR (4)** criterias of 3D model.

(8 marks)

(b) Describe **THREE (3)** differences between path animation and cel animation.

(12 marks)

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Q4   The process involved in 3D animation consists of pre-production, production and post-production process.

     (a)   List **FOUR (4)** activities involved in preproduction process.

                                                (2 marks)

     (c)   Differentiate between *Primitive Modeling* and *Constructive Solid Geometry (CSG)*.

                                                (8 marks)

     (b)   Explain **THREE (3)** activities in production process.

                                                (6 marks)

     (d)   Briefly explain the similarities between the term *viewport* and *viewpoint*.

                                                (4 marks)

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PART B

Q5   In general, lighting give a huge factor on the look of final renderings. When a light is selected, several different rollouts appear that enable you to turn the lights on and off and determine how a light affects object surfaces.

(a)   Name **TWO (2)** types of lighting in 3D modeling.

(2 marks)

(b)   Explain **THREE (3)** main light sources that can be applied in 3D Max modeling.

(6 marks)

(c)   Analyse and explain light parameters that can be manipulated to produce final images for rendering purpose.

(9 marks)

(d)   Describe **THREE (3)** purpose of three-point lighting light setup.

(3 marks)

Q6   *Material* often used in 3D Max to designate coating colors and textures to certain object that has been created. Mapping material to an object is the term used to describe how the textures are projected onto the geometry scale for finalizing step before rendering.

(a)   State **ONE (1)** type of *Material* and **ONE (1)** type of shader.

(2 marks)

(b)   Describe **THREE (3)** types of *Material* that exist in 3D modeling.

(6 marks)

(c)   Analyse and explain types of material and shader that should be applied in order to generate 3D model as shown in **Figure Q6(c).** The three marble are made from glass render with two lights source pointing at the object.

(10 marks)

(d)   The *Tweening is a main process in any types of computer animation.*
Briefly explain the tweening process particularly in keyframe animation.

(2 marks)

-END OF QUESTIONS-

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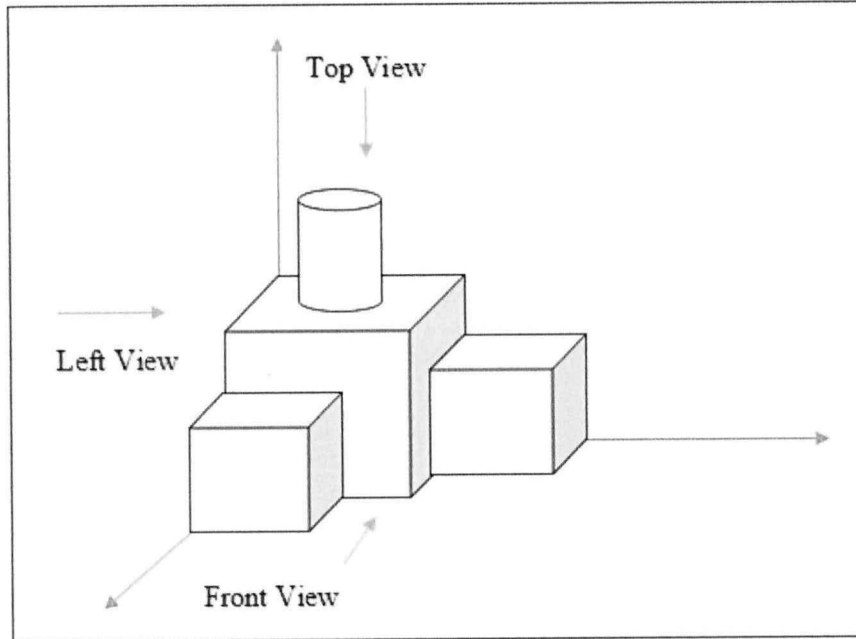
Figure Q2(b)

Figure Q6(c)

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