Started on	Monday, 21 May 2018, 12:03 PM
State	Finished
Completed on	Monday, 21 May 2018, 1:43 PM
Time taken	1 hour 40 mins
Grade	**9.75** out of 10.00 (**98**%)

Question 1

Correct

Mark 1.00 out of 1.00

Interpolating curves or surfaces through a large number of control points are not used for modelling because

Select one:

- a. Interpolating curves pass through only the initial and final control points
- b. Interpolating functions do not exist when the number of points is greater than 3
- c. They cannot be represented using mathematical functions
- d. They often have large oscillations and do not represent the shape defined by the control points. ✓
- e. They do not pass through all control points

Your answer is correct.

Correct

Marks for this submission: 1.00/1.00.

Question 2

Correct

Mark 1.00 out of 1.00

Which one of the following properties is satisfied by all Bezier curves?

Select one:

- a. All Bezier curves pass through every alternating control point
- b. Every Bezier curve can be subdivided into a set of parabolas
- c. All Bezier curves pass through the origin
- d. Bezier curves pass through all control points
- e. Bezier curves are contained within the convex hull of the control points ✓

Correct

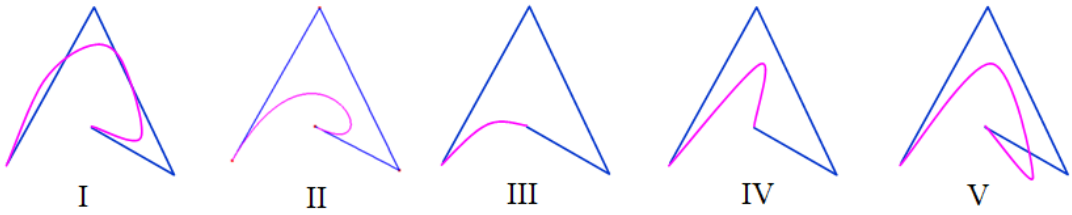
Marks for this submission: 1.00/1.00.

Question 3

Correct

Mark 1.00 out of 1.00

Use the properties satisfied by Bezier curves to determine which of the following curves shown in purple colour represents the Bezier curve for the control polygonal line shown in blue colour.



Select one:

- a. IV
- b. III
- c. V
- d. I
- e. II ✓

Your answer is correct.

Correct

Marks for this submission: 1.00/1.00.

Question 4

Correct

Mark 1.00 out of 1.00

A Bezier curve defined using 3 control points P_0, P_1, P_2 has the form $P(t) = f(t)P_0 + g(t)P_1 + h(t)P_2$, where f(t), g(t), h(t) are Bernstein polynomials. Which one of the following statements is true?

Select one:

- a. f(t), g(t), h(t) are polynomials of degree 3.
- b. f(t) + g(t) + h(t) = 0. for all values of t.
- c. f(t) + g(t) + h(t) = 1. for all values of t. ✓
- d. f(t), g(t), h(t) are polynomials of degree 4.
- e. f(0) = f(1), g(0) = g(1) and h(0) = h(1).

Correct

Marks for this submission: 1.00/1.00.

Question 5

Correct

Mark 1.00 out of 1.00

A Bezier curve for a set of 10 control points P_0, P_1,...P_9 is represented by a parametric function P(t). The last control point can be obtained from the parametric function of the Bezier curve as

Select one:

- a. P(1) ✓
- b. P(9)
- c. max(P(t))
- d. P(0)
- e. P(10)

Correct

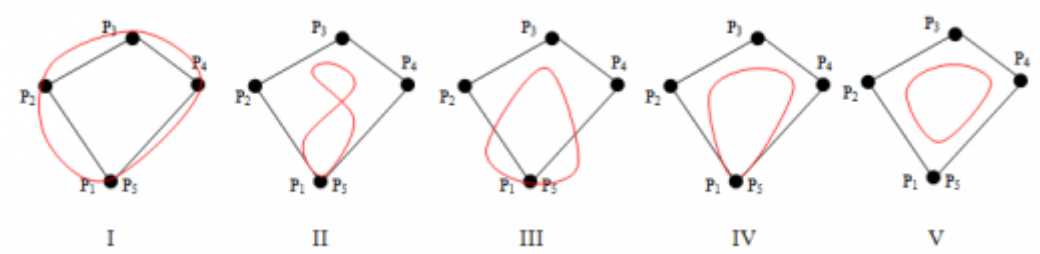
Marks for this submission: 1.00/1.00.

Question 6

Correct

Mark 1.00 out of 1.00

A Bezier curve is generated using 5 control points P_1, ...P_5 with $P_1 = P_5$. Which one of the following figures represents the correct Bezier curve.



Select one:

- a. I
- b. V
- c. III
- d. II
- e. IV ✓

Correct

Marks for this submission: 1.00/1.00.

Question 7

Correct

Mark 1.00 out of 1.00

What is the degree of the Bezier curve in the previous question(Q6)?

Select one:

- a. 5
- b. 4 ✓
- c. 6
- d. 3
- e. 2

Correct

Marks for this submission: 1.00/1.00.

Question 8

Correct

Mark 1.00 out of 1.00

An n^{th} degree Bezier curve is defined using control points P_0, P_1...P_n as

$P(t) = f_0(t)\, P_0 + f_1(t)\, P_1 + ... + f_n(t)\, P_n$, where, $f_i(t)$ are Bernstein polynomials.

Which of the following gives the expression for $f_1(t)$?

Select one:

- a. $(n-1)(1-t)^{n-1}t$
- b. $n(1-t)^{n-1}$
- c. $n(n-1)(1-t)^{n-1}t$
- d. $n(1-t)^{n-1}t$ ✓
- e. $n(1-t)^{n}t$

Your answer is correct.

Correct

Marks for this submission: 1.00/1.00.

Question 9

Correct

Mark 1.00 out of 1.00

With reference to the previous question (Q8),

which of the following gives the expression for $f_n(t)$?

Select one:

- a. $n(1-t)t^n$
- b. $(1-t)^{n-1}$
- c. t^n ✓
- d. t^{n-1}
- e. $(1-t)^n$

Your answer is correct.

Correct

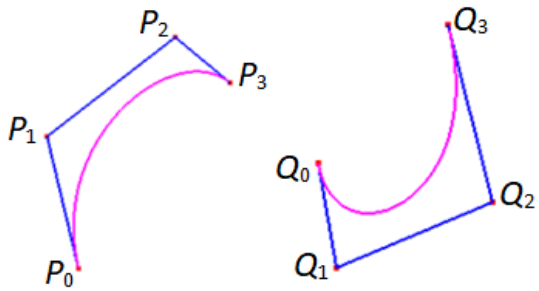
Marks for this submission: 1.00/1.00.

Question 10

Correct

Mark 0.75 out of 1.00

Two control polygonal lines and their Bezier curves are shown in the figure below. The two Bezier curves are required to be joined together at $P_3 = Q_0$, with a smooth transition (without any visible discontinuity) between them.



The conditions required to be satisfied for this are

Select one:

- a. $P_3 = Q_0$, and distance(P_2P_3) = distance(Q_0Q_1)
- b. $P_3 = Q_0$ and both Bezier curves are of the same degree.
- c. vector P_2P_3 is parallel to vector Q_0Q_1
- d. The only required condition is $P_3 = Q_0$
- e. $P_3 = Q_0$, and P_2, P_3, Q_0, Q_1 are collinear points. ✓

Your answer is correct.

Correct

Marks for this submission: 1.00/1.00. Accounting for previous tries, this gives **0.75/1.00**.