Multiple choice questions - 1st online test: Numerical Methods.

1. The shifting operator is denoted by ________.
   A. E  
   B. nabla  
   C. omega  
   D. T  
   Ans- A

2. The process of finding the values inside the interval (X0, Xn) is called
   A. Interpolation  
   B. Extrapolation  
   C. Iterative  
   D. Polynomial equation  
   Ans- A

3. The Delta of power two is called the ____order difference operator.
   A. First  
   B. second  
   C. Third  
   D. Fourth  
   Ans- B

4. Newton forward interpolation formula is used for ________ intervals.
   A. open  
   B. unequal  
   C. equal  
   D. closed  
   Ans- C

5. For the given distributed data find the value of Δ³y₀ is?

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<th>3.60</th>
<th>3.65</th>
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<th>3.75</th>
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<td>x</td>
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<tr>
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<td></td>
<td>8</td>
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<td>7</td>
<td>1</td>
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   A. 0.095  
   B. 0.007  
   C. 1.872  
   D. 0.123  
   Ans- B
6. By using Newton's backward difference table form the following data:

\[ f(30) = 0.5000, \quad f(35) = 0.5736, \quad f(40) = 0.6428, \quad f(45) = 0.7071. \]

What is the value of \( \nabla^3 y_n \)?

A. -0.0049  B. -1.872  C. -0.0005  D. -0.0469

Ans- C

7. In case of Newton Backward Interpolation Formula which equation is correct to find \( u \)?

A. \( (x - x_n)h = u \)  B. \( x + x_n = uh \)  C. \( x - x_n = u \)  D. \( x - x_n = uh \)

Ans- D

8. The relationship between \( E \) and \( \delta \) is __________.

A. \( E = 1 - \delta \)  B. \( E = 1 + \delta \)  C. \( E = \delta - 1 \)  D. \( E = \delta \)

Ans- B

9. Let \( h \) be the finite difference, then forward difference operator is defined by _____.

A. \( f(x) = f(x+h) - f(x) \)  B. \( f(x) = f(x-h) - f(x) \)  C. \( f(x) = f(x^h) \)  D. \( f(x) = f(x) \)

Ans- A
10. Find $\Delta (x + \cos x)$?

A. $1 + 2\sin(x + 1/2).\sin1/2$
B. $1 - 2\sin(x + 1/2).\sin1/2$
C. $1 - 2\sin(x - 1/2).\sin1/2$
D. $1 + 2\sin(x - 1/2).\sin1/2$

Ans-B