1) The number of columns in a connectivity matrix \([B]\) corresponds to _______.

- Total number of nodes in the entire domain.
- Minimum number of nodes in any element.
- Maximum number of nodes in any element.
- Number of elements.

2 point

2) Consider a mesh as shown below. What could be the dimensions of its connectivity matrix \([B]\)? (Where the numbers marked in red are global nodes and numbers marked in black are the local nodes.)

- 3 X 7
- 7 X 4
- 4 X 3
- 4 X 4

1 point

3) Consider a mesh as shown below. Find the global stiffness matrix element \(K_{66}\)? (Where the numbers marked in red are global nodes and numbers marked in black are the local...
4) Consider a mesh as shown below. Find the global stiffness matrix element $K_{66}$? (Where the numbers marked in red are global nodes and numbers marked in black are the local nodes. )
5) Consider a mesh as shown below. Find the global stiffness matrix element $K_{45}$? (Where the numbers marked in red are global nodes and numbers marked in black are the local nodes.)

\[ K_{22}^2 + K_{23}^3 \]

\[ K_{13}^3 \]

\[ K_{12}^2 + K_{13}^3 \]

\[ K_{12}^2 \]

1 point

6) Symmetry of a finite element problem depend upon its:

- Geometry.
- Boundary conditions.
- Material properties.
- All of the above.

1 point

7) A quarter portion of a square is shown in figure. From the options given below choose the correct statement: (where $u$ is primary variable)

- $p=0$ and $q=0$ for x axis.
- $p\neq0$ and $q=0$ for x axis.
8) Consider a mesh as shown below. Find the global stiffness matrix element $K_{44}$? (Where the numbers marked in red are global nodes and numbers marked in black are the local nodes.)

$$K_{33}^1 + K_{11}^2 + K_{11}^3$$

$$K_{33}^2 + K_{11}^2 + K_{11}^3$$

$$K_{23}^1 + K_{11}^2 + K_{11}^3$$

$$K_{33}^1 + K_{11}^2 + K_{12}^3$$

9) The total numbers of elemental equations for the given FEA problem will be:

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