REGISTRATION NUMBER | | | | | | | | | | |

SRINIX COLLEGE OF ENGINEERING

1st INTERNAL EXAMINATION-2021-22

Subject-**SA-II** Semester-**5TH** Branch-**CIVIL**

Full Mark-**60** Time-**2.00Hrs**

ANSWER ALL QUESTIONS (PART-A) **[2X10]**

1. Write the expression for horizontal thrust for a two hinged arch.
2. Draw a neat sketch of a suspension cable with two hinged stiffening girder.
3. Write the equation of a symmetric parabolic arch of span L and central rise ‘h’ with left support as origin.
4. Write down slope deflection equation.
5. Define rotation factor.
6. Define carryover factor and distribution factor.
7. Define shape factor.
8. Explain the term plastic moment capacity.
9. Write assumptions made in slope deflection method.
10. Write two conditions for sway.

ANSWER ALL QUESTIONS (PART-B) **[5X4]**

1. A two hinged parabolic arch of span 20m and rise 3.6m carries two concentrated load of 25kN at crown and 20kN at the left quarter span section. Find the horizontal thrust at each support and the bending moment at the loaded section.
2. Derive the expression for a shape factor for circular section having diameter D.
3. State upper bound and lower bound theorems and write their applications.
4. A continuous beam ABC consists of spans AB ad BC of lengths 5m and 6m respectively. Both ends A and C of the beam are having fixed support condition. The moment of inertia of span AB is four times of BC. The span AB carries a uniformly distributed load of 20kN/m, while span BC carries a uniformly distributed load of 30kN/m. Find the support moments using kani’s method.

ANSWER ANY TWO QUESTIONS (PART-C) **[10X2]**

1. A two hinged parabolic arch of span 40m and rise 8m carries a point load of 80kN at a distance of 10 m from the left support.Find the horizontal thrust at each support. Find also the maximum bending moment.
2. A cable of span 150m and deep 15m carries a load 6kN/m run of horizontal span. Find the maximum tension for the cable and the inclination of the cable at the support. Find the forces transmitted to the supporting pier.
   (i) If the cable passed over smooth rollers on the top of the pier.
   (ii) If the cable is clamped to a saddle with smooth roller resting on the top of the pier.

   For each of the above cases the anchor cable is 30^0 to the horizontal of the supporting pier is 20m high. Find the maximum B.M. for the pier.
3. A fixed beam ABC has two spans, AB=6m and BC=4m.A udl of 30Kn/m acts on span AB, on BC appoint load of 20kN acts at 1m from ‘B’. Analyze the beam using slope deflection method and also draw bending moment diagram.