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

SRINIX COLLEGE OF ENGINEERING

2nd INTERNAL EXAMINATION 2021-22

Sub- Math-I 1st Semester Branch-All(A+B)

Full marks-100 Time -2.30hrs

1. **Answer all questions (Part – A)** **(2 x 10 =20)**

a) What is circle of curvature ?
b) Define stationary point for the function of two variables.
c) Find the radius of the curvature of the curve y=e^x at the point where it crosses the y-axis.
d) Write a relationship between Beta and Gamma functions.
e) Write the standard form of linear differential equation of first order and first degree and give one example.
f) What is the necessary condition for the extreme value of f(x,y) ?
g) EvaluateΓ(3/2).
h) Find the blank; Γ(n)Γ(n-1)=…….
i) Find the asymptotes parallel to x-axis of the curve xy(x-2)-(x+3)(x-1)=0
j) Find the radius of curvature of the curve r=asinθ

2. **Answer any eight questions (Part – B)** **(6x 8 = 48)**

a) Solve$\frac{dy}{dx} + y = e^{-x}$
b) Solve x(1+y^2)dx-y(1+x^2)dy=0
c) Prove thatΓ(1/2)=$\sqrt{\pi}$
d) Find the equation of the circle of the curvature associated with the curve y=x^2(x-1).
e) Show that the curve re^{θ}=a(1+θ) has no point of the inflexion.
f) Find the asymptotes of the hyperbolic spiral rθ=a.
g) Evaluate $\int_0^\infty e^{-x2}dx$ by Gamma function.

h) Apply Newtonian formula to find the radius of curvature at the origin of the cycloid x=a($\theta + \sin\theta$),y=a(1-cos θ).

i) Find the asymptotes of the curve x^2y+xy^2+y^2+3x=0

3. Answer any Two questions (Part – C) **(16x 2 =32)**

a) Solve $\frac{dy}{dx}(x^2y^3 + xy)$=1

b) Examine the function $x^2 - xy + y^4$ for its extreme values.

c) Find all the possible asymptotes of the curve y$(x - y)^3 = y(x - y) + 2$