

Module - 1

Test - I
ECE - 1st semester

24/01/2022

Time :-

11.30 to 12.30

Attempt All Questions!

- ① Find the coordinates of the center of curvature of the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ or $x = a \cos \theta$, $y = b \sin \theta$

Hence show that equation of its evolute is $(ax)^{2/3} + (by)^{2/3} = (a^2 - b^2)^{2/3}$

- ② State and prove relation between Beta and Gamma function.

- ③ Evaluate the definite integral:

$$\int_2^3 (x+1) dx$$

- ④ Evaluate $\int_0^{\pi/2} \log \sin x dx$

- ⑤ Discuss the convergence of the integral $\int_0^{\pi/2} \frac{\sin x}{x^{2/2}} dx$.