

Mathematics

Internal Exam (20-23) Sem-I

Core Paper - I

F.M. 15

Answer any two ques.

(1) Find the Reduction formula for $\int \sin^n x dx$.

(2) Find the all the asymptotes of the curve.
 $(x+y)^2(x+y+z) = x+9y-z$

(3) Find the area of ~~curve~~ cardioid
 $r = a(1 + \cos \theta)$

(4) Find the volume and surface area of
a sphere of radius a .

Mathematics Sem - II

Internal Exam (2020-23)

Core paper - II

F.M. - 15

Answer any two ques.

(1) State & prove De Moivre's theorem for rational index,

(2) Prove the by mathematical induction for all natural number n .

Ex: $1^2 + 2^2 + 3^2 + \dots + n^2 = \frac{1}{6}(n+1)(2n+1)$

(3) Find n th roots of unity.

(4) Find the adjoint the matrix.

$$\begin{bmatrix} 1 & -1 & 1 \\ 1 & 2 & 3 \\ 2 & -1 & 3 \end{bmatrix}$$

Mathematics

Internal Exam for Sem 5 Session (2020-23)

Paper - GE

F.M. 15

Answer any three ques but Q.N. 3 is compulsory.

① (a) Define limit

(b) find the value of $\lim_{x \rightarrow 0} \frac{1}{1+e^{1/x}}$

(c) simplify: $(\sin^2 x + \cos^2 x)^4$

(d) Define ϵ & δ definition of limit

② Evaluate the integral $\int \tan^2 \frac{4}{7} dx$

③ state & prove Leibnitz's theorem.

④ If $y^{\frac{1}{m}} - y^{-\frac{1}{m}} = 2x$, prove that

$$(x^2+1)y_{n+2} + (2n+1)xy_{n+1} + (n^2-m^2)y_n = 0$$

⑤ Trace the curve

$$x^{2/3} + y^{2/3} = a^{2/3}$$