Mathematics

Internal Exam (19-22) Maths

Sem - IV Paper: core VIII

Answer any two ques.

(1) Solve the problem Apply Gauss - Jordon's method.

(2) The following table is given:

x	0	1	2	5
$y = f(x)$	2	3	12	147

What is the form of $f(x)$?

(3) Established Simpson's $\frac{1}{3}$ rule.

(4) Evaluate $\sqrt{12}$ by applying Newton - Raphson formula.

Mathematics

Internal Exam (19-22)

SEM- IV   Paper- Core IX

Answer any three ques. but Q.N. 01 is compulsory.

1. (a) Define Indefinite Riemann integral.
   (b) Define Absolute convergence of Improper integrals.
   (c) Define Gamma & Beta functions.
   (d) Define uniform convergence sequence.
   (e) Define uniform bounded sequence.

2. Show that $\int_0^1 \frac{dx}{\sqrt{x}(1+x^2)}$ is convergent.

3. Prove that $\int_0^1 \frac{dx}{\sqrt{x(1-x)}}$ converges.

4. If f is monotonic on $[a,b]$ Then prove that $f \in R[a,b]$.

5. Evaluate $\int_0^1 x^p(1-x^q)^n \, dx$.

Mathematics

Internal Exam (19-22) Maths.

Sem IV Paper: Core X

Answer any three ques. but Q.N. 01 is compulsory.

1. (a) Define Ring.
   (b) Define Subring.
   (c) Define ideal.
   (d) Define Subfield.
   (e) Define Vector space.
2. Let I be the set of integers & let the addition & multiplication be defined as
   $a + b = a + b - 1$ & $a \times b = a + b - ab$, $a, b \in I$
   Then prove that the set I is a commutative ring.
3. Let a, b & c be element of a Ring. Then prove that
   if $a + c = b + c$ then $a = b$
4. Prove that the set of numbers of the form $a + b\sqrt{2}$ where a & b are rational numbers is a field under addition & multiplication.
5. Prove that Every integral domain is a Field.

Mathematics

Internal Exam (19-22) Maths

Sem - IV   Paper: GE

Answer any three ques but Q.N. 01 is compulsory.

1. (a) Define group.
   (b) Define cyclic subgroups.
   (c) Define coset.
   (d) Define Quotient groups.
   (e) Define commutative Ring.
2. Show that the four fourth roots of unity $(1, -1, i, -i)$ form a group with respect to multiplication.
3. Prove that the set I of all integers is a abelian group as $a * b = a + b - ab$ where $a, b \in I$.
4. Prove that If H, K are two subgroups of a group G, then HK is a subgroup, iff $HK = KH$.
5. Prove that every cyclic group is an abelian group.