2020

Mathematics (general)

Paper Code: MATH-G-DC02

F.M.-18 Time: 1hr

Group A (8 marks)

Answer any 8 questions (8 x 1) = 8

1.

a) Define dense set.
b) State Peano's axiom for natural numbers.
c) Define a bounded sequence.
d) Give an example of constant sequence.
e) When a sequence is said to be null sequence?
f) If a sequence is monotone increasing and bounded above then it converges to which number?
g) Define an alternating series.
h) What is an integrating factor of differential equation?
i) Give an example of homogenous differential equation.
j) State Rolle's Theorem.

Group B (10 marks)

Answer any 5 questions (5 x 2) = 10

2.

a) Solve : $(x^3 + 3y^2x)dx + (y^3 + 3x^2y)dy = 0$

b) Give an example of a linear differential equation

c) Solve : $y(2xy + e^x)dx - e^x dy = 0$

d) Show that $\sum_{n=1}^{\infty} \frac{n^n}{n!}$ Cannot converge

e) State Sandwich theorem

f) Evaluate : $\int \frac{cosx\, dx}{\sqrt{4-sin^2x}}$

g) When a differential equation is said to be exact?

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