

QUESTION PAPER FOR PROGRAMME COURSE

QUESTION PAPER FOR MATHEMATICS PROGRAMME STUDENTS: Marks distribution: 10

GCC

10

Answer any **TWO** questions:

2 × 5

1. Examine the convergence of the following series $1 + \frac{x}{2} + \frac{x^2}{5} + \frac{x^3}{10} + \dots$
2. Show that the sequence $\{x_n\}$, where $x_n = \frac{1}{1.3} + \frac{1}{3.5} + \frac{1}{5.7} + \dots + \frac{1}{(2n-1)(2n+1)}$ is monotonic increasing and bounded above. Also show that the sequence is convergent and find its limit.
3. Test the uniform convergence of the series $\sum \frac{x}{n(1+nx^2)}$

QUESTION PAPER FOR GCC ENDS HERE

QUESTION PAPER ONLY FOR STUDENTS WITH MATHEMATICS AS SEC: Marks distribution: 05

SEC

05

Answer any **ONE** question:

1 × 5

1. (i) Define with examples: (a) Inverse proposition; (b) Contrapositive proposition [2+2]
- (ii) What is logical equivalence? 1
2. (i) Define power set of a set. Show that the power set of a set with n elements will have 2^n elements. [1+2]
- (ii) Show that every partition on a non-empty set gives rise to an equivalence relation. 2

QUESTION PAPER FOR SEC ENDS HERE