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|  SRM INSTITUTE OF SCIENCE & TECHNOLOGY (Deemed to be University u/s 3 of UGC Act, 1956) | | SRM Institute of Science and Technology |  SRINIVASA RAMANUJAN THE MAN WHO KNEW INFINITY |
| | | Kattankulathur | |
| | | DEPARTMENT OF MATHEMATICS | |
| | | 18MAB101T -CALCULUS AND LINEAR ALGEBRA | |
| | | UNIT V: SEQUENCE & SERIES | |
| | | Tutorial Sheet -2 | |
| Sl.No. | Questions | | Answer |
| Part – A | | | |
| 1 | Test for convergence of the series: $\sum \frac{n^3}{3^n}$. | | Convergent. |
| 2 | Test for convergence of the series: $\sum (\log n)^{-2n}$. | | Convergent. |
| 3 | Test for convergence of the series: $\left(\frac{2^2}{1^2}-\frac{2}{1}\right)^{-1}+\left(\frac{3^3}{2^3}-\frac{3}{2}\right)^{-2}+\left(\frac{4^4}{3^4}-\frac{4}{3}\right)^{-3}+.....\infty$ | | Convergent. |
| 4 | Test for convergence of the series: $\sum \left(\frac{n+1}{2n+7}\right)^n$ | | Convergent. |
| 5 | Test for convergence of the series: $1+\frac{x}{2}+\frac{x^2}{3^2}+\frac{x^3}{4^3}+.....\infty, x>0$ | | Convergent. |
| Part – B | | | |
| 6 | Test for convergence of the series: $\frac{2}{3.4}+\frac{2.4}{3.5.6}+\frac{2.4.6}{3.5.7.8}+\frac{2.4.6.8}{3.5.7.9.10}+.....\infty$ | | Convergent. |
| 7 | Test for convergence of the series: $\frac{3}{4}.\frac{x}{5}+\frac{3.6}{4.7}.\frac{x^2}{3}+\frac{3.6.9}{4.7.10}.\frac{x^3}{11}+.....\infty, x>0$ | | Convergent for $0<x\leq 1$. Divergent for $x>0$. |
| 8 | Test for convergence of the series: $\sum \frac{1.3.5...(2n-1)}{2.4.6...2n}x^n$. | | Convergent for $0<x<1$. Divergent for $x\geq 0$. |
| 9 | Test for convergence of the series: $\sum \frac{(n!)^2}{(2n)!}x^n$. | | Convergent for $x^2<4$. Divergent for $x^2\geq 4$. |
| 10 | Test for convergence of the series: $\frac{x}{1}+\frac{2^2x^2}{2!}+\frac{3^3x^3}{3!}+\frac{4^4x^4}{4!}+.....\infty$ | | Convergent for $x<\frac{1}{e}$.Divergent for $x\geq \frac{1}{e}$ |

