SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN (AUTONOMOUS)
(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)
Chromepet, Chennai — 600 044.
M.Sc. - END SEMESTER EXAMINATIONS NOVEMBER - 2022
SEMESTER - III
20PAMCT3007 - Complex Analysis

Total Duration : 2 Hrs 30 Mins. **Total Marks : 60**

Section A

Answer any **SIX** questions $(6 \times 5 = 30$ Marks)

1. Define entire function and also prove that if f is a bounded entire function then f is constant.
2. Explain Schwarz's Lemma.
3. State and Prove Weierstrass factorization theorem
4. Compute Jensen's Formula
5. Define harmonic function and if $u : G \to R$ is a continuous function which has the MVP then u is harmonic
6. State and Prove Euler's theorem
7. Explain if f is an entire function that omits two values then f is a constant.
8. The following function f has an isolated singularity at z $= 0$. Determine its nature: if it is a removable singularity define $f(0)$ so that f is analytic at z $= 0$, if it is a pole find the singular part.
   i) $f(z) = \frac{sinz}{z}$ ii) $f(z) = \frac{cosz}{z}$

Section B

Part A

Answer any **TWO** questions $(2 \times 10 = 20$ Marks)

9. Explain briefly Goursat's theorem.
10. State and Prove Residue theorem.
11. Ascertain Riemann Mapping theorem.
12. State and Prove Harnack's theorem.

Part B

Compulsory question $(1 \times 10 = 10$ Marks)

13. If f is an entire function of finite order λ then show that f has finite genus $\mu \leq \lambda$.

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