PD-256

M.A./M.Sc. Mathematics (SECOND SEMESTER)

Examination- JUNE-2021

Compulsory/Optional

Group -

Paper-IV

COMPLEX ANALYSIS (II)

Time:- Three Hours] **[Maximum Marks:80**

नोट : दोनो खण्डों से निर्देशानुसार उत्तर दीजिए। प्रश्नों के अंक उनके दाहिनी ओर अंकित है।

Note: Answer from Both the Section as Directed. The Figures in the right-hand margin indicated marks.

Section-A

1. **Answer the following question:** **1x10**

   a. Wallis formula is----------------------------
   b. What is the Riemann zeta function?
   c. Define function element of z.
   d. What is Natural boundary?
   e. Define Harmonic conjugate.
   f. What is poisson kernel?
   g. Define convex function.
   h. Write standard form for an entire function.
   i. Define Bloch's constant.
   j. Write univalent function.

2. **Answer the following question:** **2x5**

   (a) If $|z| \leq 1$ and $P \geq 0$. Then $|1\text{-}Ep(z)| \leq |z|^{P+1}$ when Ep(z) is elementary factor.

   (b) Find the radians of convergence for $\sum_{n=1}^{\infty}\left(\frac{z^n}{2^{n+1}}\right)$

   (c) Write Dirichlet Region.

   (d) Find the order of the function cos Z and sin Z

   (e) Write the statement of $\frac{1}{4}$ - Theorem.

Section-B

Answer any fivethe followingquestion: **5x12**

3. State & prove Legendre's duplication formula.
4. State & prove Euler's product formula.
5- State & prove schwarz s is reflection principle for symmetric region.
6. state & prove monodromy theorem.
7- state & prove Harnack's Inequality.
8- Let G and Ω be regios such that there is a one-one analytic function of G an to Ω .Let a ϵG and $\varphi = F(a).If\ ga$ and V φ are the greens fuctions for G and Ω with singularities a and respectively, then - Ga (z)= v φ (f(z))
9. state & prove Jensens formula.
10. state & prove Hadamards three circles theorem.
11. state & prove Blochs theoem.
12. state & prove Schottkys theorem.