M.Sc. DEGREE EXAMINATION,APRIL 2020
II Year III Semester
Complex Analysis

Time : 3 Hours **Max.marks :75**

Section A $(10 \times 2 = 20)$ Marks

Answer any **TEN** questions

1. Define entire function.
2. Define convex
3. Find the singularities of $f(x) =$ tan z.
4. Define Meromorphic function.
5. Explain infinite product of the number z_n.
6. State Weierstrass factorization theorem.
7. Define Poisson kernel.
8. Define Dirichlet region.
9. State Poisson Jensen formula.
10. State Schottkys theorem.
11. State open mapping theorem.
12. Write down Gauss formula for Gamma function

Section B $(5 \times 5 = 25)$ Marks

Answer any **FIVE** questions

13. State and prove Liouvilles theorem.
14. Let G be a region in C and f an analytic on G. Suppose there is a constant M such that $lim_{z \to a} sup|f(z)| \leq M$ for all a in G Prove that $|f(z)| \leq M$ for all z in G.
15. Let Re $Z_n \geq -1$ then prove that the series $\sum log(1 + Z_n)$ converges absolutely iff the $\sum Z_n$ converges absolutely.
16. State and prove mean value theorem.
17. State and prove little Picard theorem.
18. State and prove Moreras theorem.
19. State prove Eulers theorem of sequence of prime numbers.

Section C $(3 \times 10 = 30)$ Marks

Answer any **THREE** questions

20. State and prove maximum modulus theorem.
21. State and prove Schwarzs Lemma.
22. Let G be a region which is not the whole plane such that every non vanishing function analytic function on G has an analytic square root. Prove that there is an analytic function f on G such that $f(a) = 0 and f'(a) \geq 0$; f is one to one; $f(G) = D = \{z : |z| \leq 1\}$
23. State and Prove Hasnacks theorem of harmonic function
24. If f is an entire function of finite order λ then prove that f has finite genus $\mu \leq \lambda$.

M.Sc. DEGREE EXAMINATION,APRIL 2020
II Year III Semester
Complex Analysis

Time : 3 Hours **Max.marks :75**

Section A $(10 \times 2 = 20)$ Marks

Answer any **TEN** questions

1. Define entire function.
2. Define convex
3. Find the singularities of $f(x) =$ tan z.
4. Define Meromorphic function.
5. Explain infinite product of the number z_n.
6. State Weierstrass factorization theorem.
7. Define Poisson kernel.
8. Define Dirichlet region.
9. State Poisson Jensen formula.
10. State Schottkys theorem.
11. State open mapping theorem.
12. Write down Gauss formula for Gamma function

Section B $(5 \times 5 = 25)$ Marks

Answer any **FIVE** questions

13. State and prove Liouvilles theorem.
14. Let G be a region in C and f an analytic on G. Suppose there is a constant M such that $lim_{z \to a} sup |f(z)| \leq M$ for all a in G Prove that $|f(z)| \leq M$ for all z in G.
15. Let Re $Z_n \geq -1$ then prove that the series $\sum log(1 + Z_n)$ converges absolutely iff the $\sum Z_n$ converges absolutely.
16. State and prove mean value theorem.
17. State and prove little Picard theorem.
18. State and prove Moreras theorem.
19. State prove Eulers theorem of sequence of prime numbers.

Section C $(3 \times 10 = 30)$ Marks

Answer any **THREE** questions

20. State and prove maximum modulus theorem.
21. State and prove Schwarzs Lemma.
22. Let G be a region which is not the whole plane such that every non vanishing function analytic function on G has an analytic square root. Prove that there is an analytic function f on G such that $f(a) = 0 and f'(a) \geq 0$; f is one to one; $f(G) = D = \{z : |z| \leq 1\}$
23. State and Prove Hasnacks theorem of harmonic function
24. If f is an entire function of finite order λ then prove that f has finite genus $\mu \leq \lambda$.