SSR DEGREE COLLEGE, NIZAMABAD (5029)
DEPARTMENT OF NUTRITION
SEMESTER – II,
MATHS UNIT WISE QUESTIONS

Unit – I

1. Define convergent sequence? Every cgt sequence is bounded.
2. S/T lim $\frac{2n-3}{n+1}$ = 2
3. S/T The sequence where S_n = $\frac{1}{n+1} + \frac{1}{n+2} + -- + \frac{1}{n+n} \forall n \in N$ convergent
4. Define cauchy sequence is Cauchy sequence is bounded.
5. Every convergent sequence is Cauchy sequence
6. Find lim S_n where S_n = $\sqrt{n^2 + 1 - n}$
7. State and prove sandwich theorem
8. State and prove Cauchy first theorem an limits
9. State and prove Cauchy general principle of convergence.
10. All bounded monotone sequence is convergent
11. P/T lim$\sqrt{n+1}$ - $\sqrt{n} = 0$

Unit – II

1. State and prove comparison test ?
2. State and prove D alemberts Ratio test ?
3. State and prove Cauchy Root test ?
4. State and prove alternating series?
5. A positive term series $\varepsilon \frac{1}{n^p}$ *is convergent*
6. Test for convergence $\frac{1}{2} + \frac{2}{3} + \frac{3}{4} + ---$
7. Evaluate (i) $\lim_{x \to 0} \frac{\sqrt{4-x-2}}{x}$

   (ii) $\lim_{x \to 0} \frac{sinx}{\sqrt{x}}$
8. Examine the following function f (x) =$\left\{\frac{xe^x}{1+e^{1/x}} \; if \; x \neq 0\right\}$
9. If εun is convergent then lim U_n = 0
10. Test for convergence $\Sigma\sqrt{n^4 + 1} - \sqrt{n^4 - 1}$

Unit - III

1. If ‘f’ is differentiable at a point ‘a’ then S/T ‘f’ is continuous at ‘a’
2. S/T the function f (x) = x^2 derivable on [0,1]
3. Find the applicability of rolles than f(x) = 1-$(x-1)^{2/3}$ on [0,2]
4. Verify Cauchy mean value thm f(x) = X^2,g (x) = X^3 in [1,2]
5. State and prove rolles theorem?
6. State and prove lagrange’s mean value theorem
7. State and prove cauchy’s mean value theorem
8. S/T $\frac{v-u}{1+v^2}$ <$\tan^{-1}$ v – $\tan^{-1}$u <$\frac{v-4}{1+v2}$ for 0< u< v Hence deduce that $\frac{\pi}{4}+\frac{3}{25}$ < $\tan^{-1}$ u<$\frac{\pi}{4}+\ \frac{1}{6}$
9. Verify rolles thm for f(x) = $(x-a)^m$ $(x-b)^n$ where m and ‘n’ +ve integer m[a,b]
10. Find ‘c’ of the Cauchy mean value thm of function f(x)= $\frac{1}{x^2}$ and g(x) = $1/x$ in [a,b]

Unit – IV

1. A constant function is Riemann integrable on [a,b]
2. A bounded function f:[a,b] →R is Riemann integrable on [a,b] if for each ε>0 ∋ a partition p of [a,b] such that o< U(p.f) - < (p,f) <ε
3. If : [a,b] → R is continuous on [a,b] then ‘f’ is integrable on [a,b]
4. If f:[a,b] → R is monotonic on [a,b] then ‘f’ is integrable on [a,b]
5. If f f∈R [a,b] then |f|∈R[a,b]
6. Fundamental theorem of integral calculus
7. Define upper and lower Riemann sum