**UNIT – II**

**G R E E N**

1. The value of of Rolle’s Theorem for f(x) =sinx/ex in (0,Π ) I

a) Π/4 b) Π/2 c)Π d)None

Ans-a

2. The value of Legrange’s mean value theorem for the functions f(x)=sinx g(x)= cosx in [a,b] is

a)a+b b)a+b/2 c)a-b/2 d)None

Ans-b

3.If f(x) is continuous in [a,b] ,f’(x) exists for every value of x in (a,b),f(a)=f(b),then there exists atleast one value c of x in (a,b) such that f’(c)=

a)0 b)a+b c)c d)None

Ans-c

4. Taylor’s series expansion of f(x) about x=a is]

a)f(a)-f’(a)(x-a)+f’’(a)(x-a)2/2!+….+(-1)nfn(a)(x-a)n/n!

b)f(a)+(x-a)f’(a)+f’’(a)(x-a)n/2!+f’’’(a)(x-3)3/3!+……

c)f(a)+xf’(a)+x2f’’(a)+…+xnfn(a)

d)None

Ans-b

5. The value of c of rolle’s theorem in (-1,1) for f(x)=x3-x is

a) 0 b)±1/√3 c)±1/√2 d)None

Ans-b

6. Is Rolle’s theorem applicable to f(x)=|x| in [-1,1]

a)Not applicable(not differential at 0) b)Not applicable(not differential at - c)applicable d)None

Ans-a

7. The value of c in Rolle’s mean value theorem for f(x)=sin x/ex in (0,Π ) is

a) Π b) Π/4 c)Π /3 d)None

Ans-b

8. The value of c in Lagrange’s mean value theorem for f(x)=ex in[0,1] is

a)loge b)log(e-1) c)0 d)None

Ans-b

9. Laplace equation in two dimensions is

a)uxx+uyy=0 b)ux2+uy2=0 c)uxy+uxx=0 d)None

Ans-a

10. The minimum value of x2+y2+z2 given that x+y+z=3a is

a)3a b)1/3a2 c)3a2  d)None

Ans-c

11. The function f(x,y) has a maximum value for

a)ln-m2>0,l<0 b)ln-m2=0 c)ln-m2<0,l<0 d)None

Ans-a

12. If u(1-v)=x,uv=y then J[u,v/x,y].J[x,y/u,v]=

a)0 b)1 c)xy d)None

Ans-a

13. If u=x3y2,we have x2-xy+y2=a2,then dy/dx=

a)x2y(4x2+xy-6y2)/x-2y b)0 c)1 d)None

Ans-a

14. If u=x+y/1-xy,v=tan-1x+tan-1y,then J[u,v/x,y].J[x,y/u,v]

a)0 b)1 c)xy d)None

Ans-a

15. logx-logy is a homogenous function of drgree

a)0 b)1 c)2 d)None

Ans-a

16. If u=J[u,v/x,y] ,then J[x,y/u,v]=

a)u b)1/u c)1 d)None

Ans-b

17. If u=x cosy ,v=y sinx,then ∂(u,v)/ ∂(x,y) is

a)cosy sinx+xy siny cosx b)cosy sinx-xy sinx siny c)cosy cosx+siny sinx d)None

Ans-b

18. If x=rcos ,y=rsin ,then J[x,y/r,θ ]=

a)r b)tanθ c)0 d)None

Ans-a

19. The stationary points of x3y2(1-x-y) are

a)(0,1) b)(-1,-1) c)(1,1) d)None

Ans-a

20. If λ is the Lagrangian multiplier in maximizing 8xyz when x2a2+y2b2+z2c2=1 then

=

a)b2y b)-a2xyz c)22x d)None

Ans-c

21. The value of x so that f(b)-f(a)/b-a=f’(x) where a<x<b given f(x)=1/x2,a=1,b=4

Is

a)1/2 b)9/4 c)1/4 Ans-b d)None

22. If u=sin-1[x+y/√x+√y] and x∂u/∂x+∂u/∂y=mtanu the m=

a)1/2 b)-1/2 c)1 d)None

Ans-a

23. If u=sin(x+y), then ∂u/∂y=

a)sinx b)cos(x+y) c)tan(x+y) d)None

Ans-b

24. If f(x,y)=c,ehere c is constant then ∂y/∂x=

a)-ƒx/ƒy  b)0 c)ƒx/ƒy d)None

Ans-a

25. The degree of homogenous functionz=√x+√y/x+y=

a)1/2 b)-1/2 c)0 d)None

Ans –b

**Y E L L O W**

1. logx-logy is a homogenous function of degree

a)1 b)0 c)1/2 d)None

Ans-b

2. If u=xy then ∂2u/∂x∂y=

a)yxy-1(1+ylogx) b)0 c)yxy-1 d)None

Ans-a

3. Two functions u and v are said to be functionally dependent if ∂(u,v)/∂(x,y)=

a)0 b)1 c)not defined d)None

Ans-a

4. If ƒ is a function of u,v,w and u,v,w are the functions of x,y,z then ∂ƒ/∂y is

a)0 b)∂f/∂u.∂u/∂z+∂f/∂v.∂v/z+∂f/∂w.∂w/∂z c)1 d)None

Ans-b

5. The stationary points of x4+y4-2x2+4xy-2y2 is

a)(√2,√2) b)(√2,0) c)(√2,-√2) d)None

Ans-a

6. J[u,v/x,y]=

a)0 b)1 c)1/2 d)None

Ans-b

7. The value of c of rolle’s theorem for f(x)=sinx/ex in (0,Π) is

a)Π b)Π/2 c)Π/4 d)None

Ans-b

8. In Taylor’s theorem Cauchy’s form of remainder is

a)hn-1ƒn-1(a-θh)/n! b)hnƒn(a+θh) c)hn(1-θ)n-1ƒn(θh+a)/(n-1)! d)None

Ans-c

9. Legrangre’s mean value theorem for f(x)=secx in(0,2Π) is

a)applicable b)not applicable due to discontinuity c)applicable and c=Π/2

d)None

Ans=b

10. Is the Rolle’s theorem applicable for f(x)=x2 in [1,2]

a)not applicable[f(1)≠f(2)] b)applicable c)not applicable[f(1)=f(2)] d)None

Ans=a

11. Using which mean value theorem, we can calculate approximately the value of (65)1/6 in an easier way

a)Cauchy’s b)Legrange’s c)Rolle’s d)None

Ans-b

12. If z is a homogenous function of degree n,in x,,y,z=f(u), then xux+yuy=

a)nf(u) b)0 c)nf’(u) d)None

Ans-a

13. If u=sin(ax+by+cz),then ∂u/∂x=

a)acos(ax+by+cz) b)asin(ax+by+cz) c)bcos(ax+by+cz) d)None

Ans-a

14. If u=sin(xy2) we have x=logt,y=et then du/dt=

a)y2[1/t+2x]cosxy2 b)0 c)1 d)None

Ans-a

15. If u=log(x2+y2) then ∂u/∂x=

a)2y/x+y b)2y/x-y c)2x/x2+y2 d)None

Ans-c

16. If z is a homogenous function of degree n then x2+zxx+2xyzxy+y2zyy=

a)nz b)0 c)n(n-1)z d)None

Ans-c

17. If u= Φ(y+ax)+Ψ(y-ax) then ∂2u/∂x2-a2∂2u/∂x2=

a)0 b)1 c)2 d)None

Ans-a

18. The value of legrange’s mean value theorem for the function f(x)=x2 in[1,5] is

a)3 b)0 c)1 d)None

Ans-a

19. The value of Cauchy’s mean value theorem for the functions f(x)=x2,g(x)=x3 in

The interval [1,2] is

a)14/9 b)14/5 c)17/9 d)None

Ans-a

20. The value of Rolle’s mean value theorem in (-1,1) for f(x)=x3-x is

a)0 b)±1/√3 c)1/2 d)None

Ans-b

21. If u=xy then ∂u/∂x=

a)yxy-1 b) 0 c)xy-1y d)None

Ans-a

22. If u=x/y and v=x+y/x-y then J[u,v/x,y]=

a)0 b)1 c)1/2 d)None

Ans-a

23. If u=tan-1[y/x],then x ∂u/∂x+y∂u/∂y=

a)0 b)sin 2u c)cos 2u d)None

Ans-a

24. If f(x) is continuous in [a,b],f’(x) exists for every value of x in (a,b),f(a)=f(b),t6hen there exists at least one value c of x in (a,b) such that f’(c)=

a)0 b)a+b c)c d)None

Ans-a

25. The value of c of rolle’s mean va;ue theorem in [1/2,2] for f(x)=x2+1/x2 is

a)3/4 b)5/4 c)1 d)None

Ans-c

**R E D**

1. The stationary points of x3y2(1-x-y) are

a)(0,1) b)(-1,-1) c)(1,1) d)None

Ans-a

2. The value of Cauchy’s mean value theorem for the functions f(x)=ex and g(x)=e-x in [a,b] is

a)0 b)a+b/2 c)a-b/2 d)None

Ans-b

3. If u=3x+y v=x-2y then ∂(u,v)/∂(x,y) is

a)-6 b)7 c)-7 d)None

Ans-c

4. If u=xy2Φ[x/y] then x∂u/∂x+y∂u/∂y=

a)0 b)1 c)u d)None

Ans-c

5. If x=rcosθ y=rsinθ then ∂θ/∂r,∂y/∂θ are

a)cosθ,r cosθ b)cosθ,sinθ c)cosθ,secθ d)None

Ans-a

6. If u=tan-1[x3+y3/x-y] then x∂u/∂x+y∂u/∂y=

a)sin 2u b)cos 2u c)0 d)None

Ans-a

7. Is rolle’s theorem applicable to the function f(x)=1/x2 in [-1,1]

a)not applicable b)applicable c)not applicable(at -1) d)None

Ans-a

8. ∂(u,v)/∂(x,y)\*∂(x,y)/∂(u,v)=

a)1 b)0 c)1/2 d)None

Ans-a

9. If u=ex v=excos y then ∂(u,v)/∂(x,y)

a)-ex b)ex c)-e-x d)None

Ans-a

10. If u=f(y/x) then ∂u/∂y=

a)xy logx b)xy c)logx d)None

Ans-a

11. The value of legrange’s mean value theorem for f(x)=x2-3x+2 in [-2,3] is

a)1/2 b)1 c)0 d)None

Ans-a

12. If x=rcosθ y=rsinθ ∂r/∂x= ,∂r/∂y=

a)x/r,tanθ b)x/r,y/r c)tanθ,sinθ d)None

Ans-b

13. If u=J[u,v/x,y] then J[x,y/u,v]

a)u b)1/u c)1 d)None

Ans-a

14. If u=x2y,v=xy2 then ∂(u,v)/∂(x,y) is

a)5x2y2 b)4x2y2 c)2x2y2 d)None

Ans-1

15. If u=ex/y thenxux+yuy=

a)0 b)1 c)2 d)None

Ans-a

16. Are u=x√1-x2,v=2x functionally dependent?If so, what us J[u,v/x,y]?

a)yes,1 b)yes,0 c)no,0 d)None

Ans-b

17. The value of c of cauchy’s mean value theorem for the functions f(x)=√x, g(x)=1/√x in [a,b] is

a)a+b/2 b)a-b/2 c)a+b d)None

Ans-a

18. If J=∂(u,v)/∂(x,y) J’=∂(x,y)/∂(u,v) then JJ’=

a)1 b)0 c)3 d)None

Ans-a

19. If f(x,y)=xy+(x-y),the stationary points are

a)(0,0) b)(1,-1) c)(1,1) d)None

Ans-b

20. If u=x2-2y,v=x+y then ∂(u,v)/∂(x,y)=

a)(x+1)2 b)2(x+1) c)3(x+1) d)None

Ans-b

21. If u=tan-1y/x then ∂u/∂x at (0,-1) is

a)1 b)0 c)2 d)None

Ans-a

22. If u=x siny+y sinx then yxy-uyx=

a)1 b)0 c)2 d)None

Ans-b

23. If u=log(x3+y3+z3-3xyz) then x∂u/∂x+y∂u/∂y=

a)4u b)3u c)u d)None

Ans-c

24. If f=x2+y2then ∂2f/∂x∂y=

a)1 b)0 c)-1 d)None

Ans-c

25. Is rolle’s theorem applicable for the function f(x)=tanx in[0,Π]

a) Not applicable (discontinuous at x=Π/2) b) applicable c) not applicable (at Π) d)None

Ans-a