أجب عن جميع الأسئلة التالية بالورقة المخصصة لذلك (Bubble Sheet)

Q[1] Choose the correct answer from the following: [55 marks] [ILOs: b7,c1]

(1) If $y=\cos(x^6)+\cos^6(x)$, then $y'=$.....

$(a)\ -6x^5\sin(x^6)+6\cos^5(x)$ $(b)\ -6x^5\sin(x^6)-6\cos^5(x)\ \sin x$

$(c)\ 6x^5\sin(x^6)+6\cos^5(x)\ \sin x$ (d) None of these

(2) If $f(x)=\begin{cases}6x & ,x\le -4\\ 1-9x & ,x>-4\end{cases}$, find $\lim_{x\to -4} f(x)=$.....

(a) 37 (b) -24 (c) 0 (d) Not exist

(3) If $e^{x+y}=xy$, *then* $\frac{dy}{dx}=$.....

$(a)\ \frac{x(1-y)}{y(x-1)}$ $(b)\ \frac{y(1-x)}{x(y-1)}$ $(c)\ \frac{(x-xy)}{(xy-y)}$ (d) None of these

(4) If $y=\sqrt{\frac{\sec x-1}{\sec x+1}}$, then $y'=$.....

$(a)\sec^2 x$ $(b)\frac{1}{2}\sec^2(\frac{x}{2})$ $(c)\ \frac{-1}{2}\cos ec^2(\frac{x}{2})$ (d) None of thes

(5) If $x^y=y^x$, then $\frac{dy}{dx}=$.....

$(a)\frac{(y-x\ln y)}{(x-y\ln x)}$ $(b)\frac{y(y-x\ln y)}{x(x-y\ln x)}$ $(c)\ \frac{y(y+x\ln y)}{x(x+y\ln x)}$ (d) None of these

(6) If $(x+y)=\sin(x+y)$, Find $y'=$.....

$(a)-1$ $(b)1$ $(c)\frac{1-\cos(x+y)}{\cos^2(x+y)}$ (d)None of these

(7) If $y=\sin(2\cos^{-1}x)$, Find $y'=$.....

$(a)\frac{-2x^2}{\sqrt{1-x^2}}+2\sqrt{1-x^2}$ $(b)\frac{2x^2}{\sqrt{1-x^2}}-2\sqrt{1-x^2}$ $(c)1$ (d)None of these

(8) Evaluate $\lim_{t\to -1}\frac{t+1}{|t+1|}$ if it exist $(a)1$ $(b)-1$ $(c)2$ (d) Not exist

(9) $\lim_{x\to 0} x^4\sin(\frac{\pi}{x})=$..... $(a)-1$ $(b)1$ $(c)0$ (d) Not exist

(10) If $y=\ln(x+\sqrt{x^2+a^2})$, Find $y'=$.....

$(a)\frac{1}{2(x+\sqrt{x^2+a^2})}$ $(b)\frac{-1}{\sqrt{x^2+a^2}}$ $(c)\frac{1}{\sqrt{x^2+a^2}}$ (d) *None of these*

انظر خلف الورقة (تابع السؤال الاول [التفاضل])

(11) Let $f(x)=x^3+\cos x$, then $f(x)$ is

(a) Even function (b) Odd function

(c) Constant function (d) Neither odd nor even function

(12) The invers of $f(x)=\log_5(x+3)-4$ *is*

a) $\dfrac{1}{\log_5(x+3)-4}$ (b) $5^{x+4}-3$ (c) $5^{x+4}+3$ (d) *None of these*

(13) If $y=\cosh^{-1}(\ln e^{\cosh\sqrt{x^2+1}})$, Find $y\,y'=$.....

(a) x (b) x^2+1 c) $\sqrt{x^2+1}$ (d) None of these

(14) $\lim\limits_{x\to 1}(1-x)\tan(\dfrac{\pi x}{2})=$..... (a) $\dfrac{\pi}{2}$ (b)1 (c) $\dfrac{2}{\pi}$ (d) Not exist

(15) If $f(x)=5-x^2$ and $g(x)=2-\sqrt{x}$, Find the domain of $g(f(x))$

(a) $]-\sqrt{5},\sqrt{5}[$ (b) $[-\sqrt{5},\sqrt{5}]$ (c) R (d) None of these

(16) $\lim\limits_{x\to 0} x^2\ln x=$..... (a) $\dfrac{-1}{2}$ (b)0 (c) -2 (d) Not exist

(17) Find Maclaurin expansion of $f(x)=\sqrt{1+\cos 2x}$

(a) $\sqrt{2}[1-\dfrac{x^2}{2!}+\dfrac{x^4}{4!}-.....]$ (b) $\sqrt{2}[1-\dfrac{x^2}{2}+\dfrac{x^4}{4}-.....]$

(c) $2\,[1-\dfrac{x^2}{2!}+\dfrac{x^4}{4!}-.....]$ (d) None of these

(18) If $x=\sin\theta$, $y=\cos\theta$, Find $\dfrac{d^2y}{dx^2}$

(a) $-\sec^3\theta$ (b) $-\sec^2\theta$ (c) $\tan^2\theta$ (d) None of these

(19) $\lim\limits_{x\to 0}\dfrac{1}{x}-\dfrac{1}{\sin x}=$..... (a) $\dfrac{1}{2}$ (b)2 (c)0 (d) Not exist

(20) Find $n^{\underline{th}}$ derivative of 2^x

(a) $(2)^n 2^x(\ln 2)^n$ (b) $(2^x)^n$ (c) $2^x(\ln 2)^n$ (d) None of these

(21) Find the domain of $f(x)=\sqrt{6-x-x^2}$

(a) $]-3,2[$ (b) $[-2,3]$ (c) $[-3,2]$ (d) None of these

انظر الورقة الثانية (تابع السؤال الاول [التفاضل])

(22) Find the range of : $y = \cos(\tan^{-1} x)$

$a) \left\{ y : \frac{-\pi}{2} < y < \frac{\pi}{2} \right\}$ $(b) \left\{ y : 0 < y < \frac{\pi}{2} \right\}$ $(c) \{ y : -1 \le y \le 1 \}$ $(d) \{ y : 0 < y \le 1 \}$

(23) $\frac{d}{dx}[\sinh^{-1}(\tan x)] = ...$

$(a) \frac{1}{\sqrt{1+\tan^2 x}}$ $(b) \sec x$ $(c) \frac{1}{\sec x}$ (d) Non of these

(24) Expand the function $f(x) = e^{(x/2)}$ with the power of $(x-2)$

$(a)\ e[1+\frac{(x-2)}{2}+\frac{(x-2)^2}{4*2!}+.....]$ $(b) e[1+\frac{(x-2)}{2!}+\frac{(x-2)^2}{4!}+.....]$

$(c)\ e[1+\frac{(x+2)}{2}+\frac{(x+2)^2}{4*2!}+.....]$ (d) Non of these

(25) If $y = x \sin x$, Find $y^{(25)} = ...$

$(a) x\cos x + 25\sin x$ $(b)\ x\cos(x+\frac{\pi}{2}) + 25\sin x$

$(c)\ x\sin x + 25\cos x$ (d) None of these

(26) $\frac{d}{dx} \cos ec(\cot^{-1} x) = ...$

$(a) -\cos ec(\cot^{-1} x)\ \cot(\cot^{-1} x)$ $(b) \frac{x}{\sqrt{x^2+1}}$ $(c) \frac{x}{\sqrt{x^2-1}}$ (d) *None of these*

(27) Find Maclaurin expansion of $f(x) = \ln(1+x)^{\sin x}$ up to 5 degree

$(a) x^2 - \frac{x^3}{2} + \frac{x^4}{6} - \frac{x^5}{6} .....$ $(b) x^2 - \frac{x^3}{3} + \frac{x^4}{4} - \frac{x^5}{5} .....$

$(c) -x^2 + \frac{x^3}{2} - \frac{x^4}{6} + \frac{x^5}{6} .....$ (d) None of these

(28) *If* $y = e^x \cos x$ *Find* $y^{(n)}$

$(a)\ (\sqrt{2})^n e^x \sin(x+\frac{n\pi}{4})$ $(b) (\sqrt{2})^n e^x \cos(x+\frac{n\pi}{4})$ $(c) \sqrt{2}\, e^x \sin(x+\frac{n\pi}{4})$ (d) None of these

(29) Find D_f and R_f *of* $f(x) = \cos ec\, x$, *where* $n = 0, \pm1, \pm2, ...$

$a) \begin{Bmatrix} D_f = R \\ R_f = R \end{Bmatrix}$ $(b) \begin{Bmatrix} D_f = R - \{x = n\pi\} \\ R_f = R -]-1,1[\end{Bmatrix}$ $(c) \begin{Bmatrix} D_f = R - \{x = n\pi\} \\ R_f = R - [-1,1] \end{Bmatrix}$ (d) None of these

(30) The invers of $f(x) = e^x$ *is* $(a) \frac{1}{x}$ $(b)\ e^{-x}$ $(c) \ln x$ (d) None of these

انظر خلف الورقة (السؤال الثاني [الجبر])

[Q2] Choose the correct answer from the following: [55 marks][ILOs: a1,b1]

(1)If $\frac{2x^2-3}{(x^2-4)(x-1)}=\frac{A}{x-2}+\frac{B}{x+2}+\frac{C}{x-1}$, then the value of A, B , C .

(a) $\left(\frac{4}{5},\frac{12}{5},\frac{1}{3}\right)$ (b) $\left(\frac{5}{4},\frac{5}{12},\frac{1}{3}\right)$ (c) $\left(\frac{5}{12},\frac{4}{5},\frac{1}{6}\right)$ d) $\left(\frac{5}{4},\frac{-5}{12},\frac{-1}{3}\right)$

(2) The following system of equations $\begin{cases} x-y+z=0 \\ x+y+kz=0 \\ -x-y+z=1 \end{cases}$,has a solution if k is

(a) $K\in R-\{-1\}$ (b) $K\in R-\{1\}$ (c) $K\in R$ (d) $K\in R-\{0\}$

(3)If $A=\{1,2,3,4\}$ *Which of the following sets is a partitions on A.*

(a) $\{\{1,2\},\{3,4\}\}$ (b) $\{\{1,2,3\},\{2,4\}\}$ (c) $\{\{1,2,3\},\{4\}\}$ (d) *a and c*

(4) If $\Delta=\begin{vmatrix} 1 & 3 & 1 \\ 2 & -1 & 1 \\ 0 & 4 & 2 \end{vmatrix}$, then the value of $\begin{vmatrix} 4 & 12 & 4 \\ 8 & -4 & 4 \\ 0 & 16 & 8 \end{vmatrix}$ is .....

(a) 12Δ (b) 4Δ (c) 64Δ d) 16Δ

(5)The statement $A\vee B\equiv$

(a) $(A^C\wedge B^C)^C$ (b)$A\wedge B$ (c)$A\to B$ (d) None of these

(6) If $z=-32+32\sqrt{3}\,i$, *then* r,θ *are*

(a) $(-64,\frac{2\pi}{3})$ (b)$(64,\frac{2\pi}{3})$ (c)$(64,2\pi)$ (d) None of these

(7) For any two set A and B , *if* $A\cup B=A\cap B=A$, *then*:

(a) $A-B\neq\phi$ (b)$B-A\neq\phi$ (c)$A=B$ (d) $A\cap B=\phi$

(8) Which of the following statement is true

(a) $A\leftrightarrow B\equiv(\sim A\vee B)\wedge(\sim B\vee A)$ (b)$B\leftrightarrow A\equiv(\sim A\wedge B)\vee(\sim B\vee A)$

(c)a and b (d) None of these

(9) *If* $A=\begin{bmatrix} 1 & 2 & 3 \\ 2 & 3 & 1 \\ -2 & -3 & -1 \end{bmatrix}$, then find the Rank(A)= .....

(a)1 (b)2 (c)3 (d) None of these

(10) If the universal set $\Omega=\{x: x\in z^+, 1\le x<12\}$ containing the two sets $A=\{x: x\in\Omega, x>6\}$ and $B=\{x: x\in\Omega, x \text{ is even}\}$, then $(B\,\Delta\,A)$ is.....

(a) {5,8,10} (b){2,8,10} (c){1,5,8,10} (d) {1,5,8}

انتهت الأسئلة

With my best wishes ➔ *Prof. Dr. Arafa Nasef & Dr. Manal El-said Ali*