Department of Mathematics
King Saud University

M-106

Summer(1432/33)

Mid Term Exam

Name:	Number:
Name of Teacher:	Group No:

Max Marks: 30 Time: Two hours

Marks:

Multiple Choice(1-12)	
Question # 13	
Question # 14	
Question # 15	
Question # 16	
Question # 17	
Total	

Multiple Choices

Q. #	1	2	3	4	5	6	7	8	9	10	11	12
Ans												

Q. No: 1 Value of the integral $\int_0^1 (t^2+t)^{-1/2}(2t+1)dt$ is equal to

(a) $2\sqrt{2}$ (b) $\sqrt{3}$ (c) $-\sqrt{2}$ (d) None of these

Q. No: 2 The average value of the function $f(x)=4x^3-3x^2$ on the interval [0,1] is

(a) 1 (b) -1 (c) 0 (d) None of these

Q. No: 3 If the number c satisfies the conclusion of the Mean Value theorem for the function $f(x)=x^2$ on the interval [0,1] then c is equal to

(a) $1/\sqrt{3}$ (b) $-1/\sqrt{3}$ (c) $2/\sqrt{3}$ (d) None of these

Q. No: 4 Let $F(x)=\int_0^{x^2} t^3 \sin t dt$, then $F'(x)$ is equal to

(a) $2x^7 \sin x^2$ (b) $2x^7 \cos x^2$ (c) $2x^7 \sin x$ (d) None of these

Q. No: 5 $\lim_{n\to\infty} \frac{1+2+3+.....+n}{n^2}$ is equal to

(a) $\frac{1}{2}$ (b) $\frac{1}{4}$ (c) $\frac{2}{3}$ (d) None of these

Q. No: 6 Value of the integral $\int \sec^2 x \tan x dx$ is equal to

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

Q. No: 7 The value of the derivative of $f(x)=\ln(2+x)+e^x$ at $x=0$ is

(a) $\frac{3}{2}$ (b) $\frac{1}{2}$ (c) 1 (d) None of these

Q. No: 8 $\cosh(0)$ is equal to

(a) 1 (b) 2 (c) 0 (d) None of these

Q. No: 9 If $f(x) = \tan^{-1}(\sinh x)$ then $f'(x)$ is equa to

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

Q. No: 10 If $1 = \log_4^{x^2}$ then x is equal to

(a) 2,-2 (b) 1,-1 (c) 4 (d) None of these

Q. No: 11 The norm of the partition $P = \{0, 0.3, 0.8, 1\}$ is

(a) 0.5 (b) 0.3 (c) 0.2 (d) None of these

Q. No: 12 For the partition $P = \{x_0, x_1, ..., x_n\}$ of [0,2] and $w_k \in [x_{k-1}, x_k]$, the limit

$\lim_{n\to\infty} \sum_{k=1}^{n} \left(\sqrt{w_k + 1}\right) \Delta x_k$ = the definite integral

(a) $\int_0^2 \sqrt{x+1}\,dx$ (b) $2\int_0^2 \sqrt{x+1}\,dx$ (c) $\int_0^2 \sqrt{2x+1}\,dx$ (d) None of these

Full Question

Question No: 13 Use the **Simpson's rule** to approximate $\int_{\bullet}^{1} \frac{1}{\sqrt{1+x^2}} dx$ dx with n=4. [4]

Question No: 14 Evaluate the integral $\int \frac{x^2}{\sqrt[3]{x^3-2}} dx$. **[3]**

Question No:15 Evaluate the integral $\int \frac{x^3}{x^4\sqrt{1-x^{10}}} dx$ **[4]**

Question N0: 16 Find y' if $y = \dfrac{\sqrt{\sin x \sqrt[3]{x^2 + \tan x}}}{\sqrt[5]{\ln|\cos x|}}$ **[4]**

Question No: 17 Find $\lim_{x \to 0} (\cos x)^{1/x^2}$ if it exists. [3]