F.Y.B.Tech. (Part-I) (Sem-II) March/April 2021 Examination

ENGINEERING MATHEMATICS-II (CBCS)

Sub. Code: 72500 / 59933

Day and Date: Tuesday, 24/08/2021 **Total Marks: 50**

Time: 01:30 PM to 02:30 PM

Answer Key

			Correct Option
Q. 1)	If the differential equation $(a\tan y + x)\,dx + (2x\,sec^2 y - 3y)dy = 0$ is exact then the constant a is …		A
	A) a = 2	B) a = 3	
	C) a = -2	D) a = -3	
Q. 2)	If the differential equation $(y + \sin x)\,dx + (x - 2\,e^y)dy = 0$ is exact then the solutionis .		C
	A) $xy + \cos x - 2e^y = c$	B) $xy - \cos x - e^y = c$	
	C) $xy - \cos x - 2e^y = c$	D) $y^2 - \cos x - 2e^y = c$	
Q.3)	The Integrating Factor for the differential equation $y\,(1 + 2xy)dx + x(1 - xy)\,dy = 0$ is …		A
	A) $1/3x^2y^2$	B) $3x^2y^2$	
	C) $1/y^2$	D) $1/x^2$	
Q. 4)	The Integrating Factor for the differential equation $(3xy^2 - y^3)\,dx - (2x^2y - xy^2)\,dy = 0$ is …		A
	A) $1/x^2y^2$	B) x^2y^2	
	C) $1/xy^2$	D) $1/x^2y$	
Q. 5)	The solution of the differential equation $\frac{dy}{dx} - \frac{y}{x} = x$ is …		D
	A) $y + x^2 = xc$	B) $xy - x^2 = c$	
	C) $y - x = xc$	D) $y - x^2 = xc$	
Q. 6	The Integrating Factor for the differential equation $\frac{dy}{dx} + y\,tanx = secx$ is …		A
	A) sec x	B) cos x	
	C) sin x	D) log sec x	
Q. 7	Using Euler's method to solve the differential equation $\frac{dy}{dx} = 2 + \sqrt{xy}$ at x= 2 in five steps with y (1)=1taking h = 0.2 the approximate value of y_2 is		C
	A) 1	B) 1.6	
	C) 2.2771	D) 3.0342	

Q. 8	In Euler's modified method which of the following is true.		B
	A) $y_1^{(2)} = y_0 + h\, f(x_0, y_0)$	B) $y_1^{(2)} = y_0 + \frac{h}{2}[f(x_0, y_0) + f(x_1, y_1^{(1)}]$	
	C) $y_1^{(2)} = y_0 + \frac{h}{2}[f(x_0, y_0) + f(x_1, y_1^{(0)}]$	D) $y_1^{(2)} = y_0 + \frac{h}{2}[f(x_0, y_0) - f(x_1, y_1^{(1)}]$	
Q. 9	Using R-K method to solve the differential equation dy/dx= 0.31+ 0.25 y +0.3 x at x=0.2 with h=0.2 and y(0)= 0.72 then the value of k_2 is ……		B
	A) 0.980	B) 0.1065	
	C) 0.1067	D) 1.1065	
Q. 10	While solving the differential equation dy / dx = y - xy with y =2 when x =0 by using Taylor's Series method then what is value y'''_0…..		B
	A) 4	B) - 4	
	C) 0	D) - 3	
Q. 11	Using Euler's modified method to solve the differential equation $\frac{dy}{dx} = x^2 + y$ at x=0.1 with h=0.1 and y (0)= 0.94 the approximate value of $y_1^{(1)}$ is …		D
	A) 1.0395	B) 0.0392	
	C) 1.3209	D) 1.0392	
Q. 12	Find the approximated value of x till third iterations for $x^3 - 5x + 1 = 0$ using Bisection Method. Where root lies in the interval(0 , 1)		A
	A) 0.125	B) 1.125	
	C) 0.75	D) 0.5	
Q. 13	Find the approximated value of x till second iterations for $x log_{10} x = 1.2$ using Bisection Method. Where root lies in the interval (2 , 3)		D
	A) 2.25	B) 2.5	
	C) 0.75	D) 2.75	
Q. 14	Find the approximated value of x_2 using Secant Method for the equation $x^4 = 32$ where the root lies between 2 and 3		B
	A) 2.2425	B) 2.2462	
	C) 2.2546	D) 2.5	
Q.15	The equation f(x) is given as $x\, e^x - 2 = 0$. Considering the initial approximation at x= 0 then by Newton Raphson method the value second approximation is …		B
	A) 2	B) 1.4236	
	C) 1.035	D) 1.0338	
Q.16	The Iterative formula for Newton Raphson method is given by _____		A
	A) $x_{n+1} = x_n - \frac{f(x_n)}{f'(x_n)}$	B) $x_n = x_{n+1} - \frac{f(x_n)}{f'(x_n)}$	
	C) $x_n = x_n + \frac{f(x_n)}{f'(x_n)}$	D) $x_{n+1} = x_n + \frac{f(x_n)}{f'(x_{n+1})}$	

Q.17	The value of $\int_0^\infty e^{-x^4}\,dx$ is		C
	A) $\lvert\overline{\frac{1}{4}}$	B) $\lvert\overline{\frac{3}{4}}$	
	C) $\frac{1}{4}\lvert\overline{\frac{1}{4}}$	D) $\lvert\overline{\frac{1}{2}}$	
Q.18	The value of $\lvert\overline{\frac{15}{2}}$ is		D
	A) $\frac{13135}{16}$	B) $\frac{3003\sqrt{\pi}}{128}$	
	C) $150150\sqrt{\pi}$	D) $\frac{135135\sqrt{\pi}}{128}$	
Q.19	What is the value of $\beta\left(\frac{3}{2},\frac{1}{2}\right)$?		C
	A) π	B) 2π	
	C) $\pi/2$	D) $\pi/4$	
Q. 20	What is the value of $\int_0^{\pi/2}\sqrt{\cot\theta}\;d\theta$		C
	A) $2\sqrt{\pi}$	B)$\sqrt{\pi}/2$	
	C) $\pi/\sqrt{2}$	D)$\sqrt{2}/\pi$	
Q. 21	Which of the following in not true about Error function?		A
	A) erf $(-x)$ = erf (x)	B)$erf_c(-x) = 1 + \text{erf}(x)$	
	C)erf(x)$-erf_c(-x) = -1$	D)erf(x) +$erf_c(x) = 1$	
Q .22	The value of $\int_0^1\int_0^1 \frac{1}{(1+x^2)(1+y^2)}\,dx\,dy$ is …		C
	A) $\pi^2/8$	B) $\pi^2/4$	
	C) $\pi^2/16$	D) 0	
Q.23	The value of $\int_0^2\int_0^x xy\;dy\,dx$ is ….		A
	A) 2	B) $\frac{\pi}{2}$	
	C) 16	D) $\pi/16$	
Q.24	The value of $\int_0^1\int_0^y e^y\;dy\,dx$ is ….		C
	A) 0	B) e -1	
	C) 1	D) 2	
Q.25	The value of $\int_0^{\frac{\pi}{2}}\int_0^y \sin x\;dx\,dy$ is ….		D
	A) 0	B) 1	
	C) $\frac{\pi}{2}$	D) $\frac{\pi}{2}-1$	