Vivekananda College of Engineering & Technology,Puttur
[A Unit of Vivekananda Vidyavardhaka Sangha Puttur ®]
Affiliated to VTU, Belagavi & Approved by AICTE New Delhi

CRM08	Rev 1.10	BS	10/08/21

CONTINUOUS INTERNAL EVALUATION– 2

Dept:BS	Sem /Div:II/A,B,C,D,E &F	Sub:Advanced Calculus and Numerical Methods	S Code:18MAT21
Date:30-08-2021	Time: 9:30-11:00 am	Max Marks: 50	Elective:N

Note: Answer any 2 full questions, choosing one full question from each part.

-

QN		Questions	Marks	RBT	COs
		PART A			
1	a	Apply the method of variation of parameters to solve $\dfrac{d^2 y}{dx^2}+a^2 y=secax$	8	L2	CO2
	b	Solve: $x^2\dfrac{d^2 y}{dx^2}+x\dfrac{dy}{dx}+9 y=3 x^2+\sin(3logx)$	8	L3	CO2
	c	Solve: $(3x+2)^2\dfrac{d^2 y}{dx^2}+3(3x+2)\dfrac{dy}{dx}-36 y=3x^2+4 x+1$	9	L3	CO2
2	a	Using variation of parameters find the solution of $(D^2-2D+1) y=\dfrac{e^x}{x}$	8	L2	CO2
	b	Solve $(2x+1)^2 y^{11}-6(2x+1)y^1+16y=8(2x+1)^2$	8	L3	CO2
	c	Solve $xy^{11}-\dfrac{2y}{x}=x+\dfrac{1}{x^2}$	9	L3	CO2
		PART B			
3	a	Discuss the nature of series $\dfrac{1}{2}+(\dfrac{2}{3})x+(\dfrac{3}{4})^2 x^2+(\dfrac{4}{5})^3 x^3+......$	8	L3	CO4
	b	Express $f(x)=x^3+2x^2-x-3$ interms of Legendre polynomials	8	L2	CO4
	c	With usual notation, show that $J_{\frac{1}{2}}(x)=\sqrt{\dfrac{2}{\pi x}}\,sinx$	9	L3	CO4
4	a	Test for the convergence or divergence of the series $\displaystyle\sum_{n=1}^{\infty}\dfrac{n!}{(n^n)^2}$	8	L3	CO4
	b	Prove that $J_{\frac{-1}{2}}(x)=\sqrt{\dfrac{2}{\pi x}}\,cosx$	8	L3	CO4
	c	If $x^3+2x^2-x+1=aP_0(x)+bP_1(x)+cP_2(x)+dP_3(x)$ find a,b,c,d	9	L2	CO4

Prepared by: Ravishankar N K

HOD: M. Ramananda Kamath