JSPM's Jayawantrao Sawant College of Engineering (Roll No……….)
Department of Engineering Sciences
Unit Test 2 Examination AY 2024-25 SEM 12
FE 2024 Pattern
Subject: Engineering Mathematics-2 **(Subject Code: BSC151-BES)**

Date: 29/03/2025

Time: ***Max. Marks :30***

Instructions to the Candidate:

1) ***Answer all the questions (Q1or Q2 and Q3 or Q4).***
2) ***Neat diagrams must be drawn wherever necessary***
3) ***Figures to the right indicate full marks.***
4) ***Assume suitable data wherever necessary.***

Q. No.	**Question Statement**	**CO**	**BL**	**PO**	**Marks**
Q. 1a)	Change of order of integration $\int_0^5 \int_{2-x}^{2+x} f(x,y)dxdy$	3	2	1	5
Q. 1b)	Find the volume bounded by the cone $\boldsymbol{x^2} + \boldsymbol{y^2} = z^2$ and paraboloid $x^2 + y^2 = z$	3	1	1	5
Q. 1c)	Evaluate $\int_0^2 \int_0^x \int_0^{2x+2y} e^{x+y+z}$ dxdydz	3	2	1	5
OR					
Q. 2a)	Find the area of cardioid $r = a(1-\cos\theta)$ using double integration	3	1	1	5
Q. 2b)	Find centre of gravity of one loop of r = asin2θ	3	1	1	5
Q. 2c)	Find Moment of inertia about the line $\theta = \frac{\pi}{2}$ of the area enclosed by $r = a(1 + \cos\theta)$	3	2	1	5
Q. 3a)	Solve: $\frac{dy}{dx} = \left(\frac{y+1}{(y+2)e^y - x}\right)$	4	2	1	5
Q. 3b)	Solve: $(1+xy)ydx + (1-xy)xdy = 0$	4	1	1	5
Q. 3c)	Solve $\frac{dx}{dy} - xtany = x^4secy$	4	1	1	5
OR					

Q. 4a)	Solve: $(2x\log x - xy)dy + 2ydx = 0$	4	2	1	5
Q. 4b)	Solve $\cos y\frac{dy}{dx} - \frac{\sin y}{1+x} = (1 + x)e^{x}$	4	1	1	5
Q. 4c)	Solve $\tan y \frac{dy}{dx} + tanx = cosycos^{2}x$	4	2	1	5

……………………………….Best Of Luck………………………….