SRIGAYATRI EDUCATIONAL INSTITUTIONS

INDIA

SR MPC | **QUARTERLY EXAMINATIONS** | **Date: 01-07-2020**

Time: 3.00 Hours | **Max. Marks: 75M**

IPE MODEL :: MATHS-IIB

Syllabus: Indefinite integrals complete, Definite integrals up to Ex: 7.2.

I. VSAQ: Answer ALL the following questions. **10 x 2= 20 M**

1. Evaluate $\int \frac{1}{1+\cos x}\,dx$.
2. Evaluate $\int \frac{(1+x)e^x}{\cos^2(xe^x)}\,dx, \cos(xe^x) \neq 0$
3. Evaluate $\int \frac{\sin(\tan^{-1}x)}{1+x^2}\,dx, x \in R$.
4. Evaluate $\int \frac{1}{(x+3)\sqrt{x+2}}\,dx, x > -2$.
5. Evaluate $\int \frac{xe^x}{(x+1)^2}\,dx, x \neq -1$
6. Evaluate $\int_0^{\pi} \sqrt{2+2\cos\theta}\,d\theta$
7. Evaluate $\int_2^3 \frac{2x}{1+x^2}\,dx$
8. Evaluate $\int_0^4 |2-x|\,dx$
9. Evaluate $\int_0^{\frac{\pi}{2}} \frac{\sin^5 x}{\sin^5 x+\cos^5 x}\,dx$
10. Evaluate $\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} \sin|x|\,dx$

SECTION-B

II. SAQ: Answer any FIVE of the following questions. **5 x 4= 20 M**

11. Evaluate $\int \frac{1}{3\cos x+4\sin x+6}\,dx$
12. Evaluate $\int \frac{1}{(1-x)(4+x^2)}\,dx, x \neq 1$
13. Evaluate $\int \sin^{-1} x\,dx, x \in (-1,1)$

14. Evaluate $\int_0^{\frac{\pi}{2}} \frac{a\sin x + b\cos x}{\sin x + \cos x}\,dx$.

15. Evaluate $\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} \frac{\cos x}{1+e^x}\,dx$

16. Evaluate $\int \frac{1}{(1+x)\sqrt{2x^2+3x+1}}\,dx,\ x \in (-\infty,-1)\cup\left(-\frac{1}{2},\infty\right)$.

17. Evaluate $\int_0^{\frac{\pi}{2}} \frac{x}{\sin x + \cos x}\,dx$

SECTION-C

III. LAQ: Answer any FIVE of the following questions. 5 x 7= 35 M

18. Evaluate $\int \frac{2x+5}{\sqrt{x^2-2x+10}}\,dx,\ x \in R$.

19. Evaluate $\int (6x+5)\sqrt{6-2x^2+x}\,dx, x \in \left(-\frac{3}{2},2\right)$

20. Evaluate $\int \frac{2\cos x + 3\sin x}{4\cos x + 5\sin x}\,dx$

21. If $I_n = \int \sin^n x\,dx$ then $I_n = -\frac{\sin^{n-1} x\cos x}{n} + \frac{(n-1)}{n} I_{n-2}$ where n is a positive integer and hence deduce the value of $\int \sin^4 x\,dx$

22. Evaluate $\int_0^{\frac{\pi}{4}} \frac{\sin x + \cos x}{9+16\sin 2x}\,dx$

23. Evaluate $\int_0^1 \frac{\log(1+x)}{1+x^2}\,dx$

24. Evaluate $\int_0^{\pi} \frac{x\sin x}{1+\cos^2 x}\,dx$

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