MATHS Practical Practice Questions
(On Paper Borivali Students Only)

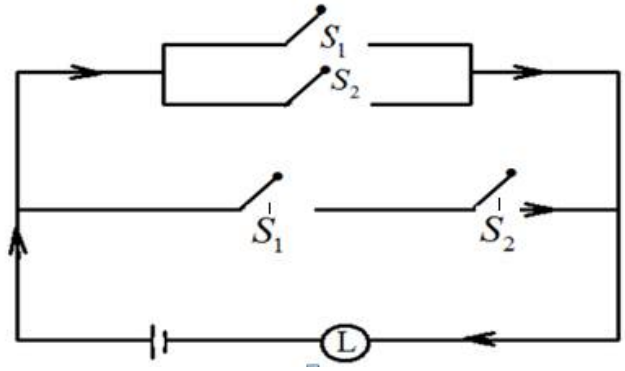
1. Find the general solution of $\sqrt{3}\cos x - \sin x = 1$ **(Prac. No. 16)**

2. If $A = \begin{bmatrix} 4 & -5 & -11 \\ 1 & -3 & 1 \\ 2 & 3 & -7 \end{bmatrix}$ find A^{-1} by using adjoint method. **(Prac. No.2)**

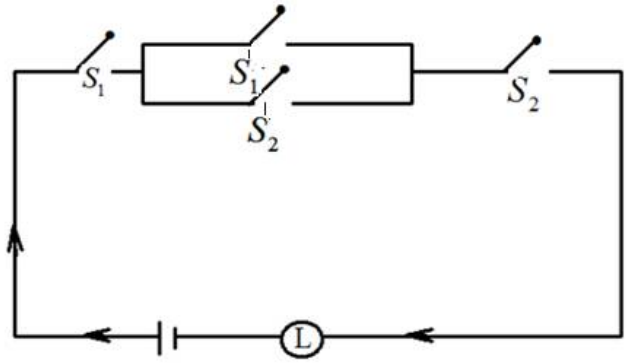
3. The sum of the three numbers is 6. Twice the third number when added to the first number gives 7. On adding the sum of the second and third number to twice the first member we get 12. Find the three numbers using matrices. **(Prac. No.2)**

4. In a ΔABC prove that $a\sin A - b\sin B = c\sin(A - B)$ **(Prac. No.13)**

5. For the following circuit show that irrespective of status of the switches the lamp will always be open. **(Prac. No.6)**



6. Represent the following switching circuit in symbolic form and construct its switching table. What is your conclusion from the table. **(Prac. No.6)**



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7. Prove that the lines $\frac{x-2}{1}=\frac{y-4}{4}=\frac{z-6}{7}$ and $\frac{x+1}{3}=\frac{y+3}{5}=\frac{z+5}{7}$ are coplanar , Also find the equation of the plane containing these two lines. **(Prac. No.10)**

8. Find the volume of a tetrahedron whose vertices are $A(-1,2,3)$, $B(3,-2,1)$ and $C(2,1,3)$ and $D(-1,-2,4)$ **(Prac. No.7)**

9. Find the shortest distance between the two lines $\frac{x-3}{1}=\frac{y+5}{-2}=\frac{z-7}{1}$ and $\frac{x+1}{7}=\frac{y+1}{-6}=\frac{z+1}{1}$ **(Prac. No.9)**

10. The cost of 4 kg. potatoes , 3 kg wheat , and 2 kg rice is Rs. 60. The cost of 1 kg potato, 2 kg wheat and 3 kg rice is Rs. 45. The cost of 6 kg potato, 2 kg wheat and 3 kg rice is Rs. 70. Find the cost of each item per kg by matrix inversion method. **(Prac. No.2)**

11. Find the equations of tangent and the normal to the following curve at $t=2$ where $x=1/t$, $y=-1/t$ **(Prac. No.4)**

12. Find the maximum volume of a right circular cylinder if the sum of its radius and height is 6 units. **(Prac. No.5)**

13. Find the maximum and minimum value of the function $f(x)=x^2e^x$ **(Prac. No.5)**

14. Let $x \sim B(n,p)$ **(Prac. No.14)**
(i) If n = 10, E(x) = 5 find p and Var (X)
(ii) If $E(x)=5$ and Var (x) = 2.5. Find n and p

15. Find k, if the function f defined by **(Prac. No.15)**
$f(x)=kx(1-x) \qquad o<x<o$
$=0$ otherwise is the p.d.f. of a.r.v.x. Also find $P(x<1/2)$ and $P\left(\frac{1}{4}<x<\frac{1}{2}\right)$

16. The rate of disintegration of a radioactive element at any time t is proportional to its mass at that time. Find the time during which the original mass of 1.5 gm will disiutegrate into its mass of 0.5 gm. **(Prac. No.12)**

17. Verify Rolle's theorem for the following functions **(Prac. No.4)**
(a) $f(x)=x^2-5x+9, x\in[1,4]$

18. Divide the number 84 into two parts such that the product of one part and the square of the other is maximum**.** **(Prac. No.5)**

19. Find the area of the region lying between the parabolas $y^2=x$ and $x^2=y$: **(Prac. No.8)**

20. Find the area enclosed between the circle $x^2+y^2=1$ and the line $x+y=1$ lying in the first quadrant **(Prac. No.8)**