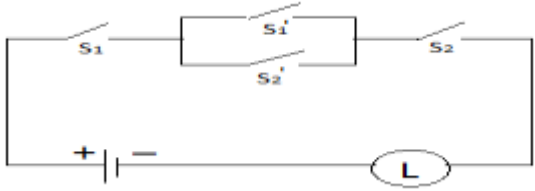


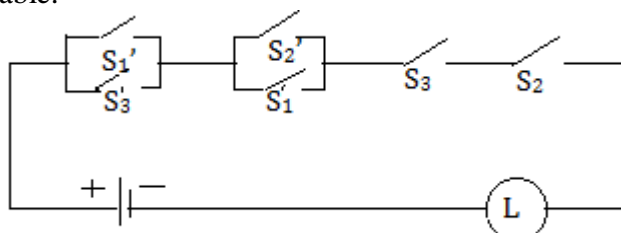
HSC PRACTICAL 2019 QUESTION BANK

For All the student who all are registered at
Pace Junior Science College, Powai.

1.	Find the A^{-1} of a matrix $A = \begin{bmatrix} 1 & 2 & 3 \\ 1 & 1 & 5 \\ 2 & 4 & 7 \end{bmatrix}$ by using elementary row operations and hence solve the system of equations $x + 2y + 3z = 6$, $x + y + 5z = 7$, $2x + 4y + 7z = 13$.	
2.	Using matrices and adjoint of matrices, solve the following system of equations $2x + 3y + 10z = 4$, $4x - 6y + 5z = 1$, $6x + 9y - 20z = 2$.	
3.	Find the approximate value of $\tan 44^\circ$ given $1^\circ = 0.175^\circ$	
4.	In ΔABC if a^2, b^2, c^2 are in A.P. Hence prove that $\cot A, \cot B, \cot C$ are also in A.P.	
5.	Find the maximum and minimum value of the function $f(x) = x^2 e^x$.	
6.	Represent the following switching circuit in symbolic form and construct its switching table. 	
7.	Find the volume of a tetrahedron whose vertices are $A(-1, 2, 3)$, $B(3, -2, 1)$, $C(2, 1, 3)$ and $D(-1, -2, 4)$	
8.	Find the area of the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ using definite integration. Hence find the area of the ellipse $\frac{x^2}{25} + \frac{y^2}{16} = 1$.	
9.	Find the vector equation of a line passing through the point $A(2, -6, 4)$ and parallel to the vector $3\bar{i} + 5\bar{j} + 7\bar{k}$. Also reduce it to cartesian form.	
10.	Find the vector and Cartesian equation of the plane passing through the points $(2, 3, 1)$ and $(4, -5, 3)$ and parallel to the x-axis.	
11.	Find the area of the region lying between the parabolas $y^2 = x$ and $x^2 = y$	
12.	In ΔABC prove that $a \sin A - b \sin B = c \sin(A - B)$.	
13.	A fair coin is tossed 9 times. Find the probability that it shows heads exactly 5 times.	
14.	A fair coin is tossed 9 times. Find the probability that it shows heads in the first four tosses and tails in the last five tosses.	
15.	Verify Rolle's theorem for the following functions $f(x) = \sin x + \cos x + 5$, $x \in [0, 2\pi]$.	

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16.	Verify LMVT for the following functions. $f(x) = x + \frac{1}{x}, x \in [1,3]$	
17.	Find the general solution of $\sqrt{3} \cos x - \sin x = 1$.	
18.	Find the principal solution of $2 \cos x + 1 = 0$.	
19.	Represent the following switching circuit in symbolic form and construct its switching table. 	
20.	Find the area of the region bounded by the parabola $y^2 = 4ax$ and its latus rectum.	