

**Std - XII Mathematics Practical Exam**

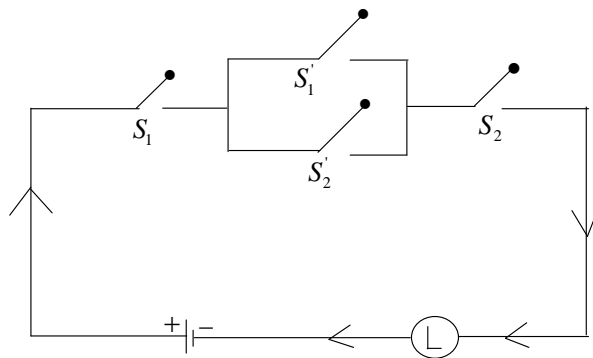
**Study Material**

**(Only For borivali pace student)**

- Note
- 1) 5 Marks is allotted for maths journals
  - 2) 15 Marks for Practical Exam test  
(Attempt any three out of four)
  - 3) You can find solution in your maths journal

(Make sure you check the solutions of these question properly with friends or teacher)

Q.1 Express the following circuit in symbolic form & write its switching table? What is your conclusion from the table? (P R- 6 No .2)



Q.2 The sum of three numbers is 6. Twice the third number when added to first number gives 7. On adding the sum of the second and third numbers to thrice the first number we get 12. Find numbers using adjoint method of matrices. (P R- 2 No .3)

Q.3 If the points A ( 1, -2, 2 ), B ( 3, 1, 1 ), C (-1, p, 3) are collinear then find the value of p (P R- 7 No .1)

Q.4 Find the vector equation of a line passing through the point A ( 2, -6, 4) and parallel to the vector  $3\hat{i} + 5\hat{j} + 7\hat{k}$ . Also reduce it to Cartesian form. (P R- 9 No .1)

Q.5 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 equation of plane containing these two lines. (P R- 10 No .2)

Q.6 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 disintegrate into its mass of 0.5 gm. (P R- 12 No .1)

Q.7 In  $\Delta ABC$ , prove that  $a \sin A = b \sin B = c \sin(A - B)$ . (P R- 13 No .1)

Q.8 Find the equations of the tangent and the normal to the following curve at  $t = 2$  where

$$x = \frac{1}{t}, y = t - \frac{1}{t}. \quad (\text{P R- 4 No .1})$$

Q.9 Let  $X \sim B(n, p)$  if  $E(X) = 5$  and  $\text{Var}(X) = 2.5$  find  $n$  and  $p$  (P R- 14 No .3 (ii))

Q.10 Find  $k$ , if the function  $f$  defined by

$$f(x) = \begin{cases} kx(1-x) & 0 < x < 1 \\ 0 & \text{otherwise} \end{cases}$$

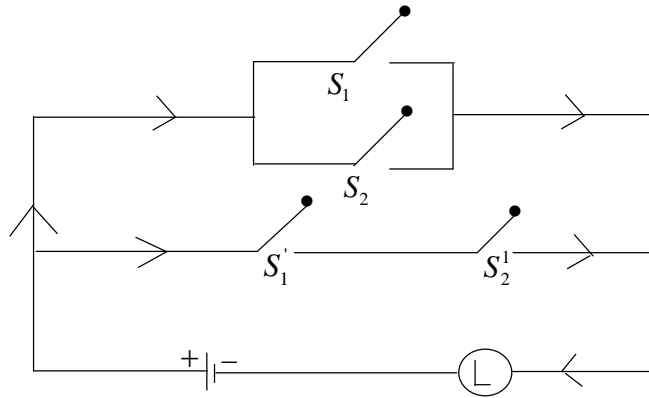
is pdf of r.v  $X$ . Also find  $P\left(\frac{1}{4} < X < \frac{1}{2}\right)$ . (P R- 15 No .4)

Q.11 Find the maximum & minimum value of the function  $f(x) = x^2 e^x$  (P R- 5 No .5)

Q.12 Find approximate value of  $(4.01)^3$  (P R- 3 No .1)

Q.13 Verify Rolle's theorem for the function  $f(x) = x^2 - 5x + 9, x \in [0, 2\pi]$  (P R- 3 No .3a)

Q.14 For the following circuit shows that irrespective of the status of the switches the lamp will always be open (P R- 6 No .1)



Q.15 The surface area of spherical balloon is increasing at the rate of  $2 \text{ cm}^2/\text{s}$ . At what rate is the volume of the balloon increasing when the radius of the balloon is  $6 \text{ cm}$  (P R- 3 No .4)