1. ( a ) cotθ = sin2θ ( θ≠ $n\pi$ , n is integer , if θ =
   ( b ) The value of sin($\cot^{-1} x$) is
   ( c ) The equation $x^2 - 7xy + 12y^2 = 0$ represents a

2. ( a) P,Q,R and S are to give lectures to an audience. The organiser can arrange the order of their presentation in
   ( b ) The equation $x - \frac{5}{x-2}$ = 2-$\frac{5}{x-2}$ has
   ( c ) if the arithmetic mean of the roots of a quadratic equation is 8 and the geometric mean is 5, then the equation is

3. ( a ) The middle term in the expansion of $\left(x + \frac{1}{x}\right)^{10}$
   ( b ) If one end of a diameter of the circle $2x^2 + 2y^2 - 4x - 8y + 2 = 0\ is\ (3,2)$ the other end is

4. ( a ) The number of tangents which can be drawn from the point (1,2) to the circle $x^2 + y^2 + 2x - 4y + 4 = 0\ is$
   ( b ) The line $\frac{x-2}{3} = \frac{y-3}{4} = \frac{z-4}{5}$ is parallel to the plane
   ( c ) The domain of the real valued function $f(x) = \frac{x-3}{(x-1)\sqrt{x^2-4}}$ is

5. ( a ) Let *a, b ,c* be non-zero real numbers such that
   $\int_0^3 (3x^2 + 2bx + c)dx = \int_1^3 (3ax^2 + 2bc + c)dx\ then$
   ( i ) *a+b+c =3* (ii ) ) *a+b+c =1 ( iii )* ) *a+b+c =0 ( iv)* ) *a+b+c =-2*
   ( b ) *If* $\int x^{-3}.5^{\frac{1}{x^2}}dx$ *=* $k5^{\frac{1}{x^2}}$ *then* $k\ is$
   *( c ) If f(x) = g(x) then the value of* $\int f(x)g(x)dx\ is$

6. ( a ) If $x^y$=$e^{x-y}$ then dy/dx is equal to
   ( b ) The daily wages of 7 persons are : ( in Rs.) 12, 7,15,10,19,17,25. The quartile deviation is …

7. ( a ) The weighed mean of first n natural numbers whose weights are equal to the squares of the corresponding numbers is …
   ( b ) The probability that a man fishing at particular place will catch 1,2,3,4 fishes are 0.4,0.3,0.2 and 0.1 respectively. The expected number of fish caught is …

8. ( a ) A train passes a platform 50 m long in 14 seconds and a man standing on the platform in 10 seconds. The speed of the train is …
   ( b ) The resultant of two forces, P, Q acting at certain angle is X, that of P,R acting at the same angle is also X. Then the value of P is …

9. ( a ) A purse contains 4 copper coins, 3 silver coins, the seconds purse contains 6 copper coins and 2 silver coins. A coin is taken out of any purse. The probability that it is a copper coin is …

   ( b ) If n denotes the number of sixes in four consecutive throws of a disc, then P(n-4) is …

10. ( a ) If a and b are unit vectors making an angle θ with each other, then $|\vec{a} - \vec{b}|$ is …

    ( b ) The number of unit vectors perpendicular to vectors $\vec{u} = \vec{\imath} + \vec{\jmath}$ $and$ $v = \vec{\jmath} + \vec{k}$ is …