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KCET ONLINE TEST-26, MAY-2020  **MATHEMATICS**  **TIME: 45Mins MARKS: 30**

**TOPIC**: **APPLICATION OF DERIVATIVES & DIFFERENTIAL EQUESTION. DATE: 21/05/2020**

1. **The volume of a spherical balloon is increasing at the rate of 40 *cubic centimeter per minute*. The rate of change of the surface of the balloon at the instant when its radius is 8 *centimeter*, is**

(a)  *sq cm*/*min* (b) 5 *sq cm*/*min*

(c) 10 *sq cm*/*min* (d) 20 *sq cm*/*min*

1. **A man of height 1.8 *meter* is moving away from a lamp post at the rate of 1.2  If the height of the lamp post be 4.5 *meter*, then the rate at which the shadow of the man is lengthening is**

(a) (b) 

(c)  (d) None of these

1. **The radius of the cylinder of maximum volume, which can be inscribed in a sphere of radius *R* is**

(a)  (b) 

(c)  (d) 

1. **The distance travelled *s* (in *meter*) by a particle in *t* seconds is given by, The speed of the particle after 1 second will be**

(a) 8 *cm/sec* (b) 6 *cm/sec*

(c) 2 *cm/sec* (d) None of these

1. **If  is tangent to the curve  at (2, 3), then**

(a)  (b) 

(c)  (d) 

1. **At what points of the curve tangent makes the equal angle with axis**

(a)  and  (b)  and 

(c)  and  (d)  and 

1. **If the normal to the curve  at the point  makes an angle with the positive *x*-axis then  is equal to**

(a)  (b) 

(c)  (d) 

1. **The point(s) on the curve  where the tangent is vertical (parallel to *y-*axis), is (are)**

(a)  (b)  (c)  (d) 

1. **If the function  where  attains its maximum and minimum at *p* and *q* respectively such that , then *a* equals**

(a) 3 (b) 1

(c) 2 (d) 

1. **The function  is**

(a) Increasing on  (b) Decreasing on 

(c) Decreasing on and increasing on  (d) Increasing on  and decreasing on 

1. **The function  increases, if**

(a)  (b) 

(c)  (d) 

1. **Let  for every real number *x*. Then**

(a) *h* is decreasing whenever *f* is increasing

(b) *h* is increasing whenever *f*  is decreasing

(c) *h* is decreasing whenever *f* is decreasing

(d) Nothing can be said in general

1. **In [0, 1] Lagrange's mean value theorem is NOT applicable to**

(a)  (b) 

(c)  (d) 

1. **If the function satisfies the conditions of Lagrange's mean value theorem for the interval [1, 2] and the tangent to the curve at is parallel to the chord that joins the points of intersection of the curve with the ordinates  and . Then the value of is**

(a)  (b) 

(c)  (d) 

1. **Let , Rolle’s theorem is applicable to *f* for , if **

(a) – 2 (b) – 1

(c) 0 (d) 

1. **The solution of the differential equation  is**

(a)  (b) 

(c)  (d) None of these

1. **The solution of the differential equation is**

(a)  (b) 

(c)  (d) 

1. **The solution of the differential equation is**

(a)  (b) 

(c)  (d) None of these

1. **The solution of the differential equation  is**

(a)  (b) 

(c)  (d) 

1. **The general solution of  is**

(a)  (b) 

(c)  (d) 

1. **The solution of the equation  is**

(a)  (b) 

(c)  (d) None of these

1. **The solution of the given differential equation  is**

(a)  (b) 

(c)  (d) 

1. **If integrating factor of  is  then *P* is equal to**

(a)  (b) 

(c)  (d) 

1. **A solution of the differential equation  is**

(a)  (b) 

(c)  (d) 

1. **The slope of the tangent at to a curve passing through is given by , then the equation of the curve is**

(a)  (b)  (c)  (d) None of these

1. **The equation of family of curves for which the length of the normal is equal to the radius vector is**

(a)  (b) 

(c)  (d) None of these

1. **A continuously differentiable function  satisfying  is**

(a)  (b) 

(c)   (d) Not possible

1. **The rate of increase of bacteria in a certain culture is proportional to the number present. If it double in 5 hours then in 25 hours, its number would be**

(a) 8 times the original (b) 16 times the original

(c) 32 times the original (d) 64 times the original

1. **The solution of is**

(a) **** (b) 

(c)  (d) 

1. **The solution of the differential equation  is equal to**

(a)  (b) 

(c)  (d) 