**ANNUAL EXAMINATION 2020**

**(Only for Regular Students)**

***Centre No. 135 Centre Name- Disha College, Raipur (C.G.)***

**Class-B.Sc.-I Subject- Mathematics**

**Paper No-II Paper Name- Calculus**

**Time- 3 hrs. M.M.-50**

Note – *Attempt all units. Solve any two from each units. Each question carries equal marks*.

Unit-I

Q1(a) Vsyj&izes; ls tan-1x dk dh ?kkrks esa izlkj Kkr dhft,A%

Expland tan-1x is powers of by Taylors’s theorem.

(b) ;fn

Rkks D;k f(x), x = -1ij lrar gS\

If

Then decide whether the function f(x) is continuous at x = -1

(c) fof/k ds ç;ksx ls fl) dhft;s fd

Apply technique to prove that

Unit-II

Q2(a) oØ x3 +2x2y -xy2 - 2y3 +xy -y2-1 = 0 dh vuUrLif’kZ;k Kkr dhft,A

Find all asymptotes of the curve.

x3 +2x2y -xy2 - 2y3 +xy -y2-1 = 0

(b) oØ dk vuqjs[k.k dhft,A

Trace the curve.

(c) fl) dhft, fd oØ ds fcanq ij oØrk&f=T;k 3 a sin cos gSA

Prove the radius of curvature of the curve

at the point is 3 a sin cos

Unit-III

Q3(a) oØksa vkSj ls ifjc) {ks= dk {ks=Qy Kkr dhft,A

Find the area enclosed by the curves.

(b) fl) dhft,A

Prove that:

(c) dk eku Kkr dhft,A

Evaluate

Unit-IV

Q4(a) gy dhft,A

Solve:

(b) gy dhft, (1+xy) y dx + (1-xy)x dy = 0

Solve the differential equation : (1+xy) y dx + (1-xy)x dy = 0

(c) gy dhft,

Solve.

Unit-V

Q5(a) Lora= pj dks ifjHkf”kr djds fuEukafdr vody lehdj.k dks gy dhft,A

Transform independent variable x into z and solve the following differential equation.

(b) çkpy fopj.k fof/k ls gy dhft,A

Solve by method of variation of parameter.

(c) gy dhft, ,

Solve the following simultaneous differential equations.

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