

Babasaheb Bhimrao Ambedkar Bihar University, Muzaffarpur

Directorate of Distance Education

T.D.C. 4th Semester Examination 2015 (Session 2013-16)

Subject:- Mathematics (Hons.)

Paper - 4th

Assignment (Full Marks - 20)

Answer any four questions:-

किन्हीं चार प्रश्नों के उत्तर दें।

Solve:

5 x 4 = 20

(i) $\frac{dy}{dx} = e^{x-y} - 1$

(ii) $(1 + e^{x/y}) dx + e^{x/y} (1 - x/y) dy = 0$

(iii) $\frac{dy}{dx} = \frac{2x - 6y + 7}{x - 3y + 4}$

(iv) $(1 + y^2) dx = (\tan^{-1} y - x) dy$

(v) $\frac{dy}{dx} + xy = x^3 y^3$

(vi) $y = 2px + p^3, \quad p \equiv \frac{dy}{dx}$

(vii) $x + \frac{p}{\sqrt{1+p^2}} = a, \quad p \equiv \frac{dy}{dx}$

(viii) $(px - y)(py + x) = h^2 p$

(ix) Find the orthogonal trajectories of the family

(x) of co-axial circles $x^2 + y^2 + 2gx + c = 0$

Find the orthogonal trajectories of

$$r^n \sin n\theta = a^n.$$