Roll No. | | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 09

B.Sc.(Agriculture) (2014 & Onwards) (Sem.–2)

MATHEMATICS – II

Subject Code : BSAG-205A

Paper ID : [72360]

Time : 3 Hrs. Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

1. Write briefly :

(a) Evaluate $\int (4x + \sin(x) + 1)\, dx$.

(b) Write the integral of $\frac{1}{x^3}$.

(c) Differentiate $a^x + \sin(x)$ *w.r.t* x.

(d) Differentiate $x \cdot \tan(x)$ *w.r.t* x.

(e) Write a short note on limit and continuity of functions.

(f) Find third derivative of $\sin(x)$ *w.r.t* x.

(g) Evaluate $\int \cot(x)\, dx$.

(h) Write a short note on algebraic functions.

(i) Evaluate $\lim_{x \to 2} \frac{x+1}{2x+1}$.

(j) Evaluate $\int (e^x + x^{10} + e^{10})\, dx$.

SECTION-B

2. Determine the maximum or minimum value(s) of the function

$$2x^3 - 15x^2 + 36x + 10.$$

3. Differentiate $\sin^p(x)\ .\ \cos^q(x)$ *w.r.t* x.

4. Find the n^{th} derivative of a^x *w.r.t* x.

5. Evaluate $\lim\limits_{x \to a} \dfrac{\sqrt{x} - \sqrt{a}}{x - a}$.

6. Evaluate $\int \dfrac{1}{(x+1)(x-3)} dx$ by partial fractions.

SECTION-C

7. If $y = \sqrt{x} + \dfrac{1}{\sqrt{x}}$, show that $2x\dfrac{dy}{dx} + y = 2\sqrt{x}, x > 0$.

8. Evaluate $\int \dfrac{\cos(x)}{\left(\cos\dfrac{x}{2} + \sin\dfrac{x}{2}\right)^3} dx$ by suitable substitution.

9. Evaluate $\int x\cos(x)\, dx$ by parts.