UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program :Third Semester – 2020

Paper: Elementary Mathematics-II (Calculus)

Course Code: MATH-211/MTH-21107Part – I (Compulsory) **Time: 30Min. Marks: 10**

Roll No. in Fig. ……

Roll No. in Words. ……

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Signature of Supdt.:

Attempt this Paper on this Question Sheet only.
Division of marks is given in front of each question.
This Paper will be collected back after expiry of time limit mentioned above.

Q.1. Encircle the right answer cutting and overwriting is not allowed. (10x1=10)

1) If $f(x)=\tan\sqrt{x}$ then the natural domain of f is

a)$(-\infty, +\infty)$ b) $[1,+\infty)$

c)$(0, +\infty)$ d)None of above

2) The solution of the inequality $-9<x-3<9$

a) (1,7) b) (-1,7)

c) (-1,-7) d) none of above

3) $\lim_{n\to\infty}(1+n)^{1/n}$

a) e b) ∞

c) 0 d) none of above

4)d /dx ln | ax | =

a)1/(x lne) b) 1/(xlna)

c) ± x d) none of above

5)$1/x^2+1$ is the derivative of

a)$\sin^{-1}x$ b) $\cos^{-1}x$

c) $\tan^{-1}x$ d) none of above

6)$\int \left(\frac{1}{x+1}\right)dx$

a)ln x b) 1/x lna

c) $-1/x^2$ d) none of above

7)$\int \cos x\,dx$

a) sinx+c b) lncosx +c

c) ln sinx +c d) none of above

8)$-\int \left(\frac{1}{\sqrt{(1-x2)}}\right)dx$

a)$\sin^{-1}x$ b) $\cos^{-1}x$

c) $\tan^{1}x$ d) none of above

9)$\int_0^1 1/\sqrt{(1-x2)}$

a)0 b) 30

c) 60 d) none of above

10)$\int \sec x \tan x\,dx$

a)-cscx +c b) secx +c

c) cotx +c d) none of above

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program :Third Semester – 2020

Roll No. ……..

Paper: Elementary Mathematics-II (Calculus) **Time: 2 Hrs. 30 Min. Marks: 50**

Course Code: MATH-211/MTH-21107 **Part – II**

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Q.2. Solve the following: **(5x4=20)**

i. Solve $|x| + |x - 1| > 1$

ii. Evaluate $\lim_{n \to 0} \frac{sinax}{sinbx}$

iii. Find $\frac{dy}{dx}$ if $x^3 + y^3 - 3axy = 0$

iv. Evaluate $\int x\, See^2 x\, dx$

v. Evaluate $\int_1^2 \frac{x^2+1}{x+1}$

Solve the following: **(3x10=30)**

Q.3.

i. Solve $\frac{x^2 - 2}{1 - 2x} > 1$ (05)

ii. Find $\lim_{x \to 0} \frac{a^x - 1}{x}$ (05)

Q.4. Differentiate w.r.t 'x'

i. $y = e^{ax} Cos\ (barctanx)$ (05)

ii. $y = x\ \ a^x Sinhx$ (05)

Q.5. Evaluate

i. $\int \frac{1}{\sqrt{a^2 - x^2}}\, dx$ (05)

ii. $\int_0^{\frac{\pi}{6}} x\, Cos\, x\, dx$ (05)