Name: .... **Class: MSc-III** **Reg. No.:** ....

Quiz 2: Real Analysis II

Instructions:

- Please choose the most correct option by filling or ticking or crossing the box.
- Spoiled or overwritten selection has no credit.

Question 1 Which is/are improprer integral(s) of second kind:

(A) $\int_0^1 \frac{1}{x} dx$ (B) $\int_1^2 \frac{1}{x^2+1} dx$ (C) $\int_{-1}^1 \frac{2x+1}{x+1} dx$

☐ C only.
■ A and C only.
☐ B only.
☐ A and B only.

Question 2 Find the value of p for which $\int_0^1 \frac{1}{x^{p+1}} dx$ is convergent

☐ $p > 0$.
☐ $p \leq 0$.
■ $p < 0$.
☐ $p < 1$.

Question 3 A sequence of real numbers is Cauchy if and only if

☐ it is divergent.
☐ it may converge.
☐ it is positive.
■ it is convergent.

Question 4 $\int_1^2 \frac{dx}{(x-1)^m}$ is divergent iff

☐ $m < 1$.
☐ $m > 1$.
☐ $m \leq 1$.
■ $m \geq 1$.

Question 5 If $\lim_{x\to\infty} f(x) = m$, then for all real $\epsilon > 0$, there exists $N > 0$ such that

☐ $|m - f(x)| < \epsilon$ for all $x < N$.
■ $|m - f(x)| < \epsilon$ for all $x > N$.
☐ $|f(x) - m| < \epsilon$ for all $x < N$.
☐ $|f(x) - m| > \epsilon$ for all $x > N$.

Question 6 If $f, |f| \in \mathcal{R}(\alpha; a, b)$, then one has

☐ $\int_a^b f d\alpha \geq \int_a^b |f| d\alpha$.
■ $\int_a^b |f| d\alpha \geq \int_a^b f d\alpha$.
☐ $\left|\int_a^b f d\alpha\right| \leq \int_a^b f d\alpha$
☐ $\left|\int_a^b f d\alpha\right| \geq \int_a^b |f| d\alpha$.

Name: .... **Class: MSc-III** **Reg. No.:** ....

Quiz 2: Real Analysis II

Instructions:

- Please choose the most correct option by filling or ticking or crossing the box.
- Spoiled or overwritten selection has no credit.

Question 1 Which is/are improprer integral(s) of second kind:

(A) $\int_0^1 \frac{1}{x}dx$ (B) $\int_1^2 \frac{1}{x^2+1}dx$ (C) $\int_{-1}^1 \frac{2x+1}{x+1}dx$

- ■ A and C only.
- ☐ C only.
- ☐ A and B only.
- ☐ B only.

Question 2 Find the value of p for which $\int_0^1 \frac{1}{x^{p+1}}dx$ is convergent

- ☐ $p \leq 0$.
- ☐ $p < 1$.
- ☐ $p > 0$.
- ■ $p < 0$.

Question 3 A sequence of real numbers is Cauchy if and only if

- ☐ it is positive.
- ☐ it may converge.
- ☐ it is divergent.
- ■ it is convergent.

Question 4 If $\lim_{x\to\infty} f(x) = m$, then for all real $\epsilon > 0$, there exists $N > 0$ such that

- ☐ $|m - f(x)| < \epsilon$ for all $x < N$.
- ☐ $|f(x) - m| < \epsilon$ for all $x < N$.
- ☐ $|f(x) - m| > \epsilon$ for all $x > N$.
- ■ $|m - f(x)| < \epsilon$ for all $x > N$.

Question 5 $\int_1^2 \frac{dx}{(x-1)^m}$ is divergent iff

- ■ $m \geq 1$.
- ☐ $m \leq 1$.
- ☐ $m < 1$.
- ☐ $m > 1$.

Question 6 If $f, |f| \in \mathcal{R}(\alpha; a, b)$, then one has

- ☐ $\left|\int_a^b f d\alpha\right| \leq \int_a^b f d\alpha$
- ☐ $\int_a^b f d\alpha \geq \int_a^b |f| d\alpha$.
- ■ $\int_a^b |f| d\alpha \geq \int_a^b f d\alpha$.
- ☐ $\left|\int_a^b f d\alpha\right| \geq \int_a^b |f| d\alpha$.

Name: .... **Class: MSc-III** **Reg. No.:** ....

Quiz 2: Real Analysis II

Instructions:
- Please choose the most correct option by filling or ticking or crossing the box.
- Spoiled or overwritten selection has no credit.

Question 1 A sequence of real numbers is Cauchy if and only if

■ it is convergent. □ it is positive.
□ it is divergent. □ it may converge.

Question 2 Which is/are impropre integral(s) of second kind:

(A) $\int_0^1 \frac{1}{x} dx$ (B) $\int_1^2 \frac{1}{x^2+1} dx$ (C) $\int_{-1}^1 \frac{2x+1}{x+1} dx$

□ B only. □ A and B only.
□ C only. ■ A and C only.

Question 3 Find the value of p for which $\int_0^1 \frac{1}{x^{p+1}} dx$ is convergent

□ $p \leq 0$. □ $p > 0$.
■ $p < 0$. □ $p < 1$.

Question 4 $\int_1^2 \frac{dx}{(x-1)^m}$ is divergent iff

□ $m \leq 1$. ■ $m \geq 1$.
□ $m > 1$. □ $m < 1$.

Question 5 If $f, |f| \in \mathcal{R}(\alpha; a, b)$, then one has

□ $\left|\int_a^b f d\alpha\right| \leq \int_a^b f d\alpha$ ■ $\int_a^b |f| d\alpha \geq \int_a^b f d\alpha$.
□ $\left|\int_a^b f d\alpha\right| \geq \int_a^b |f| d\alpha$. □ $\int_a^b f d\alpha \geq \int_a^b |f| d\alpha$.

Question 6 If $\lim_{x\to\infty} f(x) = m$, then for all real $\epsilon > 0$, there exists $N > 0$ such that

□ $|f(x) - m| > \epsilon$ for all $x > N$.
■ $|m - f(x)| < \epsilon$ for all $x > N$.
□ $|m - f(x)| < \epsilon$ for all $x < N$.
□ $|f(x) - m| < \epsilon$ for all $x < N$.

Name: .... **Class: MSc-III** **Reg. No.:** ....

Quiz 2: Real Analysis II

Instructions:

- Please choose the most correct option by filling or ticking or crossing the box.
- Spoiled or overwritten selection has no credit.

Question 1 A sequence of real numbers is Cauchy if and only if

☐ it is positive. ☐ it may converge.
☐ it is divergent. ■ it is convergent.

Question 2 Find the value of p for which $\int_0^1 \frac{1}{x^{p+1}}dx$ is convergent

■ $p < 0$. ☐ $p \leq 0$.
☐ $p > 0$. ☐ $p < 1$.

Question 3 Which is/are improprer integral(s) of second kind:

(A) $\int_0^1 \frac{1}{x}dx$ (B) $\int_1^2 \frac{1}{x^2+1}dx$ (C) $\int_{-1}^1 \frac{2x+1}{x+1}dx$

☐ C only. ■ A and C only.
☐ B only. ☐ A and B only.

Question 4 If $\lim_{x\to\infty} f(x) = m$, then for all real $\epsilon > 0$, there exists $N > 0$ such that

☐ $|f(x) - m| > \epsilon$ for all $x > N$.
☐ $|m - f(x)| < \epsilon$ for all $x < N$.
☐ $|f(x) - m| < \epsilon$ for all $x < N$.
■ $|m - f(x)| < \epsilon$ for all $x > N$.

Question 5 If $f, |f| \in \mathcal{R}(\alpha; a, b)$, then one has

☐ $\left|\int_a^b f d\alpha\right| \geq \int_a^b |f| d\alpha$. ☐ $\int_a^b f d\alpha \geq \int_a^b |f| d\alpha$.
■ $\int_a^b |f| d\alpha \geq \int_a^b f d\alpha$. ☐ $\left|\int_a^b f d\alpha\right| \leq \int_a^b f d\alpha$

Question 6 $\int_1^2 \frac{dx}{(x-1)^m}$ is divergent iff

☐ $m > 1$. ☐ $m \leq 1$.
☐ $m < 1$. ■ $m \geq 1$.

Name: .... **Class: MSc-III** **Reg. No.:** ....

Quiz 2: Real Analysis II

Instructions:

- Please choose the most correct option by filling or ticking or crossing the box.
- Spoiled or overwritten selection has no credit.

Question 1 A sequence of real numbers is Cauchy if and only if

☐ it may converge. ☐ it is divergent.
■ it is convergent. ☐ it is positive.

Question 2 Find the value of p for which $\int_0^1 \frac{1}{x^{p+1}}dx$ is convergent

☐ $p > 0$. ☐ $p < 1$.
■ $p < 0$. ☐ $p \leq 0$.

Question 3 Which is/are improprer integral(s) of second kind:

(A) $\int_0^1 \frac{1}{x}dx$ (B) $\int_1^2 \frac{1}{x^2+1}dx$ (C) $\int_{-1}^1 \frac{2x+1}{x+1}dx$

■ A and C only. ☐ B only.
☐ A and B only. ☐ C only.

Question 4 If $\lim_{x\to\infty} f(x) = m$, then for all real $\epsilon > 0$, there exists $N > 0$ such that

☐ $|m - f(x)| < \epsilon$ for all $x < N$.
■ $|m - f(x)| < \epsilon$ for all $x > N$.
☐ $|f(x) - m| < \epsilon$ for all $x < N$.
☐ $|f(x) - m| > \epsilon$ for all $x > N$.

Question 5 If $f, |f| \in \mathcal{R}(\alpha; a, b)$, then one has

☐ $\left|\int_a^b f d\alpha\right| \leq \int_a^b f d\alpha$ ☐ $\int_a^b f d\alpha \geq \int_a^b |f| d\alpha$.
☐ $\left|\int_a^b f d\alpha\right| \geq \int_a^b |f| d\alpha$. ■ $\int_a^b |f| d\alpha \geq \int_a^b f d\alpha$.

Question 6 $\int_1^2 \frac{dx}{(x-1)^m}$ is divergent iff

☐ $m < 1$. ☐ $m \leq 1$.
☐ $m > 1$. ■ $m \geq 1$.

Name: .... **Class: MSc-III** **Reg. No.:** ....

Quiz 2: Real Analysis II

Instructions:

- Please choose the most correct option by filling or ticking or crossing the box.
- Spoiled or overwritten selection has no credit.

Question 1 Find the value of p for which $\int_0^1 \frac{1}{x^{p+1}} dx$ is convergent

□ $p > 0$. ■ $p < 0$.
□ $p \leq 0$. □ $p < 1$.

Question 2 Which is/are improprer integral(s) of second kind:

(A) $\int_0^1 \frac{1}{x} dx$ (B) $\int_1^2 \frac{1}{x^2+1} dx$ (C) $\int_{-1}^1 \frac{2x+1}{x+1} dx$

■ A and C only. □ B only.
□ C only. □ A and B only.

Question 3 A sequence of real numbers is Cauchy if and only if

□ it may converge. ■ it is convergent.
□ it is positive. □ it is divergent.

Question 4 $\int_1^2 \frac{dx}{(x-1)^m}$ is divergent iff

□ $m \leq 1$. □ $m < 1$.
■ $m \geq 1$. □ $m > 1$.

Question 5 If $f, |f| \in \mathcal{R}(\alpha; a, b)$, then one has

■ $\int_a^b |f| d\alpha \geq \int_a^b f d\alpha$. □ $\left| \int_a^b f d\alpha \right| \leq \int_a^b f d\alpha$
□ $\int_a^b f d\alpha \geq \int_a^b |f| d\alpha$. □ $\left| \int_a^b f d\alpha \right| \geq \int_a^b |f| d\alpha$.

Question 6 If $\lim_{x\to\infty} f(x) = m$, then for all real $\epsilon > 0$, there exists $N > 0$ such that

□ $|f(x) - m| < \epsilon$ for all $x < N$.
■ $|m - f(x)| < \epsilon$ for all $x > N$.
□ $|m - f(x)| < \epsilon$ for all $x < N$.
□ $|f(x) - m| > \epsilon$ for all $x > N$.