



+1/1/60+

MA 106 Endsem Exam : Part A
Indian Institute of Technology Bombay
Date: 19th April 2023

Timing: 9.30 to 10.30 AM

Spring 2023, II

Max Mark: 20

Name:

Div/Tutorial:

Roll Number:

Please read the following instruction before answering the question.

- The (Optical Mark Recognition) OMR sheet will be collected back at 10.30 AM.
- There is 15 questions in Part A. Every question contains a single correct answer.
- Use pencil/pen to fill the correct choices in the OMR sheet. **Answer provided in the OMR sheet will only be evaluated.**

Question 1 Only a perfect response will be scored 1 point - otherwise, null score. Test/4

☐ A Wrong ☐ B Correct ☐ C Wrong ☐ D Wrong

Question 2 Only a perfect response will be scored 1 point - otherwise, null score. Test/2

☐ A Wrong ☐ B Wrong ☐ C Correct ☐ D Wrong

Question 3 Only a perfect response will be scored 1 point - otherwise, null score. Test/1

☐ A Wrong ☐ B Wrong ☐ C Correct ☐ D Wrong

Question 4 Only a perfect response will be scored 1 point - otherwise, null score. Test/3

☐ A Wrong ☐ B Wrong ☐ C Correct ☐ D Wrong

Question 5 This question is related to Limit/4. The correct answer is Option A.

☐ A Option A ☐ B Option D ☐ C Option C ☐ D Option B

Question 6 This question is related to Limit/3. The correct answer is Option D.

☐ A Option C ☐ B Option B ☐ C Option D ☐ D Option A

Question 7 This question is related to Limit/2. The correct answer is Option B.

☐ A Option B ☐ B Option C ☐ C Option A ☐ D Option D

Question 8 This question is related to Sequence/2. The correct answer is Option B.

☐ A Option B ☐ B Option D ☐ C Option C ☐ D Option D



Question 9 This question is related to Sequence/4. What is the limit of the sequence $\left\{\frac{1}{n}\right\}$

- ☐ A 0 ☐ B Not Defined ☐ C 1 ☐ D ∞

Question 10 This question is related to Sequence/3. The correct answer is Option A.

- ☐ A Option A ☐ B Option C ☐ C Option D ☐ D Option B

Question 11 This question is related to Series/7. What is the sum of $\sum \frac{1}{n^4}$

- ☐ A $\frac{\pi^4}{90}$ ☐ B $\frac{\pi^4}{15}$ ☐ C $\frac{\pi^2}{6}$ ☐ D $\frac{\pi^2}{90}$

Question 12 This question is related to Series/6. What is the sum of $\sum \frac{1}{n^2}$

- ☐ A $\frac{\pi^2}{3}$ ☐ B $\frac{\pi^2}{2}$ ☐ C $\frac{\pi^2}{6}$ ☐ D $\frac{\pi}{4}$

Question 13 This question is related to Series/2. The correct answer is Option D.

- ☐ A Option C ☐ B Option A ☐ C Option D ☐ D Option B

Question 14 This question is related to Series/1. The correct answer is Option B.

- ☐ A Option D ☐ B Option C ☐ C Option A ☐ D Option B

Question 15 This question is related to Series/3. The correct answer is Option C.

- ☐ A Option C ☐ B Option B ☐ C Option D ☐ D Option A



MA 106 Part A Optical Mark Recognition (OMR) Sheet

Encode Rollnumber									Division
0	0	0	0	0	0	0	0	0	1
1	1	1	1	1	1	1	1	1	2
2	2	2	2	2	2	2	2	2	3
3	3	3	3	3	3	3	3	3	4
4	4	4	4	4	4	4	4	4	
5	5	5	5	5	5	5	5	5	
6	6	6	6	6	6	6	6	6	
7	7	7	7	7	7	7	7	7	
8	8	8	8	8	8	8	8	8	
9	9	9	9	9	9	9	9	9	
B	B	B	B	B	B	B	B	B	
D	D	D	D	D	D	D	D	D	

Name:

Rollnumber:

Div./Tut.:

Encode your correct choices.

- | | | | | | | | | | |
|-----|---|---|---|---|------|---|---|---|---|
| Q1. | A | B | C | D | Q9. | A | B | C | D |
| Q2. | A | B | C | D | Q10. | A | B | C | D |
| Q3. | A | B | C | D | Q11. | A | B | C | D |
| Q4. | A | B | C | D | Q12. | A | B | C | D |
| Q5. | A | B | C | D | Q13. | A | B | C | D |
| Q6. | A | B | C | D | Q14. | A | B | C | D |
| Q7. | A | B | C | D | Q15. | A | B | C | D |
| Q8. | A | B | C | D | | | | | |



+2/1/57+

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Question 1 Only a perfect response will be scored 1 point - otherwise, null score. Test/1

☐ A Wrong ☐ B Wrong ☐ C Correct ☐ D Wrong

Question 2 Only a perfect response will be scored 1 point - otherwise, null score. Test/2

☐ A Wrong ☐ B Correct ☐ C Wrong ☐ D Wrong

Question 3 Only a perfect response will be scored 1 point - otherwise, null score. Test/4

☐ A Wrong ☐ B Correct ☐ C Wrong ☐ D Wrong

Question 4 Only a perfect response will be scored 1 point - otherwise, null score. Test/3

☐ A Wrong ☐ B Wrong ☐ C Wrong ☐ D Correct

Question 5 This question related to Limit/1. The correct answer is Option A.

☐ A Option B ☐ B Option D ☐ C Option C ☐ D Option A

Question 6 This question is related to Limit/2. The correct answer is Option B.

☐ A Option D ☐ B Option A ☐ C Option B ☐ D Option C

Question 7 This question is related to Limit/4. The correct answer is Option A.

☐ A Option C ☐ B Option B ☐ C Option A ☐ D Option D

Question 8 This question is related to Sequence/1. The correct answer is Option A.

☐ A Option C ☐ B Option B ☐ C Option D ☐ D Option A



Question 9 This question is related to Sequence/4. What is the limit of the sequence $\left\{\frac{1}{n}\right\}$

- ☐ A Not Defined ☐ B ∞ ☐ C 1 ☐ D 0

Question 10 This question is related to Sequence/3. The correct answer is Option A.

- ☐ A Option B ☐ B Option C ☐ C Option D ☐ D Option A

Question 11 This question is related to Series/5. The correct answer is Option D.

- ☐ A Option C ☐ B Option D ☐ C Option A ☐ D Option B

Question 12 This question is related to Series/4. The correct answer is Option C.

- ☐ A Option A ☐ B Option B ☐ C Option C ☐ D Option D

Question 13 This question is related to Series/6. What is the sum of $\sum \frac{1}{n^2}$

- ☐ A $\frac{\pi^2}{3}$ ☐ B $\frac{\pi^2}{2}$ ☐ C $\frac{\pi}{4}$ ☐ D $\frac{\pi^2}{6}$

Question 14 This question is related to Series/7. What is the sum of $\sum \frac{1}{n^4}$

- ☐ A $\frac{\pi^2}{6}$ ☐ B $\frac{\pi^4}{15}$ ☐ C $\frac{\pi^4}{90}$ ☐ D $\frac{\pi^2}{90}$

Question 15 This question is related to Series/1. The correct answer is Option B.

- ☐ A Option D ☐ B Option A ☐ C Option B ☐ D Option C



MA 106 Part A Optical Mark Recognition (OMR) Sheet

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0	0	0	0	0	0	0	0	0	1
1	1	1	1	1	1	1	1	1	2
2	2	2	2	2	2	2	2	2	3
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7	7	7	7	7	7	7	7	7	
8	8	8	8	8	8	8	8	8	
9	9	9	9	9	9	9	9	9	
B	B	B	B	B	B	B	B	B	
D	D	D	D	D	D	D	D	D	

Name:

Rollnumber:

Div./Tut.:

Encode your correct choices.

- Q1. ☐ A ☐ B ☐ C ☐ D
- Q2. ☐ A ☐ B ☐ C ☐ D
- Q3. ☐ A ☐ B ☐ C ☐ D
- Q4. ☐ A ☐ B ☐ C ☐ D
- Q5. ☐ A ☐ B ☐ C ☐ D
- Q6. ☐ A ☐ B ☐ C ☐ D
- Q7. ☐ A ☐ B ☐ C ☐ D
- Q8. ☐ A ☐ B ☐ C ☐ D

- Q9. ☐ A ☐ B ☐ C ☐ D
- Q10. ☐ A ☐ B ☐ C ☐ D
- Q11. ☐ A ☐ B ☐ C ☐ D
- Q12. ☐ A ☐ B ☐ C ☐ D
- Q13. ☐ A ☐ B ☐ C ☐ D
- Q14. ☐ A ☐ B ☐ C ☐ D
- Q15. ☐ A ☐ B ☐ C ☐ D



+3/1/54+

MA 106 Endsem Exam : Part A
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Question 1 Only a perfect response will be scored 1 point - otherwise, null score. Test/2

☐ A Wrong ☐ B Wrong ☐ C Wrong ☐ D Correct

Question 2 Only a perfect response will be scored 1 point - otherwise, null score. Test/3

☐ A Correct ☐ B Wrong ☐ C Wrong ☐ D Wrong

Question 3 Only a perfect response will be scored 1 point - otherwise, null score. Test/1

☐ A Wrong ☐ B Correct ☐ C Wrong ☐ D Wrong

Question 4 Only a perfect response will be scored 1 point - otherwise, null score. Test/4

☐ A Correct ☐ B Wrong ☐ C Wrong ☐ D Wrong

Question 5 This question is related to Limit/3. The correct answer is Option D.

☐ A Option A ☐ B Option C ☐ C Option B ☐ D Option D

Question 6 This question related to Limit/1. The correct answer is Option A.

☐ A Option A ☐ B Option B ☐ C Option C ☐ D Option D

Question 7 This question is related to Limit/4. The correct answer is Option A.

☐ A Option C ☐ B Option A ☐ C Option B ☐ D Option D

Question 8 This question is related to Sequence/1. The correct answer is Option A.

☐ A Option A ☐ B Option C ☐ C Option D ☐ D Option B



Question 9 This question is related to Sequence/2. The correct answer is Option B.

- ☐ Option B ☐ Option C ☐ Option D ☐ Option D

Question 10 This question is related to Sequence/4. What is the limit of the sequence $\left\{\frac{1}{n}\right\}$

- ☐ ∞ ☐ Not Defined ☐ 1 ☐ 0

Question 11 This question is related to Series/4. The correct answer is Option C.

- ☐ Option B ☐ Option D ☐ Option C ☐ Option A

Question 12 This question is related to Series/2. The correct answer is Option D.

- ☐ Option A ☐ Option D ☐ Option C ☐ Option B

Question 13 This question is related to Series/3. The correct answer is Option C.

- ☐ Option D ☐ Option B ☐ Option C ☐ Option A

Question 14 This question is related to Series/5. The correct answer is Option D.

- ☐ Option D ☐ Option B ☐ Option C ☐ Option A

Question 15 This question is related to Series/1. The correct answer is Option B.

- ☐ Option D ☐ Option C ☐ Option A ☐ Option B



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0	0	0	0	0	0	0	0	0	1
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8	8	8	8	8	8	8	8	8	
9	9	9	9	9	9	9	9	9	
B	B	B	B	B	B	B	B	B	
D	D	D	D	D	D	D	D	D	

Name:

Rollnumber:

Div./Tut.:

Encode your correct choices.

- Q1. ☐ A ☐ B ☐ C ☐ D
- Q2. ☐ A ☐ B ☐ C ☐ D
- Q3. ☐ A ☐ B ☐ C ☐ D
- Q4. ☐ A ☐ B ☐ C ☐ D
- Q5. ☐ A ☐ B ☐ C ☐ D
- Q6. ☐ A ☐ B ☐ C ☐ D
- Q7. ☐ A ☐ B ☐ C ☐ D
- Q8. ☐ A ☐ B ☐ C ☐ D

- Q9. ☐ A ☐ B ☐ C ☐ D
- Q10. ☐ A ☐ B ☐ C ☐ D
- Q11. ☐ A ☐ B ☐ C ☐ D
- Q12. ☐ A ☐ B ☐ C ☐ D
- Q13. ☐ A ☐ B ☐ C ☐ D
- Q14. ☐ A ☐ B ☐ C ☐ D
- Q15. ☐ A ☐ B ☐ C ☐ D



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Question 1 Only a perfect response will be scored 1 point - otherwise, null score. Test/1

☐ A Wrong ☐ B Correct ☐ C Wrong ☐ D Wrong

Question 2 Only a perfect response will be scored 1 point - otherwise, null score. Test/3

☐ A Correct ☐ B Wrong ☐ C Wrong ☐ D Wrong

Question 3 Only a perfect response will be scored 1 point - otherwise, null score. Test/2

☐ A Correct ☐ B Wrong ☐ C Wrong ☐ D Wrong

Question 4 Only a perfect response will be scored 1 point - otherwise, null score. Test/4

☐ A Wrong ☐ B Correct ☐ C Wrong ☐ D Wrong

Question 5 This question is related to Limit/2. The correct answer is Option B.

☐ A Option D ☐ B Option A ☐ C Option C ☐ D Option B

Question 6 This question is related to Limit/3. The correct answer is Option D.

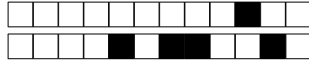
☐ A Option B ☐ B Option C ☐ C Option A ☐ D Option D

Question 7 This question related to Limit/1. The correct answer is Option A.

☐ A Option D ☐ B Option A ☐ C Option B ☐ D Option C

Question 8 This question is related to Sequence/3. The correct answer is Option A.

☐ A Option D ☐ B Option A ☐ C Option C ☐ D Option B



Question 9 This question is related to Sequence/1. The correct answer is Option A.

- ☐ Option B ☐ Option A ☐ Option C ☐ Option D

Question 10 This question is related to Sequence/2. The correct answer is Option B.

- ☐ Option B ☐ Option D ☐ Option D ☐ Option C

Question 11 This question is related to Series/7. What is the sum of $\sum \frac{1}{n^4}$

- ☐ $\frac{\pi^4}{15}$ ☐ $\frac{\pi^2}{6}$ ☐ $\frac{\pi^4}{90}$ ☐ $\frac{\pi^2}{90}$

Question 12 This question is related to Series/6. What is the sum of $\sum \frac{1}{n^2}$

- ☐ $\frac{\pi^2}{6}$ ☐ $\frac{\pi^2}{2}$ ☐ $\frac{\pi}{4}$ ☐ $\frac{\pi^2}{3}$

Question 13 This question is related to Series/4. The correct answer is Option C.

- ☐ Option B ☐ Option D ☐ Option A ☐ Option C

Question 14 This question is related to Series/2. The correct answer is Option D.

- ☐ Option D ☐ Option B ☐ Option A ☐ Option C

Question 15 This question is related to Series/3. The correct answer is Option C.

- ☐ Option D ☐ Option C ☐ Option A ☐ Option B



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Encode Rollnumber									Division
0	0	0	0	0	0	0	0	0	1
1	1	1	1	1	1	1	1	1	2
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5	5	5	5	5	5	5	5	5	
6	6	6	6	6	6	6	6	6	
7	7	7	7	7	7	7	7	7	
8	8	8	8	8	8	8	8	8	
9	9	9	9	9	9	9	9	9	
B	B	B	B	B	B	B	B	B	
D	D	D	D	D	D	D	D	D	

Name:

Rollnumber:

Div./Tut.:

Encode your correct choices.

- Q1. ☐ A ☐ B ☐ C ☐ D
- Q2. ☐ A ☐ B ☐ C ☐ D
- Q3. ☐ A ☐ B ☐ C ☐ D
- Q4. ☐ A ☐ B ☐ C ☐ D
- Q5. ☐ A ☐ B ☐ C ☐ D
- Q6. ☐ A ☐ B ☐ C ☐ D
- Q7. ☐ A ☐ B ☐ C ☐ D
- Q8. ☐ A ☐ B ☐ C ☐ D

- Q9. ☐ A ☐ B ☐ C ☐ D
- Q10. ☐ A ☐ B ☐ C ☐ D
- Q11. ☐ A ☐ B ☐ C ☐ D
- Q12. ☐ A ☐ B ☐ C ☐ D
- Q13. ☐ A ☐ B ☐ C ☐ D
- Q14. ☐ A ☐ B ☐ C ☐ D
- Q15. ☐ A ☐ B ☐ C ☐ D