

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.

- a. The (Optical Mark Recognition) OMR sheet will be collected back at 10.30 AM.
- b. There is 15 questions in Part A. Every question contains a single correct answer.
- c. 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    ☒ 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    ☒ Correct    ☐ D Wrong

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

☐ A Wrong    ☐ B Wrong    ☒ Correct    ☐ D Wrong

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

☐ A Wrong    ☐ B Wrong    ☒ Correct    ☐ D Wrong

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

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

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

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

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

☒ 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.

☒ 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  $\left\{\frac{1}{n}\right\}$

☒ 0      ☐ Not Defined      ☐ 1      ☐  $\infty$

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

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

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

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

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

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

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

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

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

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

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

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

# MA 106 Part A Optical Mark Recognition (OMR) Sheet

| Encode Rollnumber              |                                |                                |                                |                                |                                |                                |                                |                                | Division                       |                   |
|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|-------------------|
| <input type="text" value="0"/> | <input type="text" value="0"/> | <input type="text" value="0"/> | <input type="text" value="0"/> | <input type="text" value="0"/> | <input type="text" value="0"/> | <input type="text" value="0"/> | <input type="text" value="0"/> | <input type="text" value="0"/> | <input type="text" value="1"/> | Name: .....       |
| <input type="text" value="1"/> | <input type="text" value="1"/> | <input type="text" value="1"/> | <input type="text" value="1"/> | <input type="text" value="1"/> | <input type="text" value="1"/> | <input type="text" value="1"/> | <input type="text" value="1"/> | <input type="text" value="1"/> | <input type="text" value="2"/> |                   |
| <input type="text" value="2"/> | <input type="text" value="2"/> | <input type="text" value="2"/> | <input type="text" value="2"/> | <input type="text" value="2"/> | <input type="text" value="2"/> | <input type="text" value="2"/> | <input type="text" value="2"/> | <input type="text" value="2"/> | <input type="text" value="3"/> | .....             |
| <input type="text" value="3"/> | <input type="text" value="3"/> | <input type="text" value="3"/> | <input type="text" value="3"/> | <input type="text" value="3"/> | <input type="text" value="3"/> | <input type="text" value="3"/> | <input type="text" value="3"/> | <input type="text" value="3"/> | <input type="text" value="4"/> |                   |
| <input type="text" value="4"/> | <input type="text" value="4"/> | <input type="text" value="4"/> | <input type="text" value="4"/> | <input type="text" value="4"/> | <input type="text" value="4"/> | <input type="text" value="4"/> | <input type="text" value="4"/> | <input type="text" value="4"/> |                                | Rollnumber: ..... |
| <input type="text" value="5"/> | <input type="text" value="5"/> | <input type="text" value="5"/> | <input type="text" value="5"/> | <input type="text" value="5"/> | <input type="text" value="5"/> | <input type="text" value="5"/> | <input type="text" value="5"/> | <input type="text" value="5"/> |                                |                   |
| <input type="text" value="6"/> | <input type="text" value="6"/> | <input type="text" value="6"/> | <input type="text" value="6"/> | <input type="text" value="6"/> | <input type="text" value="6"/> | <input type="text" value="6"/> | <input type="text" value="6"/> | <input type="text" value="6"/> |                                |                   |
| <input type="text" value="7"/> | <input type="text" value="7"/> | <input type="text" value="7"/> | <input type="text" value="7"/> | <input type="text" value="7"/> | <input type="text" value="7"/> | <input type="text" value="7"/> | <input type="text" value="7"/> | <input type="text" value="7"/> |                                | Div./Tut.: .....  |
| <input type="text" value="8"/> | <input type="text" value="8"/> | <input type="text" value="8"/> | <input type="text" value="8"/> | <input type="text" value="8"/> | <input type="text" value="8"/> | <input type="text" value="8"/> | <input type="text" value="8"/> | <input type="text" value="8"/> |                                |                   |
| <input type="text" value="9"/> | <input type="text" value="9"/> | <input type="text" value="9"/> | <input type="text" value="9"/> | <input type="text" value="9"/> | <input type="text" value="9"/> | <input type="text" value="9"/> | <input type="text" value="9"/> | <input type="text" value="9"/> |                                |                   |
| <input type="text" value="B"/> | <input type="text" value="B"/> | <input type="text" value="B"/> | <input type="text" value="B"/> | <input type="text" value="B"/> | <input type="text" value="B"/> | <input type="text" value="B"/> | <input type="text" value="B"/> | <input type="text" value="B"/> |                                |                   |
| <input type="text" value="D"/> | <input type="text" value="D"/> | <input type="text" value="D"/> | <input type="text" value="D"/> | <input type="text" value="D"/> | <input type="text" value="D"/> | <input type="text" value="D"/> | <input type="text" value="D"/> | <input type="text" value="D"/> |                                |                   |

Encode your correct choices.

|     |                                     |                                     |                                     |                                |      |                                     |                                |                                     |                                     |
|-----|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------------|------|-------------------------------------|--------------------------------|-------------------------------------|-------------------------------------|
| Q1. | <input type="text" value="A"/>      | <input checked="" type="checkbox"/> | <input type="text" value="C"/>      | <input type="text" value="D"/> | Q9.  | <input checked="" type="checkbox"/> | <input type="text" value="B"/> | <input type="text" value="C"/>      | <input type="text" value="D"/>      |
| Q2. | <input type="text" value="A"/>      | <input type="text" value="B"/>      | <input checked="" type="checkbox"/> | <input type="text" value="D"/> | Q10. | <input checked="" type="checkbox"/> | <input type="text" value="B"/> | <input type="text" value="C"/>      | <input type="text" value="D"/>      |
| Q3. | <input type="text" value="A"/>      | <input type="text" value="B"/>      | <input checked="" type="checkbox"/> | <input type="text" value="D"/> | Q11. | <input checked="" type="checkbox"/> | <input type="text" value="B"/> | <input type="text" value="C"/>      | <input type="text" value="D"/>      |
| Q4. | <input type="text" value="A"/>      | <input type="text" value="B"/>      | <input checked="" type="checkbox"/> | <input type="text" value="D"/> | Q12. | <input type="text" value="A"/>      | <input type="text" value="B"/> | <input checked="" type="checkbox"/> | <input type="text" value="D"/>      |
| Q5. | <input checked="" type="checkbox"/> | <input type="text" value="B"/>      | <input type="text" value="C"/>      | <input type="text" value="D"/> | Q13. | <input type="text" value="A"/>      | <input type="text" value="B"/> | <input checked="" type="checkbox"/> | <input type="text" value="D"/>      |
| Q6. | <input type="text" value="A"/>      | <input type="text" value="B"/>      | <input checked="" type="checkbox"/> | <input type="text" value="D"/> | Q14. | <input type="text" value="A"/>      | <input type="text" value="B"/> | <input type="text" value="C"/>      | <input checked="" type="checkbox"/> |
| Q7. | <input checked="" type="checkbox"/> | <input type="text" value="B"/>      | <input type="text" value="C"/>      | <input type="text" value="D"/> | Q15. | <input checked="" type="checkbox"/> | <input type="text" value="B"/> | <input type="text" value="C"/>      | <input type="text" value="D"/>      |
| Q8. | <input checked="" type="checkbox"/> | <input type="text" value="B"/>      | <input type="text" value="C"/>      | <input type="text" value="D"/> |      |                                     |                                |                                     |                                     |