



# **UNIVERSITY OF CALCUTTA**

## **Notification No. CSR/11/2025**

It is notified for information of all concerned that in terms of the provisions of Section 54 of the Calcutta University Act, 1979, (as amended), and, in the exercise of her powers under 9(6) of the said Act, the Vice-Chancellor has, by an order dated 07.02.2025 approved the Question pattern of different Modules for Major; Minor and SEC of Semester- 3 & 4 of Mathematics (4-Year Honours and Honours with Research / 3-Year MDC) under CCF.

The new CSR shall take effect from the Odd Semester Examinations, 2024 and onwards.

**SENATE HOUSE**

**Kolkata-700073**

**17.02.2025**

A handwritten signature in blue ink, appearing to read 'D Das' followed by the date '17/02/2025'.

**Prof.(Dr.) Debasis Das**

**Registrar**

## **Question Pattern for Mathematics Major Papers**

### **For semesters 3 & 4**

#### **MATH-H-CC 3 -3-Th: Real Analysis**

Group A (30 marks)

(a) Short answer type questions:

3 questions are to be attempted out of 5 questions each carrying 3 marks.

(b) Long answer type questions:

3 questions are to be attempted out of 5 questions each carrying 7 marks.

Group B (35 marks)

(a) Short answer type questions:

4 questions are to be attempted out of 6 questions each carrying 2 marks.

(b) Long answer type questions:

(i) 3 questions are to be attempted out of 5 questions each carrying 4 marks.  
and

(ii) 3 questions are to be attempted out of 5 questions each carrying 5 marks.

Group C (10 marks)

2 questions are to be attempted out of 4 questions each carrying 5 marks.

#### **MATH-H-CC 4-3-TH: Ordinary Differential Equations-I and Group Theory-I**

Group-A - Ordinary Differential Equations-I (45 marks)

9 questions are to be attempted from a set of 14 questions each carrying 5 marks.

Group-B – Group Theory-I (30 marks)

6 questions are to be attempted from a set of 9 questions each carrying 5 marks.

#### **MATH-H-CC 5-4-TH: Theory of Real Functions**

Group A: Limit & Continuity of Functions (45 marks)

(a) Short answer type questions:

5 questions are to be attempted out of 8 questions each carrying 3 marks.

(b) Long answer type questions:

6 questions are to be attempted out of 9 questions each carrying 5 marks.

Group B: Differentiability of Functions (30 marks)

- (a) Short answer type questions:  
4 questions are to be attempted out of 6 questions each carrying 3 marks.
- (b) Long answer type questions:  
3 questions are to be attempted out of 5 questions each carrying 6 marks.

**MATH-H-CC 6 -4-Th: Mechanics-I**

- (a) Short answer type questions:  
6 questions are to be attempted out of 9 questions each carrying 2 marks.
- (b) Long answer type questions:
  - (i) 7 questions are to be attempted out of 10 questions each carrying 6 marks.  
[ 2 questions are to be set from Statics, 4 questions are to be set from Law of gravitation portion, 2 questions are to be set from Work Power Energy portion, 2 questions are to be set from Impulse of a force portion]
  - (ii) 3 questions are to be attempted out of 5 questions each carrying 7 marks [questions are to be set from Motion of a particle in a plane].

**MATH-H-CC 7-4-TH: Multivariate Calculus-I and Partial Differential Equations-I**

Group A: Multivariate Calculus – I(60 marks)

- (a) Short answer type questions:  
5 questions are to be attempted out of 8 questions each carrying 2 marks.
- (b) Long answer type questions:  
5 questions are to be attempted out of 8 questions each carrying 10 marks.

Group B: Partial Differential Equations – I(15 marks)

3 questions are to be attempted out of 5 questions each carrying 5 marks.

**MATH-H-CC 8-4-TH: Group Theory-II and Ring Theory-I**

Group-A: Group Theory-II (40 marks)

8 questions are to be attempted from a set of 11 questions each carrying 5 marks.

Group-B: Ring Theory-I (35 marks)

7 questions are to be attempted from a set of 10 questions each carrying 5 marks.

**MATH-H-SEC3-3-Th -Linear Programming and Rectangular Games**

- (a) Short answer type questions:  
5 questions are to be attempted out of 8 questions each carrying 3 marks.
- (b) Long answer type questions:
  - (i) 5 questions are to be attempted out of 8 questions each carrying 6 marks.

- [ questions are to be set from first three groups ( Starting from LPP formulation to Two-phase method)]
- (ii) 5 questions are to be attempted out of 8 questions each carrying 6 marks  
[ questions are to be set from last three groups ( Starting from Duality theory to Game problems)].

## **Question Pattern for Mathematics Minor Papers / MDC Papers**

### **MATH-MD-CC3-3-TH: Ordinary Differential Equations and Group Theory**

Group-A - Ordinary Differential Equations (45 marks)

9 questions are to be attempted from a set of 16 questions each carrying 5 marks.

Group-B – Group Theory (30 marks)

6 questions are to be attempted from a set of 10 questions each carrying 5 marks.

### **MATH-MD-CC 4-4-TH: Mechanics**

(a) Short answer type questions:

6 questions are to be attempted out of 10 questions each carrying 2 marks.

(b) Long answer type questions:

(i) 7 questions are to be attempted out of 11 questions each carrying 6 marks.

[ 2 questions are to be set from Statics, 4 questions are to be set from Law of gravitation portion, 3 questions are to be set from Work Power Energy portion, 2 questions are to be set from Impulse of a force portion ]

(ii) 3 questions are to be attempted out of 6 questions each carrying 7 marks [questions are to be set from Motion of a particle in a plane].

### **MATH-MD-CC5-4-TH:Advanced Calculus**

Group A: (20 marks)

4 questions are to be attempted out of 7 questions each carrying 5 marks.

Group B(25 marks):

5 questions are to be attempted out of 9 questions each carrying 5 marks

Group C(30 marks):

6 questions are to be attempted out of 10 questions each carrying 5 marks.

**Evaluation of tutorial (1 credit or 25 marks)**

(a) An Internal examination of 30 marks should be conducted by the Colleges from which 50% weightage of the marks obtained, should be taken into consideration. Questions of 3 marks / 5 marks / 6 marks covering the whole syllabus should be prepared for the purpose of internal examination.

(b) 10 marks should be awarded based on viva-voce examination conducted by the Colleges.

For SEC paper (**MATH-H-SEC3-3-TH : Linear Programming and Rectangular Games**) 10 marks will be awarded by evaluation of internal assignments instead of viva-voce.