

DESIGN OF THE MODEL QUESTION PAPER - 2018
HSSC EXAMINATION

CLASS : XII
Time : 2 $\frac{1}{2}$ hours

SUBJECT : Mathematics
Max Marks : 80

The weightage or the distribution of marks over different dimensions of the question paper shall be as follows.

1. Weightage to Learning Outcomes :

| S. No | Learning outcomes | Marks | Percentage of marks |
|-------|-------------------|-----------|---------------------|
| 1 | Knowledge | 20 | 25% |
| 2 | Understanding | 36 | 45% |
| 3 | Application | 20 | 25% |
| 4 | Skill | 4 | 05% |
| | Total | 80 | 100% |

2. Weightage to Content / Subject units:

| Serial No | Units | Marks |
|-----------|---------------------------------|-----------|
| 1 | Relations and Functions | 4 |
| 2 | Inverse Trigonometric Functions | 4 |
| 3 | Continuity and Derivatives | 10 |
| 4 | Applications of Derivatives | 6 |
| 5 | Integrals and applications | 18 |
| 6 | Differential Equations | 6 |
| 7 | Vectors and 3D | 12 |
| 8 | Probability | 6 |
| 9 | Matrices | 6 |
| 10 | Determinants | 4 |
| 11 | Linear Programming | 4 |
| | Total | 80 |

3. Weightage to Forms of Questions:

| S. No | Form of questions | Marks for each question | Number of questions | Total marks |
|-------|-------------------------------|-------------------------|---------------------|-------------|
| 1 | Very short answer type (MCQ) | 1 | 7 | 7 |
| 2 | Short answer type (SA1) | 2 | 7 | 14 |
| 3 | Short answer type (SA2) | 3 | 7 | 21 |
| 4 | Long answer type (LA1) | 4 | 7 | 28 |
| 5 | Long answer type (LA2) | 5 | 2 | 10 |
| | Total | | 30 | 80 |

The expected time for difficult level problems would be as follows

| S. No | Form of questions | Approx. time for each question in mins (t) | Number of questions (n) | Approx .time for each form of questions in mins (t xn) |
|-------|------------------------------|--|-------------------------|--|
| 1 | Very short answer type(MCQ) | 2 | 7 | 14 |
| 2 | Short answer type (SA1) | 3 | 7 | 21 |
| 3 | Short answer type (SA2) | 5 | 7 | 35 |
| 4 | Long answer type (LA1) | 7 | 7 | 49 |
| 5 | Long answer type (LA2) | 9 | 2 | 18 |
| | Total | | 30 | 137 mins |

As the actual time is calculated on the basis of the number of questions required to be answered and the length of their expected answer it would therefore be advisable for candidates to budget the time properly by cutting out the superfluous words and be within the expected time limits.

4. Scheme of options.

There will be no overall choice . However there will be internal choice in 02 sub questions of 03 marks category (section C), 02 sub questions of 04 marks category (section D) and 02 sub questions of 05 marks category (section E).

5. Weightage to difficult level of questions.

| S, No | Estimated difficult level of questions | Marks | Percentage |
|-------|--|-------|------------|
| 1 | Easy | 24 | 30% |
| 2 | Average | 40 | 50% |
| 3 | Difficult | 16 | 20% |
| | Total | 80 | 100% |

A question may vary in difficulty level from individual to individual. As such the assessment in respect of each question will be made by the paper setter on the basis of general anticipation from the group as a whole taking the examination. This provision is only to make the paper balanced in its weightage rather than to determine the pattern of marking at any stage.

6. 10 % theory (8 marks) is to be included.

Unit – wise time and marks distribution

| UNIT | CHAPTERS | No of different type of questions | Marks Alloted | Topic wise marks | Time in minutes |
|------|-----------------------------------|---|------------------|------------------|---|
| I | • Relations and Functions | SA 1 - 2 | 4 | 4 | 6 |
| | • Inverse Trigonometric functions | MCQ –1 SA2 - 1 | 1 3 | 4 | 2 5 |
| II | • Matrices | SA1 – 1 LA1 - 1 | 2 4 | 6 | 3 7 |
| | • Determinants | LA1 - 1 | 4 | 4 | 7 |
| III | • Continuity & Derivatives | MCQ – 1 SA2 -3 | 1 9 | 10 | 2 15 |
| | • Applications of Derivatives | MCQ – 1 LA2 - 1 | 1 5 | 6 | 2 9 |
| | • Integration | SA1 – 1 SA2 – 1 LA1- 1 LA2 - 1 | 2 3 4 5 | 14 | 3 5 7 9 |
| | • Application of Integration | LA1 –1 | 4 | 4 | 7 |
| | • Differential Equations | MCQ – 2 LA1- 1 | 2 4 | 6 | 4 7 |
| | • Vectors | SA1- 1 SA2 -1 | 2 3 | 5 | 3 5 |
| IV | • 3 Dimensional Geometry | MCQ- 1 SA1 – 1 LA1 - 1 | 1 2 4 | 7 | 2 3 7 |
| | • Linear Programming | LA1- 1 | 4 | 4 | 7 |
| V | • Probability | MCQ- 1 SA1 – 1 SA2 - 1 | 1 2 3 | 6 | 2 3 5 |
| | | 30 | 80 | 80 | 137 +13 mins for reading and revision |