महाराष्ट्र राज्य माध्यमिक व उच्च माध्यमिक शिक्षण मंडळ, पुणे

Sub. : Physics/Chemistry/Biology

Std. 11th & 12th

Question Paper Pattern (XI & XII)

(Year 2019-20)

Total Marks-70 (with options 98) **Time 3 hrs.**

General Instructions: The question paper is divided into four sections.

(1) Section A: Q.No. 1 contains Ten multiple choice type of questions carrying **One** mark each.
Q.No. 2 contains Eight very short answer type of questions carrying **One** mark each.

(2) Section B: Q.No. 3 to Q.No. 14 contains Twelve short answer type of questions carrying **Two** marks each. (Attempt any **Eight**).

(3) Section C: Q.No.15 to Q.No.26 contains Twelve short answer type of questions carrying **Three** marks each. (Attempt any **Eight**).

(4) Section D: Q.No. 27 to Q.No. 31 contains Five long answer type of questions carrying **Four** marks each. (Attempt any **Three**).

(5) Use of log table is allowed. Use of calculator is **not** allowed.

(6) Figures to the right indicate full marks.

(7) For each **MCQ,** correct answer must be written along with its alphabet. e.g., **(a)……. /(b)…… /(c)…..... /(d)…....**

(8) Physical constants:-

1)----------

2)----------

3)----------

***Weightage to Learning Objectives**

	Total Weightage (With Option)	**Percentage %**
Knowledge	29 Marks	30 %
Understanding	41 Marks	42 %
Application + Skill	28 Marks	28 %
Total	**98 Marks**	**100** %

***Difficulty level of the questions**

	Total Weightage (With Option)	**Percentage %**
Easy	29 Marks	30 %
Average	49 Marks	50 %
Difficult	20 Marks	20 %
Total	**98 Marks**	**100** %

*** Weightage to types of questions**

Type of question	**Marks for each**	**No of questions**	**Total Marks**
MCQ	1 Mark each	Q.No. 1 (i to x)	10 Marks
VSA	1 Mark each	Q.No. 2 (i to viii)	8 Marks
SA I	2 Mark each	Q.No. 3 to 14	24 Marks
SA II	3 Mark each	Q.No. 15 to 26	36 Marks
LA	4 Mark each	Q.No. 27 to 31	20 Marks
Total			**98 Marks**

Note for Practical examination:-

Higher Secondary (XII), Physics, Chemistry, Biology, Mathematics and Statistics practical examination will be conducted as per last year's norms, irrespective of the changes in the theory exam pattern which will be implemented this year (2019-20).

Higher Secondary (XI), Instructions for conducting XI practical examination has been printed in the hand book published by *Balbharati* for the academic year 2019-20 for Physics, Chemistry, Biology, Mathematics and Statistics.

Subject: Physics

Marks 70 **Time- 3 hrs**

General Instructions: The question paper is divided into four sections.

(1) Section A: Q.No. 1 contains Ten multiple choice type of questions carrying **One** mark each.
Q.No. 2 contains Eight very short answer type of questions carrying **One** mark each.

(2) Section B: Q.No. 3 to Q.No. 14 contains Twelve short answer type of questions carrying **Two** marks each.

(3) Section C: Q.No.15 to Q.No 26 contains Twelve short answer type of questions carrying **Three** marks each.

(4) Section D: Q.No. 27 to Q.No 31 contains Five long answer type of questions carrying **Four** marks each.

(5) Use of log table is allowed. Use of calculator is **not** allowed.

(6) Figures to the right indicate full marks.

(7) Physical constants:-

1)----------
2)----------
3)----------

Section A

Q.No.1 Select and write the correct answer: **[10]**
(i) to (x) **MCQ (7 Theory + 3 Numericals)**

Q.No.2 Answer the following: **[08]**
(i) to (viii) **VSA (6 Theory + 2 Numericals)**

Section B

Attempt any **Eight**: **[16]**
Q.No.3 to Q.No. 14 **SA- I (7 Theory + 5 Numericals)**

Section C

Attempt any **Eight:** **[24]**
Q.No.15 to Q.No. 26 **SA-II (7 Theory + 5 Numericals)**

Section D

Attempt any **Three**: **[12]**
Q.No.27 to Q.No. 31 **LA** (3 Questions must carry 2 marks Theory and 2 marks Numericals)

Question paper format for Physics, Chemistry and Biology

Std. XI & XII (Science)

Question Paper Format For Unit Test

Marks 25 **Time- 1 ½ hrs**

Section A

Q.No.1 Select and write the correct answer: **[04]**
(i) to (iv) **MCQ**

Q.No.2 Answer the following: **[03]**
(i) to (iii) **VSA**

Section B

Attempt any **Four**: **[08]**
Q.No.3 to Q.No. 8 **SA- I**

Section C

Attempt any **Two**: **[06]**
Q.No.9 to Q.No. 11 **SA-II**

Section D

Attempt any **One** **[04]**
Q.No.12 to Q.No. 13 **LA**

Question Paper Format For Terminal Examination

Marks 50 **Time- 2 ½ hrs**

Section A

Q.No.1 Select and write the correct answer: **[07]**
(i) to (vii) **MCQ**

Q.No.2 Answer the following: **[07]**
(i) to (vii) **VSA**

Section B

Attempt any **Eight**: **[16]**
Q.No.3 to Q.No. 13 **SA- I**

Section C

Attempt any **Four**: **[12]**
Q.No.14 to Q.No. 19 **SA-II**

Section D

Attempt any **Two**: **[08]**
Q.No.20 to Q.No. 23 **LA**

Subject: Physics

Chapter-wise Distribution of Marks

Std: XI

Sr. No	Chapter	Marks	Marks With Option
1.	Units and measurements	5	7
2.	Mathematical Methods	5	7
3.	Motion in a plane	6	8
4.	Laws of motion	7	10
5.	Gravitation	5	7
6.	Mechanical properties of solids	4	6
7.	Thermal properties of matter	5	7
8.	Sound	5	7
9.	Optics	7	10
10.	Electrostatics	5	7
11.	Electric current through conductors	4	6
12.	Magnetism	4	6
13.	Electromagnetic waves & communication system	4	5
14.	Semiconductors	4	5
	Total	**70**	**98**

Std: XII

Sr. No	Chapter	Marks	Marks With Option
1.	Circular Motion	4	6
2.	Gravitation	3	4
3.	Rotational Motion	4	6
4.	Oscillations	5	7
5.	Elasticity	3	4
6.	Surface Tension	4	5
7.	Wave Motion	3	4
8.	Stationary waves	5	7
9.	Kinetic Theory & gases and radiation	4	6
10.	Wave Theory light	3	4
11.	Interference & diffraction	4	6
12.	Electrostatics	3	4
13.	Current electricity	3	4
14.	Magnetic effect of electric current	3	4
15.	Magnetism	3	4
16.	Electromagnetic Induction	4	6
17.	Electrons and photons	3	4
18.	Atoms molecules & Nuclei	4	6
19.	Semiconductors	3	4
20.	Communication systems	2	3
	Total	**70**	**98**

Subject: Biology

Std. XI & XII (Science)

Question Paper Format For Annual Examination

Marks 70 **Time- 3 hrs**

General Instructions: The question paper is divided into four sections.

(1) Section A: Q.No. 1 contains Ten multiple choice type of questions carrying **One** mark each.
Q.No. 2 contains Eight very short answer type of questions carrying **One** mark each.

(2) Section B: Q.No. 3 to Q.No. 14 contains Twelve short answer type of questions carrying **Two** marks each.

(3) Section C: Q.No.15 to Q.No.26 contains Twelve short answer type of questions carrying **Three** marks each.

(4) Section D: Q.No. 27 to Q.No. 31 contains Five long answer type of questions carrying **Four** marks each.

(5) Figures to the right indicate full marks.

Section A

Q.No.1 Select and write the correct answer: **[10]**

(i) to (x) **MCQ**

Q.No.2 Answer the following: **[08]**

(i) to (viii) **VSA**

Section B

Attempt any **Eight**: **[16]**

Q.No.3 to Q.No. 14 **SA- I**

Section C

Attempt any **Eight:** **[24]**

Q.No.15 to Q.No. 26 **SA-II**

Section D

Attempt any **Three**: **[12]**

Q.No.27 to Q.No. 31 **LA**

Subject: BIOLOGY
CHAPTER-WISE DISTRIBUTION OF MARKS
Std- XI

Sr. No.	Chapter	Marks	Marks with option
1	Living World	2	3
2	Systematics of Living Organisms	3	4
3	Kingdom Plantae	5	7
4	Kingdom Animalia	4	5
5	Cell Structure and Organization	4	5
6	Biomolecules	4	5
7	Cell Division	4	6
8	Plant Tissues and Anatomy	4	6
9	Morphology of Flowering Plants	7	10
10	Animal Tissue	4	6
11	Study of Animal Type: Cockroach	4	6
12	Photosynthesis	5	7
13	Respiration and Energy Transfer	5	7
14	Human Nutrition	5	7
15	Excretion and Osmoregulation	5	7
16	Skeleton and Movement	5	7
	Total	**70**	**98**

Std- XII

Sr. No.	Chapter	Marks	Marks with option
1	Genetic Basis of Inheritance	5	7
2	Gene: Its' nature, expression and regulation	4	6
3	Biotechnology: Process and Application	3	4
4	Enhancement in Food Production	3	4
5	Microbes in Human Welfare	2	3
6	Photosynthesis	5	7
7	Respiration	5	7
8	Reproduction in Plants	5	7
9	Organisms and Environment I	3	4
10	Origin and Evolution of Life	3	4
11	Chromosomal Basis of Inheritance	3	4
12	Genetic Engineering and Genomes	2	3
13	Human Health and Diseases	2	3
14	Animal Husbandry	2	3
15	Circulation	6	8
16	Excretion and Osmoregulation	4	6
17	Control and Co-ordination	5	7
18	Human Reproduction	5	7
19	Organisms and Environment II	3	4
	Total	**70**	**98**

Subject: Chemistry

Std. XI & XII (Science)

Question Paper Format For Annual Examination

Marks 70 **Time- 3 hrs**

General Instructions: The question paper is divided into four sections.

(1) Section A: Q.No. 1 contains Ten multiple choice type of questions carrying **One** mark each.
Q.No. 2 contains Eight very short answer type of questions carrying **One** mark each.

(2) Section B: Q.No. 3 to Q.No. 14 contains Twelve short answer type of questions carrying **Two** marks each.

(3) Section C: Q.No.15 to Q.No.26 contains Twelve short answer type of questions carrying **Three** marks each.

(4) Section D: Q.No. 27 to Q.No. 31 contains Five long answer type of questions carrying **Four** marks each.

(5) Use of log table is allowed. Use of calculator is **not** allowed.

(6) Figures to the right indicate full marks.

(7) Physical constants:-

1)----------

2)----------

3)----------

Section A

Q.No.1 Select and write the correct answer: **[10]**

(i) to (x) **MCQ**

Q.No.2 Answer the following: **[08]**

(i) to (viii) **VSA**

Section B

Attempt any **Eight**: **[16]**

Q.No.3 to Q.No. 14 **SA- I**

Section C

Attempt any **Eight:** **[24]**

Q.No.15 to Q.No. 26 **SA-II**

Section D

Attempt any **Three**: **[12]**

Q.No.27 to Q.No. 31 **LA**

Note: * Numericals should be of maximum **30% (12-14 Marks).**

* Numericals should be included in every section.

Subject: Chemistry

CHAPTER-WISE DISTRIBUTION OF MARKS

Std- XI

Sr. No.	Chapter	Marks	Marks with option
1	Some Basic Concepts of Chemistry	3	5
2	Introduction to Analytical chemistry	4	6
3	Some Analytical Techniques	2	3
4	Structure of Atom	5	7
5	Chemical Bonding	6	8
6	Redox Reaction	3	4
7	Modern Periodic Table	4	6
8	Elements of Group 1 and 2	4	6
9	Elements of Group 13,14 and 15	6	8
10	States of Matter	4	6
11	Adsorption and Colloids	3	4
12	Chemical Equilibrium	6	8
13	Nuclear Chemistry and Radioactivity	3	4
14	Basic Principles of Organic Chemistry	6	8
15	Hydrocarbons	8	11
16	Chemistry in Everyday life	3	4
		70	**98**

Std- XII

Sr. No.	Chapter	Marks	Marks with option
1.	Solid state	4	6
2	Solution and colligative properties	5	7
3	Chemical thermodynamics and energetics	6	8
4	Electrochemistry	5	7
5	Chemical kinetics	4	6
6	General principles and processes of isolation of elements	3	5
7	p-Block elements	8	10
8	d- and f-Block elements	5	6
9	Coordination compounds	3	4
10	Halogen derivatives of alkanes and arenes	4	6
11	Alcohols, phenols and ethers	4	6
12	Aldehydes , ketones and carboxylic acids	5	7
13	Compounds containing nitrogen	4	6
14	Biomolecules	4	6
15	Polymers	3	4
16	Chemistry in everyday life	3	4
		70	**98**

Question Paper Pattern (XI & XII)

Mathematics and Statistics (Arts & Science)

(Year 2019-20)

Total Marks- 80 (with options 112) **Time -3 hrs.**

General Instructions: The question paper is divided into four sections.

(1) Section A: Q.No. 1 contains Eight multiple choice type of questions carrying **Two** marks each.
Q.No. 2 contains Four very short answer type of questions carrying **One** mark each.

(2) Section B: Q.No. 3 to Q.No. 14 contains Twelve short answer type of questions carrying **Two** marks each. (Attempt any **Eight**).

(3) Section C: Q.No. 15 to Q.No. 26 contains Twelve short answer type of questions carrying **Three** marks each. (Attempt any **Eight**).

(4) Section D: Q.No. 27 to Q.No. 34 contains Eight long answer type of questions carrying **Four** marks each. (Attempt any **Five**).

(5) Use of log table is allowed. Use of calculator is **not** allowed.

(6) Figures to the right indicate full marks.

(7) For each **MCQ,** correct answer must be written along with its alphabet. e.g., **(a)……. /(b)…… /(c)……. /(d)…….**

(8) Use of graph paper is not necessary. Only rough sketch is expected.

(9) The question paper contains 15% theory question.

*Weightage to Learning Objectives

	Total Weightage (With Option)	**Percentage %**
Knowledge	34 Marks	30 %
Understanding	47 Marks	42 %
Application + Skill	31 Marks	28 %
Total	**112 Marks**	**100** %

*Difficulty Level of the questions

	Total Weightage (With Option)	**Percentage %**
Easy	34 Marks	30 %
Average	56 Marks	50 %
Difficult	22 Marks	20 %
Total	**112 Marks**	**100** %

* Weightage to Types of questions

Type of question	**Marks for each**	**No of questions**	**Total Marks (with option)**
MCQ	2 Mark each	Q.No. 1 (i to viii)	16 Marks
VSA	1 Mark each	Q.No. 2 (i to iv)	4 Marks
SA I	2 Mark each	Q.No. 3 to 14	24 Marks
SA II	3 Mark each	Q.No. 15 to 26	36 Marks
LA	4 Mark each	Q.No. 27 to 34	32 Marks
Total			**112 Marks**

Subject: Mathematics and Statistics

Std. XI & XII (Arts & Science)

Question Paper Format For Annual Examination

Marks 80 **Time- 3 hrs**

General Instructions: The question paper is divided into four sections.

(1) Section A: Q.No. 1 contains Eight multiple choice type of questions carrying **Two** marks each.
Q.No. 2 contains Four very short answer type of questions carrying **One** mark each.

(2) Section B: Q.No. 3 to Q.No. 14 contains Twelve short answer type of questions carrying **Two** marks each.

(3) Section C: Q.No. 15 to Q.No. 26 contains Twelve short answer type of questions carrying **Three** marks each.

(4) Section D: Q.No. 27 to Q.No. 34 contains Eight long answer type of questions carrying **Four** marks each.

(5) Use of log table is allowed. Use of calculator is **not** allowed.

(6) Figures to the right indicate full marks.

(7) Use of graph paper is not necessary. Only rough sketch is expected.

Section A

Q.No.1 Select and write the correct answer: **[16]**
(i) to (viii) **MCQ**

Q.No.2 Answer the following: **[04]**
(i) to (iv) **VSA**

Section B

Attempt any **Eight**: **[16]**
Q.No.3 to Q.No. 14 **SA- I**

Section C

Attempt any **Eight:** **[24]**
Q.No.15 to Q.No. 26 **SA-II**

Section D

Attempt any **Five**: **[20]**
Q.No.27 to Q.No. 34 **LA**

Subject: Mathematics

Std. XI & XII (Arts & Science)

Question Paper Format For Unit Test

Marks 25 **Time- 1 ½ hrs**

Section A

Q.No.1 Select and write the correct answer: **[04]**
(i) to (ii) **MCQ**
Q.No.2 Answer the following: **[03]**
(i) to (iii) **VSA**

Section B

Attempt any **Four**: **[08]**
Q.No.3 to Q.No. 8 **SA- I**

Section C

Attempt any **Two**: **[06]**
Q.No.9 to Q.No. 11 **SA-II**

Section D

Attempt any **One**: **[04]**
Q.No.12 to Q.No. 13 **LA**

Question Paper Format For Terminal Examination

Marks 50 **Time- 2 ½ hrs**

Section A

Q.No.1 Select and write the correct answer: **[10]**
(i) to (v) **MCQ**
Q.No.2 Answer the following: **[04]**
(i) to (iv) **VSA**

Section B

Attempt any **Eight**: **[16]**
Q.No.3 to Q.No. 13 **SA- I**

Section C

Attempt any **Four**: **[12]**
Q.No.14 to Q.No. 19 **SA-II**

Section D

Attempt any **Two:** **[08]**
Q.No.20 to Q.No. 23 **LA**

Subject: Mathematics and Statistics
CHAPTER-WISE DISTRIBUTION OF MARKS - Std XI

Sr. No.	Chapter	Marks	Marks with option
1	Angle and its Measurement	3	4
2	Trigonometry 1	4	6
3	Trigonometry 2	6	8
4	Determinants and Matrices	7	10
5	Straight Lines	4	5
6	Circle	3	4
7	Conic Sections	6	8
8	Measures of Dispersion	4	5
9	Probability	4	6
10	Complex Numbers	4	6
11	Sequence and Series	5	7
12	Permutations and Combinations	6	8
13	Method Of Induction and Binomial Theorem	5	7
14	Sets and Relations	4	6
15	Functions	4	5
16	Limits	4	6
17	Continuity	3	5
18	Differentiation	4	6
	Total	**80**	**112**

Std- XII

Sr. No.	Chapter	Marks	Marks with option
1.	Mathematical Logic	6	8
2	Matrices	4	6
3	Trigonometric Functions	7	10
4	Pair of Straight Lines	4	6
5	Vectors	5	7
6	Three Dimensional Geometry	4	5
7	Line	4	5
8	Plane	4	5
9	LPP	3	4
10	Continuity	4	6
11	Differentiation	6	8
12	Applications of Derivatives	6	8
13	Indefinite Integration	6	9
14	Definite Integration and Its application	6	8
15	Differential Equations	5	7
16	Probability Distribution	3	5
17	Binomial Distribution	3	5
	Total 12	**80**	**112**