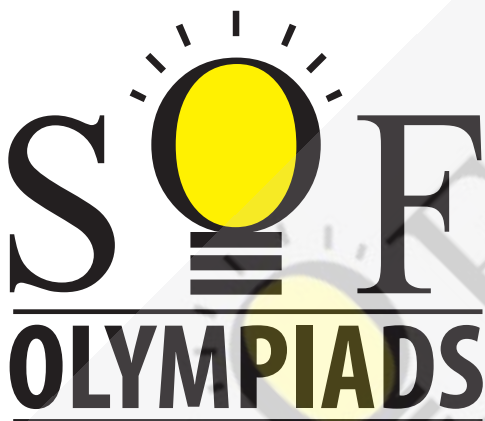


CLASS

11



# Teacher Handbook

**SYLLABUS 2025-26** **SAMPLE PAPER**





**Important:**  
Applications  
must reach us by  
**August 30,  
2025.**

# THE WORLD'S BIGGEST OLYMPIADS



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BIGGEST  
OLYMPIADS**

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Schools

**72**  
Countries












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Assessments

**8**  
Olympiads

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# About SOF Olympiads\*

											
	Level 1										
Duration	60 Minutes										
Test Center	Your School										
Eligibility	All students										
Classes	1-10	1-12	1-12	1-12	1-10	3-10	3-10	11 & 12	Level 2		
Type of Test	OBJECTIVE TYPE. MCQs - MULTIPLE CHOICE QUESTIONS (CLASSWISE NO. OF QUESTIONS ARE GIVEN BELOW)										
Classes 1-4	35	35	35	35	35	35	35	-	60 Minutes		
Classes 5-12	50	50	50	50	50	50	50	50	SOF Centers		
Sections	4	4	3	4	4	2/4/5	3	4	Class toppers, Level 1 rank holders, Zonal top 25		
	1-10	1-12	1-12	1-12	1-10	3-10	3-10	11 & 12	3-12	3-12	3-12
OBJECTIVE TYPE. MCQs - MULTIPLE CHOICE QUESTIONS											
Classes 1-4	35	35	35	35	35	35	35	-	35	35	35
Classes 5-12	50	50	50	50	50	50	50	50	50	50	50
Sections	4	4	3	4	4	2/4/5	3	4	3	2/3	2/3
	<ul style="list-style-type: none"><li>• General Awareness</li><li>• Current Affairs</li><li>• Life Skills</li><li>• Achievers Section</li></ul>	<ul style="list-style-type: none"><li>• Word and Structure Knowledge</li><li>• Reading</li><li>• Spoken and Written Expression</li><li>• Achievers Section</li></ul>	<ul style="list-style-type: none"><li>• For Classes 1-10<ul style="list-style-type: none"><li>• Logical Reasoning</li><li>• Science</li><li>• Achievers Section</li></ul></li><li>• For Classes 11 &amp; 12<ul style="list-style-type: none"><li>• Physics &amp; Chemistry</li><li>• Achievers Section</li><li>• Mathematics or Biology</li></ul></li></ul>	<ul style="list-style-type: none"><li>• For Classes 1-10<ul style="list-style-type: none"><li>• Logical Reasoning</li><li>• Mathematical Reasoning</li><li>• Everyday Mathematics</li><li>• Achievers Section</li></ul></li><li>• For Classes 11 &amp; 12<ul style="list-style-type: none"><li>• Logical Reasoning</li><li>• Mathematical Reasoning or Applied Mathematics</li><li>• Everyday Mathematics</li><li>• Achievers Section</li></ul></li></ul>	<ul style="list-style-type: none"><li>• For Classes 1-5<ul style="list-style-type: none"><li>• Logical Reasoning</li><li>• Computer Science</li><li>• Information Technology</li><li>• Achievers Section</li></ul></li><li>• For Classes 6-10<ul style="list-style-type: none"><li>• Logical Reasoning</li><li>• Computer Science</li><li>• AI, Robotics and Information Technology</li><li>• Achievers Section</li></ul></li></ul>	<ul style="list-style-type: none"><li>• For Classes 3-6<ul style="list-style-type: none"><li>• Social Studies</li><li>• Achievers Section</li></ul></li><li>• For Classes 7 &amp; 8<ul style="list-style-type: none"><li>• History</li><li>• Geography</li><li>• Social and Political Life</li><li>• Achievers Section</li></ul></li><li>• For Classes 9 &amp; 10<ul style="list-style-type: none"><li>• History</li><li>• Geography</li><li>• Political Science</li><li>• Economics</li><li>• Achievers Section</li></ul></li></ul>	<ul style="list-style-type: none"><li>• शब्द और व्याकरण बोध</li><li>• रचनात्मक बोध</li><li>• मेधावी खंड</li></ul>	<ul style="list-style-type: none"><li>• Economics</li><li>• Business Studies</li><li>• Accountancy</li><li>• Achievers Section</li></ul>	<ul style="list-style-type: none"><li>• Word and Structure Knowledge</li><li>• Reading</li><li>• Achievers Section</li></ul>	<ul style="list-style-type: none"><li>• For Classes 3-10<ul style="list-style-type: none"><li>• Science</li><li>• Achievers Section</li></ul></li><li>• For Classes 11 &amp; 12<ul style="list-style-type: none"><li>• Physics &amp; Chemistry</li><li>• Achievers Section</li><li>• Mathematics or Biology</li></ul></li></ul>	<ul style="list-style-type: none"><li>• For Classes 3-10<ul style="list-style-type: none"><li>• Mathematics</li><li>• Achievers Section</li></ul></li><li>• For Classes 11 &amp; 12<ul style="list-style-type: none"><li>• Mathematics</li><li>• Mathematical Reasoning or Applied Mathematics</li><li>• Achievers Section</li></ul></li></ul>



## SCHOOL AWARDS



	Principal			Teacher and Olympiad Incharge		
	Cash Award	Trophy	Certificate	Cash Award	Trophy	Certificate
School	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
District	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Zonal	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
International	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

### SOF SCHOOL ACADEMIC PROGRESS REPORT FOR EVERY SCHOOL

<input checked="" type="checkbox"/> Annual SOF Gifts	<input checked="" type="checkbox"/> New Year SOF Gifts
--	--

# Scholarships

SOF's dedicated scholarships, including the Girl Child Scholarship Scheme, Defence Services Academic excellence Scholarship and Academic Excellence Scholarship, demonstrate its commitment to fostering inclusivity and supporting education for all.



**SOF**  
**GCSS**

**Girl Child  
Scholarship  
Scheme  
2025-26**



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**DSAS**

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**AES**

**Academic Excellence  
Scholarship  
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# Scholarships & Awards\*

The Science Olympiad Foundation (SOF) is committed to nurturing young talent and recognizing excellence in academics and beyond. Through its prestigious Olympiads, SOF not only challenges students to reach their highest potential but also acknowledges their achievements with an extensive range of awards, scholarships and recognitions.



Scan the QR code for more details

## Level 1 - Scholarships and Awards

Level	Recognition
<b>Level 1</b>	<ul style="list-style-type: none"> <li>All participating students receive a <b>Certificate of Participation*</b>.</li> <li>All participating students receive a detailed <b>SPR - Student Progress Report</b>.</li> <li><b>Gold Medal of Distinction</b> and <b>Certificate of Distinction</b> for top 25 Zonal toppers per class per exam*.</li> <li><b>Gold Medal of Excellence</b> for top 10% students from each class.</li> <li><b>SAPR - School Academic Progress Report</b> for school management.</li> </ul>



## Final Level - Scholarships and Awards

Level	Category	Award	Additional Recognition	Numbers
<b>Level 2</b> (IEO, NSO, IMO)	Top 3 International Rankers	₹50,000, ₹25,000 and ₹10,000 for ranks 1, 2 and 3 respectively	International Medals: Gold, Silver and Bronze Certificate of Outstanding Performance	222 Winners
<b>Level 1</b> (IGKO, ICSSO, ISSO, IHO, ICO)	Top 3 Zonal Rankers	₹5,000, ₹2,500 and ₹1,000 for ranks 1, 2 and 3 respectively	Zonal Medals: Gold, Silver and Bronze Certificate of Zonal Excellence	5,772 Winners
<b>Level 1</b> (IEO, NSO, IMO) Class 1 & 2	Zonal Rankers 4 to 10	Gift worth ₹500 each	Certificate of Zonal Excellence	13,468 Winners
	Zonal Rankers 11 to 25		Certificate of Zonal Excellence	28,860 Winners
<b>Level 2</b> (IEO, NSO, IMO)	Zonal Rankers 26 onwards		Merit Certificate	

## Recognition for Visionary Leaders (School Principals) & Visionary Educators (Teachers)



**Best Principal (International)** Citation + Trophy + ₹25,000

**Best Principal (Zonal)** Citation + Trophy + ₹10,000

**Best Principal (District)** Citation + Trophy + ₹5,100

**Best Teacher (International)** Citation + Trophy + ₹10,000

**Best Teacher (Zonal)** Citation + Trophy + ₹5,000

**Best Teacher (District)** Citation + Trophy + ₹1,000

\* For further details, please visit [www.sofworld.org](http://www.sofworld.org) **Note:** TDS as applicable will be deducted.

# Guidelines



Scan the QR code to  
get important updates

## 1. Medium of the Olympiads

All SOF Olympiads will be conducted in English, except IHO, which will be conducted in Hindi.

## 2. School Codes

Each school receives a unique 6-digit code from SOF when it registers for the Olympiads (different from CBSE or any other education board affiliation code). Schools should contact the SOF Head Office in Gurugram if they do not know their code.

## 3. Registration Procedure

Schools must complete all columns of the SRF (School Registration Form) and SRS (Student Registration Sheet) accurately and legibly and submit them before the due date. Schools are requested to display the enclosed posters on noticeboards, classrooms, or other prominent places. Students must register through their schools only. Individual or direct registrations will not be accepted.

Schools may register in one of the following ways:

- Fill out and courier the registration forms.
- Fill out, scan, and email the registration forms.
- Register online at [ors.sofworld.org](https://ors.sofworld.org).

## 4. Sample Questions & Study Material

Sample questions and study material for each class are included with the prospectus. They can also be downloaded from the SOF website: [www.sofworld.org](https://www.sofworld.org).

## 5. Exam Format

All questions are multiple-choice questions (MCQ). There is no negative marking. Schools must choose one available date to conduct the exam. They must conduct it strictly on that chosen date only. Different sets of question papers are provided for each date, and non-adherence to the chosen date may lead to cancellation of the exam.

## 6. OMR Sheets

Students must fill in all columns of the OMR sheet correctly. Any incorrect or incomplete information may lead to disqualification from ranking. A sample OMR sheet is available on the SOF website and is also attached with the prospectus.

## 7. After the Exam

Answer sheets should be returned to the SOF Head Office next day of the exam. Schools must ensure the answer sheets reach the SOF Head Office within 7 days of the exam date. SOF will not evaluate any answer sheets received beyond the stipulated date.

## 8. Result

Results are typically declared about 8 weeks after the answer sheets are received. They will be sent to the respective schools and will also be uploaded on the SOF website.

## LEVEL 1 SOF OLYMPIADS

### 1. Examination Centre

All Level 1 Olympiads will be conducted in the students' own schools.

### 2. Time of the Olympiads

The Level 1 Olympiads are held during school hours.

### 3. Criteria for Level 1

All students (as per their school's registration) in the relevant classes for the respective Olympiads.

**Note :** Some exams are single-level only: IGKO, ICSSO, ISSO, IHO and ICO. Students appearing for these exams will not have a Level 2 exam.

## LEVEL 2 SOF OLYMPIADS

### 1. Applicable Olympiads

Level 2 Olympiads are conducted for IEO, NSO, and IMO for classes 3 to 12. IGKO, ICSSO, ISSO, IHO and ICO do not have a Level 2 (they are single-level exams).

### 2. Date and Examination Centre

The Level 2 exam is scheduled for 8<sup>th</sup> February, 2026 tentatively. It will be conducted at centers finalized by SOF (not in the students' own schools).

### 3. No Registration Fee

No separate registration fee is charged for the Level 2 exams.

### 4. Qualification Criteria

- Top 5% of students (class-wise) who appear in the Level 1 exam, internationally.
- Top 25 rank holders from each zone and each class.
- Class topper (where at least 10 students from a class register for the exam and the topper scores at least 50% marks). In the case of multiple sections in a class, the topper with the highest marks across all sections qualifies.

### 5. Admit Cards

Admit Cards for the Level 2 Olympiads will be dispatched to schools or uploaded on the SOF website ([www.sofworld.org](https://www.sofworld.org)) before the Level 2 exam. The Roll Number slip from the Level 1 exam may also serve as the admit card for Level 2 for qualifying students.



Total Questions : 50

Time : 1 hr.

**PATTERN & MARKING SCHEME**

Section	(1) Word and Structure Knowledge	(2) Reading	(3) Spoken and Written Expression	(4) Achievers Section
No. of Questions	30	10	5	5
Marks per Ques.	1	1	1	3

**SYLLABUS**

As Per Your Prescribed Syllabus.

**WORD AND STRUCTURE KNOWLEDGE**

- Choose the correct option to fill in the blank.  
You \_\_\_\_\_ study hard for the test so you \_\_\_\_\_ confidently showcase your knowledge and excel in your academic journey.  
(A) need to, shall (B) would, should (C) ought to, can (D) must, ought
- Choose the option with correct spelling.  
How do you spell the word that means 'to forge'?  
(A) Conterfeat (B) Counterfeet (C) Counterfeit (D) Conterfeit
- Choose the correct synonym of the given word.  
Mundane  
(A) Banal (B) Persuading (C) Interesting (D) Heavenly
- Choose the correct antonym of the given word.  
Immaculate  
(A) Modern (B) Aesthetic (C) Evolve (D) Grubby

**READING**

Directions (For Q. No. 5 and 6) : Read the extract and answer the questions that follow.

Department stores in the capital region, suffering from a prolonged slump in sales, are changing tactics by marketing new products and making their displays more interesting. Some stores are reducing the amount of floor space devoted to name brands in order to display more of their own house brands. Others are using existing floor space for their own speciality shops. Still others are targeting special segments of the population.

Stores that are developing their own brands are able to offer quality clothing at 30 percent off name-brand prices.

- What has caused department stores to alter marketing strategies?  
(A) Poor sales (B) New tax regulations  
(C) Lack of storage space (D) Production costs

6. Which strategy is not being implemented?  
(A) Marketing to specific groups (B) Developing in-store brands  
(C) Purchasing additional floor space (D) Making displays more interesting

### SPOKEN AND WRITTEN EXPRESSION

Directions (For Q. No. 7 and 8) : Choose the correct option to complete each conversation.

7. Shelly : In that area, fast food restaurants are \_\_\_\_\_, so you'll have plenty of options to choose from.  
(A) of arm's length (B) a dime a dozen  
(C) ad nauseam (D) all thumbs
8. Damon : Taking a swim in the ocean on a hot summer day is incredibly \_\_\_\_\_ and leaves me feeling refreshed.  
(A) invigorating (B) sapping  
(C) enervating (D) palling

### ACHIEVERS SECTION

9. Choose the correct option to fill in the blank.  
The protagonist's \_\_\_\_\_ reaction to praise revealed genuine humility, conveying sincerity and modesty in response.  
(A) razzle-dazzle (B) aw-shucks  
(C) boogie-woogie (D) flim-flam
10. Choose the correct antonym of the given word.  
Egregious  
(A) Atrocious (B) Flagrant  
(C) Marvellous (D) Numerous

### ANSWER KEY

1. (C) 2. (C) 3. (A) 4. (D) 5. (A) 6. (C) 7. (B) 8. (A) 9. (B) 10. (C)

Total Questions : 50

Time : 1 hr.

**PATTERN & MARKING SCHEME**

Section	(1) Physics & Chemistry	(2) Achievers Section	(3) Mathematics or Biology
No. of Questions	25	5	20
Marks per Ques.	1	3	1

**SYLLABUS**

**Section – 1 :** Physics : Units and Measurements, Mechanics, Properties of Matter, Heat and Thermodynamics, Oscillations, Waves.

Chemistry : Some Basic Concepts of Chemistry, Structure of Atom, Classification of Elements and Periodicity in Properties, Chemical Bonding and Molecular Structure, Thermodynamics, Equilibrium, Redox Reactions, Organic Chemistry - Some Basic Principles and Techniques, Hydrocarbons.

**Section – 2 :** Higher Order Thinking Questions - Syllabus as per Section – 1.

**Section – 3 :** Sets, Relations and Functions, Logarithms, Complex Numbers, Linear Inequalities, Sequences and Series, Trigonometry, Straight Lines, Conic Sections, Permutations and Combinations, Binomial Theorem, Statistics, Limits and Derivatives, Probability, Introduction to 3-D Geometry.

OR

**Section – 3 :** Diversity in the Living World, Structural Organisation in Plants and Animals, Cell : Structure and Functions, Plant Physiology, Human Physiology.

**PHYSICS AND CHEMISTRY**

1. 28 g of iron is reacted with hydrochloric acid separately as given in the following two cases:

**Case I :** In a closed vessel of fixed volume.

**Case II :** In an open beaker at 27°C.

Then the work done in case I and case II are respectively

(Given,  $R = 2 \text{ cal K}^{-1} \text{ mol}^{-1}$ )

(A) 0 and -600 cal

(B) 0 and -300 cal

(C) -300 cal and 0

(D) -600 cal and 0

2. Arrange the following compounds in the increasing oxidation number of carbon atom.

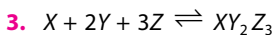
$\text{CH}_4$	$\text{CH}_3\text{Cl}$	$\text{CO}$	$\text{CO}_2$	$\text{NaHCO}_3$
P	Q	R	S	T

(A)  $P = Q < R < S < T$

(B)  $P = Q < S < R < T$

(C)  $P < Q < R < S = T$

(D)  $R = Q < P < S < T$

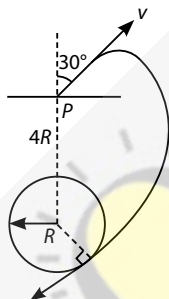


Reaction of 6.0 g of  $X$ ,  $6.0 \times 10^{23}$  atoms of  $Y$  and 0.036 mol of  $Z$  yields 4.8 g of compound  $XY_2Z_3$ . If the atomic masses of  $X$  and  $Z$  are 60 u and 80 u, respectively, the atomic mass of  $Y$  is

(Given : Avogadro no. =  $6 \times 10^{23}$ )

- (A) 40 u (B) 50 u (C) 60 u (D) 70 u

4. A satellite is launched from international space station from point  $P$ , which is at a distance of  $4R$  from the centre of the Earth of radius  $R$ . The speed of the satellite is  $v$  in a direction making  $30^\circ$  with the line joining the centre of the Earth and point  $P$ , as shown in the given figure.



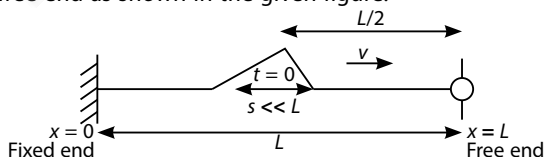
What will be the speed  $v$  if the satellite passes grazing the surface of the Earth? (Consider only gravitational interaction.)

- (A)  $\frac{4000}{\sqrt{2}}$  m/s (B)  $\frac{8000}{\sqrt{2}}$  m/s  
(C)  $\frac{6000}{\sqrt{2}}$  m/s (D)  $8000\sqrt{2}$  m/s

5. Two students of equal mass stand at the opposite ends of the diameter of a turntable disc of certain mass, moving with constant angular velocity. The two students make their way towards the middle of the turntable at equal rates. Which one of the following statements is correct?

- (A) Kinetic energy of rotation has increased while angular momentum remains same.  
(B) Kinetic energy of rotation has decreased while angular momentum remains same.  
(C) Kinetic energy of rotation has decreased but angular momentum has increased.  
(D) Both kinetic energy of rotation and angular momentum have decreased.

6. A small pulse is travelling with a speed  $v$  in a string. At time  $t = 0$ , it is moving towards the free end as shown in the given figure.

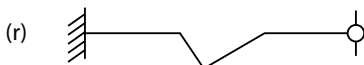
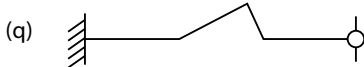
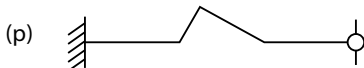


Which of the following pairs is/are incorrectly matched?

$$(i) \quad t = \frac{L}{v}$$

$$(ii) \quad t = \frac{2L}{v}$$

$$(iii) \quad t = \frac{3L}{v}$$



(A) (i) and (iii) only

(C) (iii) only

(B) (ii) only

(D) All pairs are correctly matched

### ACHIEVERS SECTION

7. A solution contains  $0.1 \text{ M Cl}^-$  and  $0.001 \text{ M CrO}_4^{2-}$ , in this solution solid  $\text{AgNO}_3$  is gradually added. Assume that the addition does not change in volume.

Given :  $K_{sp}(\text{AgCl}) = 1.7 \times 10^{-10} \text{ M}^2$  and

$K_{sp}(\text{Ag}_2\text{CrO}_4) = 1.9 \times 10^{-12} \text{ M}^3$ .

Select the incorrect statement(s) from the following.

- I.  $\text{AgCl}$  will precipitate first as the amount of  $\text{Ag}^+$  needed to precipitate is low.
- II.  $\text{Ag}_2\text{CrO}_4$  will precipitate first because the amount of  $\text{Ag}^+$  needed is low.
- III. Remaining concentration of  $\text{Cl}^-$  when  $\text{Ag}_2\text{CrO}_4$  will start precipitating will be  $4.9 \times 10^{-4} \text{ M}$ .

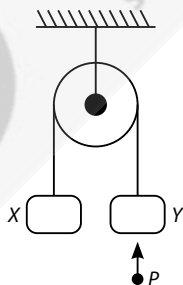
(A) I, II and III

(B) II only

(C) I and III only

(D) II and III only

8. Two identical blocks X and Y each of mass  $2 \text{ kg}$  are hanging stationary by a light inextensible flexible string, passing over a light and frictionless pulley, as shown in the given figure. A shell P of mass  $1 \text{ kg}$  moving vertically upward with velocity  $9 \text{ m/s}$  collides with block Y and is stuck to it.



Which of the following statements are correct?

- (i) The time after which block Y starts moving downwards is  $0.3 \text{ s}$ .
- (ii) The maximum height reached by Y is  $0.45 \text{ m}$ .
- (iii) The loss of mechanical energy upto the instant till Y reaches highest point is  $20 \text{ J}$ .

(A) (i) and (ii) only

(B) (ii) and (iii) only

(C) (i) and (iii) only

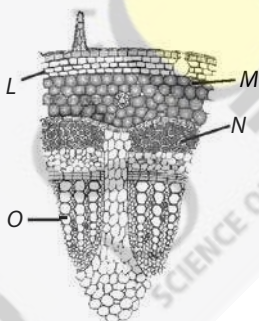
(D) (i), (ii) and (iii)

## MATHEMATICS

9. If  $X = \{4^n - 3n - 1 : n \in \mathbb{N}\}$  and  $Y = \{9(n - 1) : n \in \mathbb{N}\}$ , then  $X \cup Y$  is equal to  
 (A)  $X$  (B)  $Y$  (C)  $N$  (D)  $Z$
10. If all the words (with or without meaning) having five letters, formed by using the letters of the word SMALL and arranged as in a dictionary, then the position of the word SMALL, is  
 (A) 46<sup>th</sup> (B) 59<sup>th</sup> (C) 52<sup>nd</sup> (D) 58<sup>th</sup>

## BIOLOGY

9. Glucagon is a hormone that stimulates the conversion of glycogen into glucose in response to low blood glucose concentration.  
 Which other hormone has a similar effect on blood glucose concentration?  
 (A) Anti-diuretic hormone (B) Adrenaline  
 (C) Insulin (D) Testosterone
10. Consider the following statements regarding the given figure and select the incorrect one(s).



- (i) 'L' is the collenchymatous hypodermis that provides mechanical strength and flexibility to the young dicot stems.  
 (ii) 'M' is the innermost layer of cortex which usually possesses casparian strips.  
 (iii) 'N' is the parenchymatous pericycle that synthesises food.  
 (iv) 'O' is xylem which is exarch with respect to the positions of protoxylem and metaxylem.
- (A) (i) only (B) (i) and (ii) only  
 (C) (iv) only (D) (ii), (iii) and (iv) only

## ANSWER KEY

<b>Physics and Chemistry</b>	1. (B)	2. (C)	3. (B)	4. (B)	5. (A)	6. (B)	7. (D)	8. (A)
<b>Mathematics</b>	9. (B)	10.(D)						
<b>Biology</b>	9. (B)	10.(D)						

Total Questions : 50

Time : 1 hr.

**PATTERN & MARKING SCHEME**

Section	(1) Logical Reasoning	(2) Mathematical Reasoning or Applied Mathematics	(3) Everyday Mathematics	(4) Achievers Section
No. of Questions	15	20	10	5
Marks per Ques.	1	1	1	3

**SYLLABUS**

**Section – 1 :** Verbal and Non-Verbal Reasoning.

**Section – 2 :** Sets, Relations and Functions, Logarithms, Complex Numbers, Linear Inequalities, Sequences and Series, Trigonometry, Straight Lines, Conic Sections, Permutations and Combinations, Binomial Theorem, Statistics, Limits and Derivatives, Probability, Introduction to 3-D Geometry.

**OR**

**Section – 2 :** Numbers, Quantification, Numerical Applications, Sets, Relations and Functions, Sequences and Series, Permutations and Combinations, Mathematical Reasoning, Limits, Continuity and Differentiability, Probability, Descriptive Statistics, Basics of Financial Mathematics, Straight Lines, Circles, Parabola.

**Section – 3 :** The syllabus of this section will be based on the syllabus of Quantitative Aptitude.

**Section – 4 :** Sets, Relations and Functions, Sequences and Series, Permutations and Combinations, Limits and Derivatives, Straight Lines, Circles, Parabola, Probability.

**LOGICAL REASONING**

1. Study the given information carefully and answer the following question.

'A  $\times$  B' means 'A is the father of B'.

'A + B' means 'A is the brother of B'.

'A – B' means 'A is the brother-in-law of B'.

'A \* B' means 'A is the mother of B'.

'A # B' means 'A is the son-in-law of B'.

Which of the following definitely means K is the wife of L?

(i)  $J \times N + L \# M * K$

(ii)  $N + L - M \times K \# J$

(iii)  $J * L + N - K \times M$

(A) Only (i)

(B) Only (ii) and (iii)

(C) Only (i) and (ii)

(D) None of these

2. Ankita and Varun are 150 m apart and facing towards each other. Ankita took a left turn and walked 30 m, while Varun also took a left turn and walked 50 m. Ankita then took two consecutive right turns walking 70 m in each turn. Meanwhile Varun took a right turn and stopped after walking 40 m. If Varun is now facing towards West direction, then how far and in which direction is Ankita now with respect to Varun?

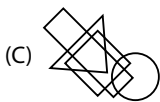
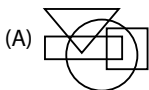
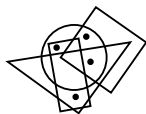
(A)  $10\sqrt{17}$  m, North-West

(B)  $10\sqrt{17}$  m, North-East

(C)  $10\sqrt{17}$  m, South-West

(D)  $17\sqrt{10}$  m, North-West

3. Which of the following figures satisfies the same conditions of placement of the dots as in the given figure?



### MATHEMATICAL REASONING

4. The domain of  $f(x) = \sqrt{\frac{4-x^2}{2+[x]}}$ , where  $[x]$  is G.I.F., is

(A)  $[-2, 2]$

(B)  $(-1, 2)$

(C)  $\mathbb{R}$

(D) None of these

5. If  $A, B, C, D$  are the angles of a quadrilateral, then  $\frac{\tan A + \tan B + \tan C + \tan D}{\cot A + \cot B + \cot C + \cot D} =$

(A)  $\cot A \cot B \cot C \cot D$

(B)  $-\tan A \tan B \tan C \tan D$

(C)  $\tan A \tan B \tan C \tan D$

(D)  $-\cot A \cot B \cot C \cot D$

6. If the mean deviation of the numbers  $1, 1 + d, 1 + 2d, \dots, 1 + 100d$  from their mean is 255, then  $d$  is equal to

(A) 10.0

(B) 20.0

(C) 10.1

(D) 20.2

### APPLIED MATHEMATICS

4. Calculate quartile deviation for the data:

Class	0-15	15-30	30-45	45-60	60-75	75-90	90-105
$f$	8	26	30	45	20	17	4

(A) 30.87

(B) 15.44

(C) 0.3271

(D) 0.6542



5. The result obtained by subtracting binary number 111010 from 11100100 is  
 (A) 10101010 (B) 10010001  
 (C) 100100101 (D) 10010011
6. The ranks of the same 15 students in two subjects A and B are given below; the two numbers within the brackets denoting the ranks of the same student in A and B respectively.  
 (1, 9), (2, 8), (3, 2), (4, 6), (5, 4), (6, 7), (7, 3), (8, 1), (9, 11), (10, 15), (11, 10), (12, 5), (13, 14), (14, 12), (15, 13).  
 Find Spearman's rank correlation coefficient.  
 (A) 0.54 (B) 0.46  
 (C) 0.42 (D) 0.32

### EVERYDAY MATHEMATICS

7. Raghav buys a shop for ₹ 120000. He pays half of the amount in cash and agrees to pay the balance in 12 annual installments of ₹ 5000 each. If the rate of interest is 12% and he pays with the installment the interest due on the unpaid amount, then find the total cost of the shop.  
 (A) ₹ 168600 (B) ₹ 176800  
 (C) ₹ 176600 (D) ₹ 166800
8. 10 different toys are to be distributed among 10 children. Total number of ways of distributing these toys so that exactly 2 children do not get any toy, is equal to

(A)  $(10!)^2 \left( \frac{1}{3!2!7!} + \frac{1}{(2!)^5 6!} \right)$

(B)  $(10!)^2 \left( \frac{1}{3!2!7!} + \frac{1}{(2!)^4 6!} \right)$

(C)  $(10!)^2 \left( \frac{1}{3!7!} + \frac{1}{(2!)^5 6!} \right)$

(D) None of these

### ACHIEVERS SECTION

9. Solve the following and select the correct option.
- (i) Six letter words are formed using all the letters of the word NUMBER. If these words are arranged in the dictionary order, then the rank of the word NUMBER is
- (ii) The number of odd numbers greater than 60,000 and less than 1,00,000 that can be formed from the digits 0, 5, 6, 7, 8, 9, if repetition of digits is allowed, is
- | (i)     | (ii) |
|---------|------|
| (A) 465 | 2592 |
| (B) 471 | 1560 |
| (C) 469 | 2592 |
| (D) 469 | 1440 |

10. Read the given statements carefully and state 'T' for true and 'F' for false.

(i) If the value of  $\lim_{x \rightarrow 0} \frac{(1-x)^n - 1}{x}$  is 100, then  $n = 100$ .

(ii) If  $\lim_{x \rightarrow 1} \frac{x^4 - 1}{x - 1} = \lim_{x \rightarrow k} \frac{x^3 - k^3}{x^2 - k^2}$ , then  $k = \frac{3}{8}$ .

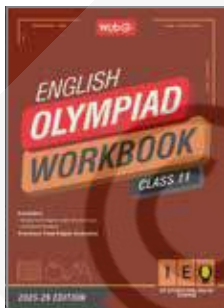
(iii) If  $x\sqrt{1+y} + y\sqrt{1+x} = 0$ , then  $\frac{dy}{dx} = \frac{-1}{(1+x)^2}$ .

(i)	(ii)	(iii)
(A) T	F	T
(B) F	F	T
(C) F	T	F
(D) F	T	T

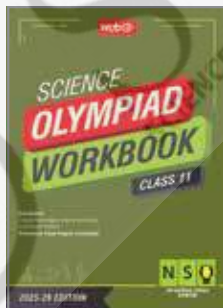
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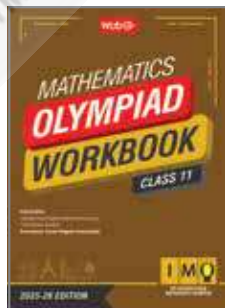
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### ANSWER KEY

1. (D) 2. (A) 3. (B)

**MATHEMATICAL REASONING** 4. (D) 5. (C) 6. (C)

**APPLIED MATHEMATICS** 4. (B) 5. (A) 6. (A)

7. (D) 8. (B) 9. (C) 10. (B)

Total Questions : 50

Time : 1 hr.

**PATTERN & MARKING SCHEME**

Section	(1) Economics	(2) Business Studies	(3) Accountancy	(4) Achievers Section
No. of Questions	15	15	15	5
Marks per Ques.	1	1	1	3

**SYLLABUS**

**Section – 1 :** Introductory Microeconomics, Statistics for Economics.

**Section – 2 :** Nature and Purpose of Business, Forms of Business Organisations, Public, Private and Global Enterprises, Business Services, Emerging Modes of Business, Social Responsibility of Business and Business Ethics, Sources of Business Finance, Small Business, Internal Trade, International Business.

**Section – 3 :** Theoretical Framework, Accounting Process, Financial Statements of Sole Proprietorship from Complete and Incomplete Records.

**Section – 4 :** Higher Order Thinking Questions - Syllabus as per Section-1, Section-2 and Section-3.

**ECONOMICS**

- The \_\_\_\_\_ is using the All-India Combined Consumer Price Index as the main measure of how consumer prices are changing.
  - Reserve Bank of India
  - Security Exchange Board of India
  - Federation of Indian Chamber of Commerce and Industry
  - Bombay Stock Exchange
- Which of the following features of Indifference Curve is/are correct?
  - The indifference curve slopes downwards.
  - Higher indifference curve gives greater level of utility.
  - Two indifference curves never intersect each other.
  - All of these
- Which of the following methods of collecting primary data is not suitable when the field of investigation is wide?
  - Indirect oral investigation
  - Direct personal investigation
  - Information through questionnaires
  - Information through local sources or correspondents

4. Which among the following is not the central problem of an economy?
- (A) For whom are the goods produced?
  - (B) How the cost of goods to be determined?
  - (C) What is produced and in what quantities?
  - (D) How are these goods produced?

### BUSINESS STUDIES

5. Select the incorrect match.
- (A) Partnership – Unlimited liability
  - (B) Joint Hindu family business – Death of *karta* affects the running of business
  - (C) Cooperative society – Voluntary membership
  - (D) Joint stock company – Time-consuming formation
6. X is a large retailing business unit selling wide variety of consumer goods on the basis of low price appeal, wide variety and assortment, self-service and heavy emphasis on merchandising appeal. Identify X.
- (A) Super market
  - (B) Consumer cooperative store
  - (C) Mail order house
  - (D) Chain store
7. X refers to the creations of the human mind, like inventions, literary and artistic works, symbols, names, images and designs used in business. It is divided into two broad categories. Identify X.
- (A) Business risk
  - (B) Integrated Circuits
  - (C) Intellectual Property
  - (D) Copyright Infringement
8. Select the odd one out on the basis of traditional business.
- (A) Requirement of physical presence
  - (B) Personal touch
  - (C) Hierarchical internal communication
  - (D) Horizontal structure

### ACCOUNTANCY

9. What will be the journal entry when an asset is sold at a loss through Asset Disposal Account?
- (A) Asset Disposal A/c To Profit and Loss A/c Dr.
  - (B) Profit and Loss A/c To Asset Disposal A/c Dr.
  - (C) Asset Disposal A/c To Provision for Depreciation A/c Dr.
  - (D) Bank A/c To Asset Disposal A/c Dr.

10. Temporary accounts are closed at the end of every accounting period and start a new period with a zero balance. These accounts are closed to prevent their balances from being mixed with the balances of the next accounting period. Which of the following accounts is transferred to capital account at the end of accounting year?
- Expenses A/c
  - Drawings A/c
  - Revenue A/c
  - Cash A/c
11. Which qualitative characteristics of accounting information states that decision-makers must interpret accounting information in the same sense as it is prepared and conveyed to them?
- Reliability
  - Understandability
  - Relevance
  - Comparability
12. On 1<sup>st</sup> April, 2023, Nitya started a business with a capital of ₹5,60,000. During the year, she made drawings of ₹15,000 and earned a profit of ₹89,000. Assets at 31<sup>st</sup> March, 2024 were ₹7,50,000. Calculate the amount of external liabilities as on 31<sup>st</sup> March, 2024.
- ₹ 1,16,000
  - ₹ 86,000
  - ₹ 2,94,000
  - ₹ 2,64,400

### ACHIEVERS SECTION

13. A machinery which costs ₹ 8,00,000 is depreciated at 6% per year using the Written Down Value Method. At the end of the three years, the total amount of depreciation will be
- ₹ 2,35,532.80
  - ₹ 1,35,532.80
  - ₹ 1,30,532.20
  - ₹ 6,64,467.20
14. Find out the coefficient of correlation of the following data.

X	2	3	4	5	6	7	8
Y	4	7	8	9	10	14	18

- 0.96
- + 0.96
- 0.85
- + 0.85

15. Gunjan took an insurance policy for her two-wheeler. Later on, she sold it to her friend Rohit and only got the registration done in Rohit's name. After few months, two-wheeler was stolen from Rohit's shop. Gunjan made a claim to insurance company, but it was rejected on the ground that she has not suffered any financial loss due to theft of two-wheeler.

Which principle of insurance is followed by insurance company by rejecting the claim?

- (A) Indemnity
- (B) Insurable interest
- (C) Subrogation
- (D) Proximate cause



**ANSWER KEY**

- |         |         |         |         |         |        |        |        |        |         |
|---------|---------|---------|---------|---------|--------|--------|--------|--------|---------|
| 1. (A)  | 2. (D)  | 3. (B)  | 4. (B)  | 5. (B)  | 6. (A) | 7. (C) | 8. (D) | 9. (B) | 10. (B) |
| 11. (B) | 12. (A) | 13. (B) | 14. (B) | 15. (B) |        |        |        |        |         |



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