

INDIAN
AIR FORCE

AIRMEN **GROUP-X**

TECHNICAL TRADES (ONLINE TEST)

COMPLETE STUDY PACKAGE
ENGLISH • PHYSICS • MATHEMATICS

 Chapterwise Theory
in Notes Form

 **3000+ MCQs**
(Chapterwise)

 Official Sample Paper
& 3 Practice Sets





INDIAN AIR FORCE

AIR MEN
GROUP-X
TECHNICAL TRADES (ONLINE TEST)

COMPLETE STUDY PACKAGE
ENGLISH • PHYSICS • MATHEMATICS

Compiled & Edited by
Arihant 'Expert Team'



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Contents

Model Solved Paper (Official) 1-6

English 1-84

1. Comprehension	3-11	12. The Preposition	45-48
2. Noun	11-14	13. Clauses	49-51
3. Pronoun	14-17	14. Transformation of Sentences	52-55
4. Forms of Verbs and Errors in the Use of Verbs	17-20	15. Narration : Direct and Indirect	56-60
5. Subject-Verb Concord	21-24	16. Voice : Active and Passive	60-64
6. Modals	24-27	17. Formation of Words	64-66
7. The Adjective	27-30	18. Synonyms and Antonyms	66-69
8. The Adverb	31-33	19. One Word Substitution	70-72
9. Sequence of Tenses and Errors in the Use of Tenses	34-38	20. Simple Idioms/Phrases	73-76
10. Determiners	38-42	21. Words Often Confuse (Homonyms)	77-79
11. The Conjunction	42-45	22. Spelling Pitfalls	80-81
		23. Jumbled Sentences/Sentence Arrangement	82-84

Physics 1-162

1. Physical World and Measurement	3-7	12. Electrostatics	77-85
2. Scalar and Vectors	8-11	13. Current Electricity	85-94
3. Kinematics	12-18	14. Magnetic Effect of Current and Magnetism	95-103
4. Law of Motion	18-24	15. Electromagnetic Induction and Alternating Current	103-111
5. Work, Energy and Power	25-30	16. Electromagnetic Waves	112-115
6. Motion of System of Particles and Rigid Body	30-36	17. Ray Optics	116-128
7. Gravitation	36-41	18. Wave Optics	129-134
8. Properties of Bulk Matter	42-49	19. Dual Nature of Matter and Radiation	135-139
9. Heat and Thermodynamics	49-59	20. Atoms and Nuclei	140-148
10. Behaviour of Gases and Kinetic Theory of Gases	60-65	21. Electronic Devices	149-157
11. Oscillations and Waves	66-76	22. Communication System	158-162



Mathematics

1-135

1. Sets, Relations and Functions	3-7	15. Three Dimensional Geometry	72-77
2. Trigonometric Function	8-11	16. Limit and Continuity	78-82
3. Inverse Trigonometric Function	12-15	17. Differentiation	83-89
4. Complex Number and Quadratic Equation	16-21	18. Application of Derivatives	90-95
5. Linear Inequalities	22-24	19. Indefinite Integration	96-100
6. Mathematical Induction	25-27	20. Definite Integral	101-104
7. Permutations and Combinations	28-33	21. Applications of the Integral	105-108
8. Binomial Theorem	34-38	22. Differential Equation	109-112
9. Sequence and Series	39-44	23. Mathematical Reasoning	113-116
10. Matrices & Determinant	45-52	24. Linear Programming	117-119
11. Cartesian System of Rectangular Coordinates	53-56	25. Vector	120-124
12. Straight Lines and Family of Lines	57-61	26. Probability	125-129
13. Circle and Family of Circles	62-65	27. Statistics	130-135
14. Conic Section	66-71	Practice Sets (1-3)	1-20

AIRMEN GROUP-X

Know About the Exam

Every year Indian Airforce conducts recruitment examination for the selection of Airmen Group-X.

Airmen Group-X exam conducted by Airforce twice in a year. The selection is based on **three stages** i.e. Written Test, Physical Test and Medical Tests.

Age Limit

Age 17- 21 Years

Note The upper age limit on date of enrollment is 21 years.

Education Qualification

Passed Intermediate / 10+2 / equivalent examination with English, Physics and Mathematics with minimum 50% marks in aggregate and 50% marks in English.

OR

Passed 3 years Diploma Course in Engineering in any stream, as shown below, from a Government recognised Polytechnic Institute with 50% marks in aggregate, and 50% marks in English in Diploma or in Intermediate/Matriculation, if English is not a subject in Diploma Course.

Written Test (Online)

Group	Time	Subjects/Questions
X	60 min	English (20 Questions)
		Physics (25 Questions)
		Mathematics (25 Questions)

Note

- (i) Each Questions carry 1 mark (ii) 0.25 mark shall be deducted for each wrong answer.

Physical and Medical Test

Visual Standards and Height (As per the table given below)

Weight	Weight should be proportionate to height and age.
Chest	Minimum range of expansion : 5 cm
Hearing	Should have normal hearing i.e. able to hear forced whisper from a distance of 6 meters by each ear separately.
Dental	Should have healthy gums, good set of teeth and minimum 14 dental points.
Health	Candidates should be of normal anatomy without loss of any appendages. He should be free from all communicable diseases & skin ailments. Candidate must be physically and mentally FIT to perform duty in any part of the world, in any climate and terrain.



Body Tattoo Permanent body tattoos are not permitted, however tattoos only on inner face of the fore arms(inside of elbow to the wrist), back(dorsal) part of the hand/reverse side of the palm and Tribals with tattoos which are as per custom Traditions of their tribes may be considered. However, right to decide on acceptability /unacceptability of the individual rests with the Selection Centre. Candidates with permanent body tattoos are to submit two photographs(close up and distinct view) with details of size and type of the Tattoo.

Note (a) Minimum height acceptable for recruitment will be 152.5 cms. For the following trades the minimum required height (determined at training centres) would be as indicated:-

S N	Trade	Candidates form	
		NE & Hill States	Other States
(a)	Auto Tech	162.5 cm	165 cm
(b)	GTI and PJI	162.5 cm	167 cm
(c)	IAF (P)	175 cm	175 cm
(d)	Musician	162 cm	162 cm

Note (b) Candidates from NE and Hill states includes Gorkhas, Kumaonis, Garhwalis, Assamese and those belonging to the States of Nagaland, Manipur, Mizoram, Meghalaya, Arunachal Pradesh, Tripura, Sikkim and hilly areas of Uttaranchal.

Pay

During training, a stipend of Rs. 14,600/- per month will be paid. On completion of training the starting gross emoluments at the minimum of scale of pay including Military Service Pay (MSP) and Group 'X' Pay {applicable for Group 'X' (Technical) Trades only} plus Dearness Allowance (DA) will be as follows:

- Group 'X' (Technical) Trade** Rs. 33,100/- per month (approximately) plus DA (as applicable) which, in subsequent years, may rise as per the career progression of the individual.
- Group 'Y' (Non-Technical) Trades** Rs. 26,900/- per month (approximately) plus DA (as applicable) which, in subsequent years, may rise as per the career progression of the individual.

Perks

- Allowances** Allowances such as Transport allowance, Composite Personal Maintenance Allowance (CPMA), Leave Ration Allowance (LRA), Children Education Allowance, HRA etc. are also admissible as applicable from time to time.
- Perquisites** Perks such as Ration, Clothing, Medical facilities, Accommodation, CSD (Canteen) facilities, Leave (60 days Annual and 30 days Casual in a Calendar year as a privilege, subject to service exigencies), Recreational facilities, Transport for school going children and Leave Travel Concession (LTC) are also provided as per the existing rules. Group Insurance Cover of Rs. 37.5 Lakhs at a premium of Rs. 2300/- per month for all airmen and facility of Group Housing Scheme are also extended. Other facilities by Air Force Wives Welfare Association (AFWWA) are also extended to the families of airmen.

Career Progression

The initial period of engagement in the IAF is 20 years, which can be extended up to the age of 57 years. Promotion prospects up to the rank of Master Warrant Officer exist to the deserving airmen. Opportunities to become a Commissioned Officer also exist for those airmen who qualify the prescribed examination, later in their service career.

- Service Entry Commission** Airmen of the rank of Sergeant & above with 10 years of minimum service and within the age limit of 34 to 42 years get the opportunity to become a Commissioned Officer in the IAF.
- Honorary Commission** Selected MWOs/WOs are granted Honorary Commission in the last year of their service before superannuating on Republic Day and Independence Day each year. On grant of Honorary Commission, they are eligible for higher scales of pay and allowances.

Syllabus

ENGLISH

I. A short passage followed by four questions to test comprehension.

The questions will be set:

1. To judge understanding of the passage.
2. To draw inference
3. To judge understanding of vocabulary

II. Grammar-1

1. Subject - verb concord
2. Forms of verbs and errors in the use of verbs, etc.
3. Sequence of tenses and errors in the use of tenses
4. Transformation of sentences - Compound, Complex, Simple, Negative, Affirmative, Comparative degree, Positive degree, Superlative degree et

III. Grammar-2

1. Formation of words - Nouns from verbs and adjectives, Adjectives from nouns and verbs, Adverbs from adjectives etc
2. Determiners
3. The Preposition
4. Nouns and Pronouns
5. The Adjective
6. The Adverb
7. The Conjunction
8. The Modals
9. Clauses - Noun clauses, Adverb clauses of condition and time and Relative clauses

IV. Vocabulary

1. Synonyms and Synonyms in context
2. Antonyms and Antonyms in context
3. One word substitution
4. Spelling pitfalls
5. Simple Idioms/phrases
6. Words often confused/Selecting the correct word fitting in a sentence

V. Narration (Direct and Indirect)

1. Commands and requests
2. Statements (Various tenses)
3. Questions (Various forms of questions, tenses, etc.)

VI. Voice (Active and Passive)

1. Changes required under each tense.
2. Other conditions for transforming Active into Passive
 - (a) The Preposition
 - (b) Modal auxiliaries
 - (c) Infinitive
 - (d) Participles

VII. Jumbled Sentences



PHYSICS (Technical Trades)

1. Physical World and Measurement
2. Kinematics
3. Laws of Motion
4. Work, Energy and Power
5. Motion of System of Particles and Rigid Body
6. Gravitation
7. Properties of Bulk Matter
8. Thermodynamics
9. Behaviour of Perfect Gases and Kinetic Theory of Gases.
10. Oscillations and Waves
11. Electrostatics
12. Current Electricity
13. Magnetic Effects of Current and Magnetism
14. Electromagnetic Induction and Alternating Current
15. Electro Magnetic Waves
16. Optics
17. Dual Nature of Matter and Radiation
18. Atoms and Nuclei
19. Electronic Devices
20. Communication Systems

MATHEMATICS (Technical Trades)

1. Sets, Relations and functions
2. Trigonometric Functions
3. Inverse Trigonometric Functions
4. Complex Number and Quadratic Equations
5. Linear Inequalities
6. Mathematical Induction
7. Permutations and Combinations
8. Binomial Theorem
9. Sequences and Series
10. Cartesian system of rectangular co-ordinates
11. Straight lines and family of lines
12. Circles and family of circles
13. Conic sections
14. Three-dimensional Geometry
15. Matrices and Determinants
16. Limit and Continuity
17. Differentiation
18. Applications of Derivatives
19. Indefinite integrals
20. Definite Integrals
21. Applications of the Integrals
22. Differential Equations
23. Mathematical Reasoning
24. Linear Programming
25. Vector
26. Probability
27. Statistics



INDIAN AIRFORCE
GROUP X

Model Solved Paper

(Official)

Time: 1 Hr

MM: 70

DIRECTIONS

- The Set contains a total of 70 questions, Comprising English Language, Physics and Mathematics.
- All questions are compulsory and each question in MCQs format.
- Each correct question carry 1 Mark and there will be negative marking of 0.25 Mark for each incorrect attempt.

Section I English Language

Directions (Q. Nos. 1-4) *Read the passage given below and answer the questions that follow.*

Personally I dislike the praise of poverty and suffering. I do not think they are at all desirable and they ought to be abolished. Nor do I appreciate the ascetic life as a social ideal though it may suit individuals. I understand and appreciate simplicity, equality, self-control but not the torturing of the body, I believe that the mind and habits have also to be trained and brought under control. It would be absurd to expect that a person who is given too much self-love can endure much suffering or show unusual self-control or behave like a hero when crisis comes. To be in good moral condition requires as much training to be in physical health.

1. The writer does not like the praise of poverty. It is
- (a) personal opinion
 - (b) opinion of the all people
 - (c) opinion of the ascetics
 - (d) opinion of the simple people

Sol. (a) It is a personal opinion that the writer does not like the praise of poverty.

2. To whom the ascetic life may be suitable?
- (a) To the writer
 - (b) To the socially advanced
 - (c) To individuals
 - (d) To all the members of society

Sol. (c) The ascetic life may be suitable to individuals.

3. What does the author mean by 'ascetic life' in the passage?
- (a) Equality
 - (b) Self-control
 - (c) Simplicity
 - (d) Mortification of the body

Sol. (d) 'Ascetic life' means 'monk or nun' etc. According to the passage, the author means by 'ascetic life' is the 'mortification of the body'.

4. Which of the following words could replace the word 'absurd' as used in the passage?
- (a) Reasonable
 - (b) Congruous
 - (c) Simple
 - (d) Silly

Sol. (d) 'Absurd' means 'illogical or unreasonable'. The word 'Absurd' could be replaced by 'silly' as used in the passage.

Direction (Q.No. 5) *Identify the incorrectly spelt word.*

5. (a) Seperate (b) Occur
(c) Receive (d) Accommodate

Sol. (a) The incorrectly spelt word is 'seperate'. It's correct spelling is 'separate' which means 'apart' or not connected.

Direction (Q. No. 6) *Choose the word almost nearest in meaning to the word given below.*

6. Zest
- (a) passion
 - (b) apathy
 - (c) lazy
 - (d) boredom

Sol. (a) 'Zest' means 'a feeling of enjoyment or excitement' and 'Passion' also means the same.

Direction (Q. No. 7) *Choose the word almost opposite in meaning to the word given below.*

7. Embellish
- (a) sacrifice
 - (b) disfigure
 - (c) forfeit
 - (d) indict

Sol. (b) 'Embellish' means 'to make something more beautiful'. So, 'Disfigure' is its correct antonym as it means 'to spoil the appearance of something'.

Direction (Q. No. 8) *Choose the correct one word substitute for the following stem.*

8. A well experienced person
- (a) Officer
 - (b) Senior
 - (c) Apprentice
 - (d) Veteran

Sol. (d) A well experienced person is known as 'veteran'.

Direction (Q. No. 9) A sentence, split into four parts, has been given. Choose the best order which produces the original sentence.

9. For backward classes (A)/a vexed problem facing us (B) and to reserve more seats (C)/is the clamour to open more colleges. (D)
 (a) (B), (C), (D), (A)
 (b) (B), (D), (A), (C)
 (c) (B), (D), (C), (A)
 (d) (B), (A), (D), (C)

Sol. (c) "A vexed problem facing us is the clamour to open more colleges and to reserve more seats for backward classes" is the correct sentence. So, option (c) is correct.

Direction (Q. Nos. 10-14) Choose the most appropriate answer and fill in the blanks.

10. The authorities seem to be concerning the condition of workers.
 (a) liberal (b) insensitive
 (c) ignorant (d) responsible

Sol. (b) 'Insensitive' means 'not able to feel or react'. So, it is the correct word to fill the blank as "The authorities seem to be insensitive concerning the condition of workers".

11. He for a walk daily in the morning.
 (a) go (b) shall go
 (c) will go (d) goes

Sol. (d) 'Goes' is the correct verb to fill the given blank as the Present indefinite tense is used to express habits or repeated actions.

12. thing of beauty is a joy forever.
 (a) A (b) The (c) One (d) An

Sol. (a) Article 'a' is the correct option to fill the given blank as 'a' is an indefinite article, used before singular noun.

13. The thunder was accompanied a heavy rain.
 (a) from (b) up (c) by (d) with

Sol. (c) 'By' is the correct preposition for the given blank as 'accompanied' is always followed by the preposition 'by'.

14. The noun form of 'detect' is
 (a) dictator (b) detention
 (c) detectable (d) detection

Sol. (d) The noun form of 'detect' is 'detection'.

Direction (Q. No. 15) Choose the sentence that conveys the same meaning as the given sentence.

15. He is greater than me
 (a) I am not so great as he
 (b) I am the greatest
 (c) I am as great as he
 (d) He is as great as I

Sol. (a) 'I am not so great as he' is the correct option that conveys the same meaning as the given sentence.

Direction (Q. Nos. 16-18) Spot the erroneous parts, if any, in the following sentences.

16. Het met with an accident
 A B
and admitted in the hospital.
 C
No error
 D

Sol. (c) 'admitted in' should be replaced by 'admitted to' as 'admit' is usually followed by the preposition 'to'.

17. He stole a dog and sold the dog
 A B
for ₹ 50. No error
 C D

Sol. (b) 'the dog' should be replaced by 'it' because a noun cannot be repeated in a sentence.

18. Both Mili as well as Meena are
 A B C
 beautiful. No error
 D

Sol. (b) 'as well as' should be replaced by 'and' because 'both' is always followed by 'and'. 'Both + And' is a conjunction pair.

Direction (Q. No. 19) Change the narration.

19. The teacher said to me, "Be regular and learn your lessons daily".
 (a) The teacher told me to be regular and learn your lesson daily.
 (b) The teacher asked me to be regular and learn my lessons daily.
 (c) The teacher advised me be regular and learn my lessons daily.
 (d) The teacher advised me to be regular and learn my lessons daily.

Sol. (d) In imperative sentence, the conjunction word 'to' is used to connect the reporting verb with the reporting speech. So, "The teacher advised me to be regular and learn my lessons daily" is the correct narration of the given sentence.

Direction (Q. No. 20) Change the voice.

20. It is time to buy books.
 It is time
 (a) all the books to be bought
 (b) for the books are being bought
 (c) for the books to be bought
 (d) For the books have been bought.

Sol. (c) The correct passive voice of the given sentence will be 'It is time for the books to be bought'. So, option (c) is suitable for the given blank.

Section II Physics and Mathematics

■ Physics

1. A body is moving in a circular path with acceleration a . If its velocity gets doubled then find the ratio of acceleration after and before the change of velocity.

- (a) 1 : 4 (b) 1 : 2 (c) 2 : 1 (d) 4 : 1

Sol. (d) Acceleration of moving a body in circular path, $a = \frac{v^2}{r}$

When the velocity of particle gets doubled, then velocity, $v' = 2v$

$$\therefore \text{Acceleration, } a' = \frac{(2v)^2}{r}, a' = \frac{4v^2}{r}$$

The ratio of acceleration, $a' : a = 4 : 1$

2. Weightlessness of an astronaut moving in a satellite is a situation of
 (a) zero velocity (b) no gravity
 (c) zero mass (d) free fall

Sol. (d) Weightlessness of an astronaut moving in a satellite is a situation of free fall.

3. For which of the following metals, the resistance decreases on increasing the temperature?
 (a) Copper (b) Tungsten
 (c) Germanium (d) Aluminium

Sol. (c) The relation between resistance and temperature is given by $R_t = R_0 (1 + \alpha t)$ where, α is the temperature coefficient of resistance. Temperature coefficient of resistance is negative for semiconductor. So, on increasing the temperature, the resistance of semiconductor

decrease. The resistance of conductor increase. Since, germanium is semiconductor, so the resistance of germanium decrease on increasing the temperature.

4. What is the angle of dip at magnetic poles of earth?
 (a) Zero (b) 45° (c) 90° (d) 180°

Sol. (c) The angle of dip at magnetic poles of earth is 90° .

5. A charge moves in a circle perpendicular to a magnetic field. Upon which of the following, the time period of revolution does not depend?
 (a) Magnetic field (b) Charge
 (c) Mass of the particle
 (d) Velocity of the particle

Sol. (d) The time period of revolution of charge in magnetic field, $T = \frac{2\pi m}{qB}$

where, m = mass of charge, q = charge, and B = magnetic field.

Therefore, the time period of revolution does not depend upon the velocity of particle.

6. Atomic number of a nucleus is Z and atomic mass is M . Find the number of neutrons.

- (a) $M - Z$ (b) M
(c) Z (d) $M + Z$

Sol. (a) Number of neutrons = Atomic mass – Atomic number $n = M - Z$

7. The electric circuit, used to get smooth DC output from a rectifier circuit is called

- (a) oscillator (b) filter
(c) amplifier (d) logic gate

Sol. (b) The electrical circuit, used to get smooth DC output from a rectifier circuit is called filter.

8. Two bodies of 2 kg and 4 kg are moving with velocities 20 m/s and 10 m/s respectively, towards each other under mutual gravitational attraction. Find the velocity of their centre of mass (in m/s).

- (a) 5 (b) 6 (c) 8 (d) Zero

Sol. (d) Velocity of body of mass 2 kg,

$$v_1 = 20 \text{ m/s}$$

Velocity of body of mass 4 kg, $v_2 = -10 \text{ m/s}$

Velocity of mass of system,

$$\Rightarrow v_{CM} = \frac{m_1 v_1 + m_2 v_2}{m_1 + m_2} = \frac{2 \times 20 - 4 \times 10}{2 + 4}$$

$$\Rightarrow v_{CM} = 0$$

9. The radius of gyration of a solid sphere of radius r about a certain axis is R . Find the distance of this axis from the centre of the sphere.

- (a) r (b) $0.5 r$
(c) $\sqrt{0.4} r$ (d) $\sqrt{0.2} r$

Sol. (c) Moment of inertia, $I = \frac{2}{5} MR^2$

The distance of this axis from the centre of the

$$\text{sphere} = \sqrt{\frac{I}{M}} = \sqrt{\frac{2/5 MR^2}{M}} = \sqrt{0.4} r$$

10. Which of the following statements is correct, in case of adiabatic expansion?

- (a) $\Delta U = 0$ (b) $\Delta U = \text{negative}$
(c) $\Delta U = \text{positive}$ (d) $\Delta W = 0$

Sol. (b) From first law of thermodynamics,

$$Q = \Delta U + W$$

For adiabatic expansion, $Q = 0$

Therefore, $W = -\Delta U$

11. The velocity of a particle, executing SHM is at its mean position.

- (a) maximum (b) minimum
(c) infinity (d) zero

Sol. (a) Velocity of particle, $u = \omega \sqrt{a^2 - y^2}$

At the mean position, $y = 0$, so $u = a\omega$.

Therefore, the velocity of particle, executing SHM is maximum at its mean position.

12. A coil of an area 2 m^2 is placed in a magnetic field which changes from 4 Wb/m^2 to 8 Wb/m^2 in 2s. Find the induced emf in the coil.

- (a) 4 V (b) 5 V (c) 6 V (d) 7 V

Sol. (a) Induced emf,

$$e = -\frac{d\phi_B}{dt} = -\frac{d}{dt}(B \cdot A) = -\frac{dB}{dt} \cdot A$$

$$= \frac{-(8 - 4) \times 2}{2} = -4 \text{ V} \quad \therefore |e| = 4 \text{ V}$$

13. The process by which an alternating current is converted into direct current is called

- (a) purification (b) amplification
(c) rectification (d) current amplification

Sol. (c) The process by which an alternating current is converted into direct current is called rectification.

14. If the threshold wavelength for photoelectric effect on sodium metal is 5000 \AA , then find its work function.

- (a) 15 J (b) $4 \times 10^{-19} \text{ J}$
(c) $4 \times 10^{-14} \text{ J}$ (d) $4 \times 10^{-22} \text{ J}$

Sol. (b) Work function, $W_0 = \frac{hc}{\lambda}$

$$= \frac{6.6 \times 10^{-34} \times 3 \times 10^8}{5000 \times 10^{-10}} = \frac{19.8 \times 10^{-19}}{5}$$

$$= 3.96 \times 10^{-19} \approx 4 \times 10^{-19} \text{ J}$$

15. Through which mode of wave propagation, are the radio waves sent from one place to another?

- (a) Ground wave propagation
(b) Sky wave propagation
(c) Space wave propagation
(d) All of the above

Sol. (d) There are three modes of propagation of radio waves namely

- (i) Ground wave propagation
(ii) Sky wave propagation
(iii) Space wave propagation

16. What is the wavelength range of visible light?

- (a) $4 \times 10^{-7} \text{ m}$ to $8 \times 10^{-7} \text{ m}$
(b) $4 \times 10^{-6} \text{ m}$ to $8 \times 10^{-8} \text{ m}$
(c) $4 \times 10^5 \text{ m}$ to $8 \times 10^{-9} \text{ m}$
(d) $4 \times 10^{10} \text{ m}$ to $8 \times 10^{10} \text{ m}$

Sol. (a) The wave of visible light in electromagnetic spectrum can be seen by naked eye and the wavelength range of visible light is from $4 \times 10^{-7} \text{ m}$ to $8 \times 10^{-7} \text{ m}$.

17. What is the dimensional formula for the universal gravitational constant?

- (a) $[M^{-1}L^3T^{-2}]$ (b) $[M^{-1}L^3T^{-1}]$
(c) $[M^{-1}L^2T^{-2}]$ (d) $[M^0L^0T^0]$

Sol. (a) Gravitational Force, $F = G \frac{m_1 m_2}{r^2}$

$$\text{Gravitational constant, } G = \frac{Fr^2}{m_1 m_2}$$

Dimensions of gravitational constant

$$[G] = \frac{[F][r^2]}{[m_1][m_2]} = \frac{[MLT^{-2}][L^2]}{[M][M]} = [M^{-1}L^3T^{-2}]$$

18. Two balls are dropped from heights h and $2h$ respectively. What would be the ratio of times taken by the balls to reach the earth?

- (a) $\sqrt{2} : 1$ (b) $1 : \sqrt{2}$ (c) $2 : 1$ (d) $4 : 1$

Sol. (b) $\because h = ut + \frac{1}{2}gt^2$

$$\text{Here, } u = 0 \text{ So, } h = \frac{1}{2}gt^2 \Rightarrow t = \sqrt{\frac{2h}{g}}$$

Time taken by ball which is dropped from height

$$h_1, t_1 = \sqrt{\frac{2h}{g}}$$

Time taken by ball which is dropped from height

$$2h, t_2 = \sqrt{\frac{4h}{g}} = \sqrt{2} \sqrt{\frac{2h}{g}}$$

\therefore The ratio of times taken by balls,

$$\frac{t_1}{t_2} = \frac{\sqrt{2h/g}}{\sqrt{2} \sqrt{2h/g}} \Rightarrow t_1 : t_2 = 1 : \sqrt{2}$$

19. When a spring is stretched by 2 cm, the energy stored is 100 J. If it is stretched further by 2 cm, its energy increases by

- (a) 300 J (b) 400 J (c) 200 J (d) 100 J

Sol. (a) Stored energy, $U = \frac{1}{2}kx^2$

$$100 = \frac{1}{2}k(2 \times 10^{-2})^2 \Rightarrow k = \frac{100 \times 2}{4 \times 10^{-4}}$$

Force constant of spring,

$$k = 50 \times 10^4 \quad \dots(i)$$

Now, spring is stretched further by 2 cm, then energy,

$$U = \frac{1}{2} \times 50 \times 10^4 \times (4 \times 10^{-2})^2 \quad [\text{using Eq. (i)}]$$

$$= 400 \text{ J}$$

Increase in energy of spring = $400 - 100 = 300 \text{ J}$

20. At what temperature, will the surface tension of water, be minimum?

- (a) 0°C (b) 25°C (c) 60°C (d) 75°C

Sol. (d) On increasing the temperature, the surface tension decreases. Therefore, the surface tension at temperature 75°C will be minimum.

21. Diameters of 2 water drops are 1 cm and 1.5 cm, respectively. Find the ratio of excess pressures inside them.

- (a) $1 : 1$ (b) $5 : 3$ (c) $3 : 2$ (d) $2 : 3$

Sol. (c) Excess pressure inside the drop, $p = \frac{2T}{R}$

Radius of first drop, $R_1 = \frac{1}{2} = 0.5 \text{ cm}$

Radius of second drop, $R_2 = \frac{1.5}{2}$

The ratio of excess pressures inside the drops,

$$\therefore \frac{p_1}{p_2} = \frac{2T/R_1}{2T/R_2} = \frac{R_2}{R_1} = \frac{1.5/2}{0.5} \Rightarrow p_1 : p_2 = 3 : 2$$

22. In Young's double slit experiment, using sodium light ($\lambda = 5898 \text{ \AA}$), 92 fringes are seen. If another light ($\lambda = 5461 \text{ \AA}$) is used, then find the number of fringes.

- (a) 62 (b) 99 (c) 67 (d) 85

Sol. (b) In Young's double slit experiment, using sodium light ($\lambda = 5898 \text{ \AA}$), 92 fringes are seen, then width of sight = $92 \times \frac{D\lambda}{d}$

If another light ($\lambda = 5461 \text{ \AA}$) is used, then

$$92 \times \frac{D\lambda}{d} = n \frac{D\lambda'}{d} \Rightarrow 92 \times \lambda = n \times \lambda'$$

Number of fringes,

$$\Rightarrow n = \frac{92 \times \lambda}{\lambda'} = \frac{92 \times 5898}{5461} = 99 \text{ fringes}$$

23. Two plates are at potentials -10 V and $+30 \text{ V}$. If the separation between the plates is 2 cm then find the electric field between them.

- (a) 2000 V/m (b) 1000 V/m
(c) 500 V/m (d) 3000 V/m

Sol. (a) Intensity of electric field,

$$E = \frac{V_1 - V_2}{d} = \frac{30 - (-10)}{2 \times 10^{-2}} = 2000 \text{ V/m}$$

24. If red light is replaced by blue light illuminating the object in a microscope, the resolving power of the microscope

- (a) will decrease (b) will increase
(c) will get halved
(d) will remain unchanged

Sol. (b) Resolving power of microscope

$$= \frac{2n \sin \alpha}{1.22 \lambda}$$

Resolving power $\propto \frac{1}{\lambda}$

where, λ is wavelength of light.

Resolving power of microscope will be increase on decreasing the wavelength.

Since, the wavelength of blue light is less than the wavelength of red light. So, if red light is replaced by blue light illuminating the object in a microscope, the resolving power of the microscope will increase.

25. In gases of diatomic molecules, find the ratio of the two specific heat of gases C_p / C_v .

- (a) 1.66 (b) 1.33 (c) 1.4 (d) 1.00

Sol. (c) For the diatomic gases, $f = 5$

$$\frac{C_p}{C_v} = 1 + \frac{2}{f} = 1 + \frac{2}{5} = 7/5 = 1.4$$

■ Mathematics

26. What is the nature of relation R , if R is defined as

$$R = \{(x, y) : 2x + y = 41, x, y \in N\} ?$$

- (a) reflexive (b) symmetric
(c) transitive (d) None of these

Sol. (d) Relation R is defined as

$$R = \{(x, y) : 2x + y = 41, y \in N\}$$

$$\Rightarrow R = \{(1, 39), (2, 37), (3, 35), (4, 33), (5, 31), (6, 29), (7, 27), (8, 25), (9, 23), (10, 21), (11, 19), (12, 17), (13, 15), (14, 13), (15, 11), (16, 9), (17, 7), (18, 5), (19, 3), (20, 1)\}$$

In relation R , $(x, x) \notin R$, then R is not reflexive.

$(x, y) \in R \Rightarrow (y, x) \notin R$, then R is not symmetric.

and $(x, y) \in R, (y, z) \in R \Rightarrow (x, z) \notin R$, then R is not transitive.

Hence, option (d) is correct.

$$\mathbf{27.} \cos 24^\circ + \cos 55^\circ + \cos 125^\circ + \cos 204^\circ + \cos 300^\circ = ?$$

- (a) $\frac{1}{2}$ (b) $\frac{3}{2}$ (c) 3 (d) 0

Sol. (a) $\cos 24^\circ + \cos 55^\circ + \cos 125^\circ +$

$$\cos 204^\circ + \cos 300^\circ = ?$$

$$\Rightarrow ? = \cos 24^\circ + \cos 55^\circ + \cos(180^\circ - 55^\circ)$$

$$+ \cos(180^\circ + 24^\circ) + \cos(360^\circ - 60^\circ)$$

$$= \cos 24^\circ + \cos 55^\circ - \cos 55^\circ - \cos 24^\circ$$

$$+ \cos 60^\circ [\because \cos(180^\circ - \theta) = -\cos \theta$$

$$\text{and } \cos(180^\circ + \theta) = -\cos \theta] = \cos 60^\circ = \frac{1}{2}$$

$$\mathbf{28.} \sec^{-1} \left[\frac{x^2 + 1}{x^2 - 1} \right] = ?$$

- (a) $2 \tan^{-1} x$ (b) $2x^2$
(c) $2 \cot^{-1} x$ (d) x^2

$$\mathbf{Sol.} \text{ (c) } \sec^{-1} \left[\frac{x^2 + 1}{x^2 - 1} \right] = ?$$

$$\Rightarrow ? = \cos^{-1} \left[\frac{x^2 - 1}{x^2 + 1} \right] \left[\because \sec^{-1}(x) = \cos^{-1} \left(\frac{1}{x} \right) \right]$$

$$\text{Let } x = \tan \theta \text{ or } \theta = \tan^{-1} x \quad \dots (i)$$

$$\therefore ? = \cos^{-1} \left[\frac{\tan^2 \theta - 1}{\tan^2 \theta + 1} \right]$$

$$= \cos^{-1} \left[\frac{\sin^2 \theta - \cos^2 \theta}{\sin^2 \theta + \cos^2 \theta} \right]$$

$$= \cos^{-1}(\sin^2 \theta - \cos^2 \theta) [\because \sin^2 \theta + \cos^2 \theta = 1]$$

$$= \cos^{-1}[-(\cos^2 \theta - \sin^2 \theta)]$$

$$= \cos^{-1}(-\cos 2\theta) = \cos^{-1} \cos(\pi - 2\theta)$$

$$= \pi - 2\theta = \pi - 2 \tan^{-1} x \quad [\text{from Eq. (i)}]$$

$$= \pi - 2 \left(\frac{\pi}{2} - \cot^{-1} x \right)$$

$$\left[\because \tan^{-1} x + \cot^{-1} x = \frac{\pi}{2} \right]$$

$$= \pi - \pi + 2 \cot^{-1} x = 2 \cot^{-1} x$$

29. Find the foci of hyperbola

$$9x^2 - 16y^2 = 144.$$

- (a) $(0, \pm 5)$ (b) $(\pm 5, 0)$
(c) $(\pm 5, 1)$ (d) $(5, \pm 1)$

Sol. (b) Equation of hyperbola, $9x^2 - 16y^2 = 144$

$$\Rightarrow \frac{9x^2}{144} - \frac{16y^2}{144} = 1 \Rightarrow \frac{x^2}{16} - \frac{y^2}{9} = 1$$

Comparing it by standard equation, $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$

$$a^2 = 16, b^2 = 9 \Rightarrow a = \pm 4, b = \pm 3$$

$$\therefore e = \sqrt{1 + \frac{b^2}{a^2}} = \sqrt{1 + \frac{9}{16}} = \sqrt{\frac{25}{16}} = \pm \frac{5}{4}$$

$$\therefore \text{Foci of hyperbola} = (\pm ae, 0) = (\pm 5, 0)$$

30. Find the nature of the triangle whose vertices are $A(12, 8)$,

$B(-2, 6)$ and $C(6, 0)$

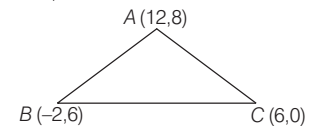
(a) Isosceles Right angle triangle

(b) Equilateral triangle

(c) Scalene triangle

(d) None of the above

Sol. (a) Vertices of triangle are $A(12, 8)$, $B(-2, 6)$ and $C(6, 0)$.



$$\text{Side, } AB = \sqrt{(-2 - 12)^2 + (6 - 8)^2}$$

$[\because \text{distance between the points of } (x_1, y_1)$

and $(x_2, y_2) = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}]$

$$= \sqrt{196 + 4} = \sqrt{200} = 10\sqrt{2}$$

$$\text{Side, } BC = \sqrt{(6 + 2)^2 + (0 - 6)^2}$$

$$= \sqrt{64 + 36} = \sqrt{100} = 10$$

$$\text{Side, } CA = \sqrt{(12 - 6)^2 + (8 - 0)^2}$$

$$= \sqrt{36 + 64} = \sqrt{100} = 10$$

$$\therefore BC = CA \text{ and } AB^2 = BC^2 + CA^2$$

$\therefore \triangle ABC$ is an isosceles right angle triangle.

31. For every point $P(x, y, z)$ on the XY -plane,

(a) $x = 0$ (b) $y = 0$

(c) $z = 0$ (d) None of these

Sol. (c) For every point $P(x, y, z)$ on the XY -plane, $z = 0$.

32. Find the conjugate of $(6 + 5i)^2$.

(a) $60 + 11i$ (b) $11 - 60i$

(c) $11 + 60i$ (d) $60 - 11i$

Sol. (b) Let $z = (6 + 5i)^2 = 36 + 25i^2 + 60i$

$$= 36 - 25 + 60i = 11 + 60i$$

Now, Conjugate of $z = \bar{z} = 11 - 60i$

33. $C(n, r) + 2C(n, r - 1) + C(n, r - 2) = ?$

(a) $C(n + 1, r)$ (b) $C(n + 2, r)$

(c) $C(n + 2, r - 1)$ (d) $C(n + 1, r - 1)$

Sol. (b) $C(n, r) + 2C(n, r - 1) + C(n, r - 2) = ?$

$$\Rightarrow ? = {}^nC_r + 2{}^nC_{r-1} + {}^nC_{r-2}$$

$$= {}^nC_r + {}^nC_{r-1} + {}^nC_{r-1} + {}^nC_{r-2}$$

$$= {}^{n+1}C_r + {}^{n+1}C_{r-1}$$

$$[\because {}^nC_r + {}^nC_{r-1} = {}^{n+1}C_r, \text{ Pascal's rule}]$$

$$= {}^{n+2}C_r = C(n + 2, r)$$

34. If n th term of a GP is 2^n , then find the sum of its first 6 terms.

- (a) 126 (b) 124 (c) 190 (d) 154

Sol. (a) Given, n th term of GP, $T_n = 2^n$

$$n = 1, 2, 3, \dots$$

$$T_1 = 2^1 = 2 \text{ (First term } a), T_2 = 2^2 = 4$$

$$\therefore r = \frac{T_2}{T_1} = \frac{4}{2} = 2 \text{ and } n = 6$$

$$\therefore S_n = \frac{a(r^n - 1)}{r - 1} \text{ and } S_6 = \frac{2(2^6 - 1)}{2 - 1} = 2(64 - 1) = 2 \times 63 = 126$$

35. Find the coefficient of x^2 in the expansion of $\left(3x - \frac{1}{x}\right)^6$.

- (a) 405 (b) 7290 (c) 2430 (d) 1215

Sol. (d) Let x^2 contain in $(r + 1)$ th term in

$$\text{expansion of } \left(3x - \frac{1}{x}\right)^6.$$

$$\therefore T_{r+1} = {}^nC_r x^{n-r} a^r = {}^6C_r (3x)^{6-r} \left(-\frac{1}{x}\right)^r$$

$$= {}^6C_r (3)^{6-r} (-1)^r \cdot x^{6-r-r}$$

$$= {}^6C_r (-1)^r (3)^{6-r} (x)^{6-2r}$$

According to the question,

$$6 - 2r = 2 \Rightarrow 2r = 4 \Rightarrow r = 2$$

\therefore Coefficient of x^2 in expansion of $\left(3x - \frac{1}{x}\right)^6$

$$= {}^6C_2 (-1)^2 (3)^{6-2} = \frac{6!}{2!4!} (3)^4$$

$$= \frac{6 \cdot 5}{2} \times 81 = 15 \times 81 = 1215$$

36. $\begin{vmatrix} 0 & c & b^2 \\ c & 0 & a \\ b & a & 0 \end{vmatrix} = ?$

- (a) $a^2b^2c^2$ (b) $4a^2b^2c^2$
(c) $\frac{1}{4}a^2b^2c^2$ (d) $(a + b + c)^2$

Sol. (b) $\begin{vmatrix} 0 & c & b^2 \\ c & 0 & a \\ b & a & 0 \end{vmatrix} = ?$

$$\Rightarrow ? = [0(0 - a^2) - c(0 - ab) + b(ac - 0)]^2$$

[Expansion in first row]

$$= [0 + abc + abc]^2 = [2abc]^2 = 4a^2b^2c^2$$

37. If $A = \begin{pmatrix} 0 & 0 & 1 \\ 0 & 1 & 0 \\ 1 & 0 & 0 \end{pmatrix}$, then $A^{-1} = ?$

- (a) A (b) $-A$ (c) I (d) $-I$

Sol. (a) $A = \begin{pmatrix} 0 & 0 & 1 \\ 0 & 1 & 0 \\ 1 & 0 & 0 \end{pmatrix}$

We know that, $A = IA$ or $I = A^{-1}A$... (i)

$$\Rightarrow \begin{pmatrix} 0 & 0 & 1 \\ 0 & 1 & 0 \\ 1 & 0 & 0 \end{pmatrix} = \begin{pmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix} A$$

$$\Rightarrow \begin{pmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix} = \begin{pmatrix} 0 & 0 & 1 \\ 0 & 1 & 0 \\ 1 & 0 & 0 \end{pmatrix} A \quad [\text{by } R_1 \leftrightarrow R_3]$$

Comparing by Eq. (i), we get

$$A^{-1} = \begin{pmatrix} 0 & 0 & 1 \\ 0 & 1 & 0 \\ 1 & 0 & 0 \end{pmatrix} \Rightarrow A^{-1} = A$$

38. If ω is the cube root of unity, then

$$\begin{vmatrix} 1 & \omega & \omega^2 \\ \omega & \omega^2 & 1 \\ \omega^2 & 1 & \omega \end{vmatrix} = ?$$

- (a) 1 (b) ω (c) ω^2 (d) 0

Sol. (d) $\begin{vmatrix} 1 & \omega & \omega^2 \\ \omega & \omega^2 & 1 \\ \omega^2 & 1 & \omega \end{vmatrix} = ?$

$$\Rightarrow ? = \begin{vmatrix} 1 + \omega + \omega^2 & 1 + \omega + \omega^2 & 1 + \omega + \omega^2 \\ \omega & \omega^2 & 1 \\ \omega^2 & 1 & \omega \end{vmatrix}$$

(by $R_1 \rightarrow R_1 + R_2 + R_3$)

$$= (1 + \omega + \omega^2) \begin{vmatrix} 1 & 1 & 1 \\ \omega & \omega^2 & 1 \\ \omega^2 & 1 & \omega \end{vmatrix}$$

[common $(1 + \omega + \omega^2)$ from R_1]

$$= 0 \quad [\because \omega \text{ is the cube root of unity, then } 1 + \omega + \omega^2 = 0]$$

39. $\lim_{x \rightarrow 0} \frac{\sin(2+x) - \sin(2-x)}{x} = ?$

- (a) $\frac{1}{2} \cos 2$ (b) 1
(c) $2 \cos 2$ (d) 0

Sol. (c) $\lim_{x \rightarrow 0} \frac{\sin(2+x) - \sin(2-x)}{x} = ?$

$$\Rightarrow ? = \lim_{x \rightarrow 0} \frac{2 \cdot \cos \frac{2+x+2-x}{2} \cdot \sin \frac{2+x-2+x}{2}}{x}$$

$$\left[\because \sin C - \sin D = 2 \cos \frac{C+D}{2} \sin \frac{C-D}{2} \right]$$

$$= \lim_{x \rightarrow 0} 2 \cos 2 \cdot \frac{\sin x}{x} = 2 \cos 2 \times \lim_{x \rightarrow 0} \frac{\sin x}{x}$$

$$= 2 \cos 2 \quad \left[\because \lim_{\theta \rightarrow 0} \frac{\sin \theta}{\theta} = 1 \right]$$

40. $\frac{d}{dx} \{ \tan^{-1}(\sec x + \tan x) \} = ?$

- (a) $-\frac{1}{2}$ (b) 1 (c) -1 (d) $\frac{1}{2}$

Sol. (d) $\frac{d}{dx} \{ \tan^{-1}(\sec x + \tan x) \} = ?$

$$\Rightarrow ? = \frac{d}{dx} \left\{ \tan^{-1} \left(\frac{1}{\cos x} + \frac{\sin x}{\cos x} \right) \right\}$$

$$= \frac{d}{dx} \left\{ \tan^{-1} \left(\frac{1 + \sin x}{\cos x} \right) \right\}$$

$$= \frac{d}{dx} \left\{ \tan^{-1} \left(\frac{\cos^2 \frac{x}{2} + \sin^2 \frac{x}{2} + 2 \sin \frac{x}{2} \cos \frac{x}{2}}{\cos^2 \frac{x}{2} - \sin^2 \frac{x}{2}} \right) \right\}$$

$$= \frac{d}{dx} \left\{ \tan^{-1} \frac{\left(\cos \frac{x}{2} + \sin \frac{x}{2} \right)^2}{\left(\cos \frac{x}{2} + \sin \frac{x}{2} \right) \left(\cos \frac{x}{2} - \sin \frac{x}{2} \right)} \right\}$$

$$[\because a^2 - b^2 = (a + b)(a - b)]$$

$$= \frac{d}{dx} \left\{ \tan^{-1} \left(\frac{\cos \frac{x}{2} + \sin \frac{x}{2}}{\cos \frac{x}{2} - \sin \frac{x}{2}} \right) \right\}$$

$$= \frac{d}{dx} \left\{ \tan^{-1} \frac{\cos \frac{x}{2} \left(1 + \tan \frac{x}{2} \right)}{\cos \frac{x}{2} \left(1 - \tan \frac{x}{2} \right)} \right\}$$

$$= \frac{d}{dx} \left\{ \tan^{-1} \frac{\tan \frac{\pi}{4} + \tan \frac{x}{2}}{1 - \tan \frac{\pi}{4} \tan \frac{x}{2}} \right\} \quad \left[\because \tan \frac{\pi}{4} = 1 \right]$$

$$= \frac{d}{dx} \left(\frac{\pi}{4} + \frac{x}{2} \right) = 0 + \frac{1}{2} = \frac{1}{2}$$

41. Find $\frac{d^2y}{dx^2}$, if $\sqrt{x+y} + \sqrt{y-x} = c$.

- (a) $\frac{2}{c}$ (b) $-\frac{2}{c^2}$ (c) $\frac{2}{c^2}$ (d) $\frac{4}{c^2}$

Sol. (c) $\sqrt{x+y} + \sqrt{y-x} = c$

$$\sqrt{x+y} = c - \sqrt{y-x}$$

On squaring both sides, we get

$$x + y = c^2 + y - x - 2c\sqrt{y-x}$$

$$\Rightarrow 2x - c^2 = -2c\sqrt{y-x}$$

Again, on squaring both sides, we get

$$4x^2 + c^4 - 4c^2x = 4c^2(y-x)$$

$$\Rightarrow 4c^2y = 4x^2 + c^4$$

Differentiation w.r.t. x ,

$$4c^2 \cdot \frac{dy}{dx} = 8x \Rightarrow \frac{dy}{dx} = \frac{2x}{c^2}$$

Differentiation again w.r.t. x , $\frac{d^2y}{dx^2} = \frac{2}{c^2}$

42. An edge of a cube is increasing at the rate of 3 cm/sec. Find the rate at which does the volume increase (in cm^3/sec) if the edge of the cube is 10 cm.

- (a) 900 (b) 725 (c) 700 (d) 825

Sol. (a) Let side of cube be x , then

$$\frac{dx}{dt} = 3 \text{ cm/sec and } x = 10 \text{ cm}$$

Volume of cube, $V = x^3$

Differentiation w.r.t. x ,

$$\frac{dV}{dt} = 3x^2 \cdot \frac{dx}{dt} = 3(10)^2 \times 3 = 900 \text{ cm}^3/\text{sec}$$

- 43.** If $s = t^3 - 4t^2 + 5$ describes the motion of a particle, then its velocity (in unit/sec) when the acceleration vanishes, is
 (a) $\frac{16}{9}$ (b) $-\frac{32}{3}$ (c) $\frac{4}{3}$ (d) $-\frac{16}{3}$

Sol. (d) $s = t^3 - 4t^2 + 5$
 Differentiation w.r.t. x ,
 $\frac{ds}{dt} = 3t^2 - 8t = \text{velocity (V)} \dots (i)$

Differentiation again w.r.t. x ,
 $\frac{d^2s}{dt^2} = 6t - 8 = \text{acceleration (a)}$

According to the question,
 acceleration (a) = 0
 $\Rightarrow 6t - 8 = 0 \Rightarrow t = \frac{8}{6} = \frac{4}{3}$

Putting the value of t in Eq. (i),
 Velocity (V) = $3\left(\frac{4}{3}\right)^2 - 8\left(\frac{4}{3}\right)$
 $= 3 \times \frac{16}{9} - \frac{32}{3} = \frac{16}{3} - \frac{32}{3}$
 $= -\frac{16}{3} \text{ unit/sec}$

- 44.** Find the standard deviation of 8, 12, 13, 15, 22.
 (a) 3.54 (b) 3.72
 (c) 4.21 (d) 4.6

Sol. (d)

Term(x)	$d = x_i - \bar{x}$	d^2
8	$8 - 14 = -6$	36
12	$12 - 14 = -2$	4
13	$13 - 14 = -1$	1
15	$15 - 14 = 1$	1
22	$22 - 14 = 8$	64
$\Sigma x = 70$		$\Sigma d^2 = 106$

AM (\bar{x}) = $\frac{\Sigma x_i}{n} = \frac{70}{5} = 14$
 (SD) = $\sqrt{\frac{\Sigma d^2}{n}} = \sqrt{\frac{106}{5}} = \sqrt{21.2} = 4.6$

- 45.** If a coin is tossed thrice, find the probability of getting one or two heads.
 (a) $\frac{4}{5}$ (b) $\frac{5}{8}$ (c) $\frac{3}{4}$ (d) $\frac{6}{7}$

Sol. (c) Total methods of thrice tossed of a coin [HHH, HHT, HTH, THH, HTT, THT, TTH, TTT] i.e. total number of possible outcomes $n(S) = 8$
 Favourable methods of come 1 and 2 Head in thrice tossed.
 [HTT, THT, TTH, HHT, HTH, THH]
 i.e. number of favourable outcomes
 $n(E) = 6$
 \therefore Required probability
 $= \frac{n(E)}{n(S)} = \frac{6}{8} = \frac{3}{4}$

- 46.** If the points $A(60\hat{i} + 3\hat{j})$, $B(40\hat{i} - 8\hat{j})$, and $C(a\hat{i} - 52\hat{j})$ are collinear, then a is equal to
 (a) 40 (b) -40 (c) 20 (d) -20

Sol. (b) The vectors of three points are $A(60\hat{i} + 3\hat{j})$, $B(40\hat{i} - 8\hat{j})$ and $C(a\hat{i} - 52\hat{j})$
 Points $A(60, 3)$, $B(40, -8)$, $C(a, -52)$
 \therefore Points A, B, C are collinear.
 \therefore Slope of $AB =$ Slope of BC
 $\Rightarrow \frac{-8 - 3}{40 - 60} = \frac{-52 + 8}{a - 40}$
 $\Rightarrow \frac{-11}{-20} = \frac{-44}{a - 40}$
 $\Rightarrow a - 40 = -80$
 $\Rightarrow a = -80 + 40 = -40$

- 47.** $\int_{-\frac{\pi}{3}}^{\frac{\pi}{3}} \sin^2 x \, dx = ?$
 (a) 1 (b) $\frac{\pi}{3} - \frac{\sqrt{3}}{4}$
 (c) $\frac{\pi}{2} - \frac{1}{4}$ (d) 0

Sol. (b) $\int_{-\frac{\pi}{3}}^{\frac{\pi}{3}} \sin^2 x \, dx = ?$
 $\Rightarrow ? = \int_{-\frac{\pi}{3}}^{\frac{\pi}{3}} \sin^2 x \, dx$
 If $f(x) = \sin^2 x \Rightarrow f(-x) = \sin^2(-x)$
 $= [\sin(-x)]^2 = (-\sin x)^2$
 $= (\sin x)^2 = \sin^2 x = f(x)$

$\therefore ? = 2 \int_0^{\frac{\pi}{3}} \sin^2 x \, dx$
 $[\because \int_{-a}^a f(x) dx = 2 \int_0^a f(x) dx, \text{ if } f(x) = f(-x)]$
 $= 2 \int_0^{\frac{\pi}{3}} \frac{1 - \cos 2x}{2} dx$
 $[\because \cos 2x = 1 - 2\sin^2 x]$
 $= \int_0^{\frac{\pi}{3}} dx - \int_0^{\frac{\pi}{3}} \cos 2x \, dx$
 $= [x]_0^{\frac{\pi}{3}} - \left[\frac{\sin 2x}{2} \right]_0^{\frac{\pi}{3}}$
 $= \left[\frac{\pi}{3} - 0 \right] - \frac{1}{2} \left[\sin \frac{2\pi}{3} - \sin 0 \right]$
 $= \frac{\pi}{3} - \frac{1}{2} \left(\frac{\sqrt{3}}{2} - 0 \right)$
 $[\because \sin \frac{2\pi}{3} = \sin 120^\circ = \frac{\sqrt{3}}{2}]$
 $= \frac{\pi}{3} - \frac{\sqrt{3}}{4}$

- 48.** $\int \frac{\cos 2x}{\cos^2 x \cdot \sin^2 x} dx = ?$
 (a) $-\cot x - \tan x + C$
 (b) $\cot x - \tan x + C$
 (c) $\cot x + \tan x + C$
 (d) $\tan x - \cot x + C$

Sol. (a) $\int \frac{\cos 2x}{\cos^2 x \cdot \sin^2 x} dx = ?$

$\Rightarrow ? = \int \frac{\cos^2 x - \sin^2 x}{\cos^2 x \cdot \sin^2 x} dx$
 $[\because \cos 2x = \cos^2 x - \sin^2 x]$
 $= \int \left(\frac{\cos^2 x}{\cos^2 x \sin^2 x} - \frac{\sin^2 x}{\cos^2 x \sin^2 x} \right) dx$
 $= \int (\operatorname{cosec}^2 x - \sec^2 x) dx$
 $= -\cot x - \tan x + C$

- 49.** Find the solution of the differential equation $\frac{dy}{dx} = e^x + y + x^2 e^y$.

- (a) $e^x - e^y + \frac{y^3}{3} = C$
 (b) $e^x + e^y + \frac{x^3}{3} = C$
 (c) $e^x + e^{-y} + \frac{x^3}{3} = C$
 (d) $e^x + e^{-y} + \frac{y^3}{3} = C$

Sol. (c) $\frac{dy}{dx} = e^x + y + x^2 e^y$
 $\Rightarrow \frac{dy}{dx} = e^x \cdot e^y + x^2 \cdot e^y$
 $[\because a^m \cdot a^n = a^{m+n}]$

$\Rightarrow \frac{dy}{dx} = e^y (e^x + x^2)$
 $\Rightarrow \frac{dy}{e^y} = (e^x + x^2) dx$
 $\Rightarrow e^{-y} dy = (e^x + x^2) dx$
 Integrating $\int e^{-y} dy = \int (e^x + x^2) dx$
 $\Rightarrow -e^{-y} + C = e^x + \frac{x^3}{3}$
 $\Rightarrow e^x + e^{-y} + \frac{x^3}{3} = C$

- 50.** Find the area of the region (in sq units) bounded by the curve $y^2 = 2y - x$ and Y -axis.

- (a) $\frac{8}{3}$ (b) $\frac{4}{3}$ (c) $\frac{5}{3}$ (d) $\frac{2}{3}$

Sol. (b) Given curves $y^2 = 2y - x$ and Y -axis, then

$y^2 = 2y - x$ and $x = 0$... (i)
 or $x = 2y - y^2$... (ii)
 and $x = 0$... (iii)

From Eqs. (i) and (ii), we get
 $y^2 = 2y \Rightarrow y^2 - 2y = 0 \Rightarrow y(y - 2) = 0$
 $\Rightarrow y = 0, 2$

Area of the region bounded by the curves
 $= \int_0^2 (2y - y^2) dy - \int_0^2 0 dx$
 $[\because \text{Area} = \int_a^b f_1(y) dy - \int_a^b f_2(y) dy]$
 $= \left[\frac{2 \cdot y^2}{2} - \frac{y^3}{3} \right]_0^2$
 $= \left[y^2 - \frac{y^3}{3} \right]_0^2 = 4 - \frac{8}{3} = 0$
 $= \frac{12 - 8}{3} = \frac{4}{3} \text{ sq unit}$



CONQUER THE SKY

Indian Airforce (Group X) Exam

Section 1

English Language

Chapter 01

Comprehension

In Airforce Examination, one passage with 4 or 5 questions has been asked. So, it is clear that this chapter carries great importance as it covers 20% part of the section.

Comprehension exercise consists a passage, upon which questions are given in objective form and are asked to choose the correct answer. Among the questions, 2-3 questions are asked from the passage directly and 1-2 questions are based on vocabulary (Antonyms/Synonyms/Word meaning).

Sometimes a question based on title of the passage, has been also asked. Candidates are required to do regular practice to solve the comprehension correctly.

Points to be Kept in Mind While Solving Comprehension

As we know, this is time bound exam, candidates are advised to follow the given steps instead of reading the passage again and again

1. Read the questions first, before reading the passage.
2. Then read the passage and mark the line wherever you find the words related to the question.
3. For vocab based questions, answers should be chosen in the context of the passage.
4. For title based questions, the title must be derived from the central idea of the passage.

Solved Example

Read the following passage carefully and answer the questions that follows.

Jogging or running at an easy pace, is really popular now. It's fun, free and a quick way to get fit. It's very good for *suppleness* or upper body strength.

There's some risk of overuse injury to feet, knees, ankles and hips. But if you don't overdo it at first, and run on soft surface like grass when you can, you shouldn't have serious

problems. If you have arthritis in your legs, hips or back or if you are overweight, try cycling or swimming instead.

The only expense is a good pair of running shoes. Avoid busy roads and jogging at night if possible. Wear light-coloured clothes so as not to feel uneasy and a cyclist's reflective chest band.

Word Meaning

Suppleness the quality of being able to bend easily or be bent easily; **Over do** to do too much or to excess; **Expense** the cost incurred in or required for something.

- 1** Jogging is popular exercise because it
- (a) makes the body strong
 - (b) is an easy way to keep oneself fit
 - (c) is eminently enjoyable
 - (d) makes the body supple

Ans. (b)

- 2** Everybody can afford to jog as it
- (a) does not require expensive outfit
 - (b) requires less effort
 - (c) requires less space
 - (d) does not need strength

Ans. (a)

- 3** While jogging, one should wear light coloured clothes
- (a) as a protection from the Sun
 - (b) to feel light
 - (c) to feel easy
 - (d) to feel comfortable

Ans. (c)

- 4** Which of the following words could replace the word 'Suppleness' as used in the passage?
- | | |
|-----------------|-----------------|
| (a) Flexibility | (b) Awkwardness |
| (c) Unfitness | (d) Rigidity |

Ans. (a)

Practice Exercise

Directions Read the following passage carefully and answer the questions that follow.

Passage 1

Once in the city of Ayodhya lived a man called Chudamani. He was a great follower of Lord Shiva. For years together, he did great penance as he wished to get a boon from the Lord. One day pleased by his devotion, Lord Shiva appeared before him

and asked him what he wanted. Chudamani prostrated in front of the Lord and asked him to make him very wealthy.

Lord Shiva said "This morning, shave your head and stand hidden behind a bush in your garden. When the beggar comes in front of you spring upon him with a stick and he will turn into a pot of gold immediately," saying disappeared.

Accordingly, Chudamani called his barber, shaved his head and hid near the gate. The barber's curiosity aroused, he too stood watching, when a beggar came to the house, Chudamani hit him with a stick and he at once turned into a pot of gold. Chudamani picked it up and went inside happily.

The barber who was watching this was amazed. "Aha, so this is how he makes his wealth", he thought.

Hurrying home, the barber too shaved his head and hid in his house hoping for a beggar to pass by. When a beggar came asking for alms, the foolish barber jumped on him and killed him by one mighty blow of his stick. The people around raised a commotion and the barber was led off by the King's soldiers and put into prison. Later on, he was hanged. He had paid for his stupidity and greed with his life.

Word Meaning

Penance an act of punishment or devotion performed to show sorrow or repentance for sin; **Prostrated** lie down, bring someone to their knees; **Raised** lifted; **Commotion** a state of confused and noisy disturbance.

- 1 What did Chudamani ask Lord Shiva?
 - (a) To grant him freedom from the cycle of life and death
 - (b) To solve his mental problem
 - (c) To make a big house for him
 - (d) To make him very wealthy
- 2 Why did Chudamani call his barber?
 - (a) To give him a pot of gold coins
 - (b) To get a shave
 - (c) To shave his head
 - (d) To beat him to death
- 3 Find a word from the passage which is the opposite of 'bane'.

(a) boon	(b) commotion
(c) penance	(d) curse
- 4 The people around raised a commotion as
 - (a) The barber was gifted a pot of gold by Chudamani
 - (b) The barber had killed a beggar
 - (c) The barber stole money from the king
 - (d) The barber had killed Chudamani

Passage 2

Journalists argue over functions of a newspaper. I feel that a provincial paper's purpose is not only to present and project the news objectively and imaginatively, but to help its readers to express themselves more effectively, canalising their aspirations, making more articulate their demands. A newspaper should reflect the community it serves-warts and all. When the mirror is held to society it reveals neglect, injustice, ignorance or complacency. It should help to eradicate them. It would be pretentious to think that a newspaper can change the course of world affairs-but at the local limit it can exert influence, it can probe, it can help get things done. The

individual's voice must not be stifled. Instead, the readers should be encouraged to express their opinions, fears, hopes or their grievances on this platform.

Word Meaning

Articulate having or showing the ability to speak fluently and coherently; **Warts and all** including features or qualities that are not appealing or attractive; **Reveals** make known to others; **Complacency** a feeling of uncritical satisfaction with oneself or one's achievements; **Eradicate** destroy completely; **Probe** investigation.

- 1 What is the main purpose of a newspaper?
 - (a) Project news objectively and imaginatively
 - (b) To present facts in a blunt way
 - (c) Encourage the readers to be pretentious
 - (d) Exert influences on the individuals
- 2 How can a newspaper influence local affairs?
 - (a) By influencing public opinion through half truths
 - (b) By focusing on world affairs
 - (c) By probing into the ills of society and rallying support for change
 - (d) By encouraging the readers to accept their grievances
- 3 How can the readers air their grievances?
 - (a) By writing to their local newspaper
 - (b) By writing to journalists
 - (c) By supporting the local newspaper
 - (d) By being complacent
- 4 The expression 'warts and all' in the passage means
 - (a) the reader's grievances
 - (b) the community's problem
 - (c) hopes and fears
 - (d) with no attempt to conceal blemishes or inadequacies

Passage 3

The largest land mammal on Earth, the African elephant weighs up to eight tonnes. The elephant is distinguished by its massive body, large ears and a long trunk, which has many uses ranging from using it as a hand to pick up objects, as a horn to trumpet warnings, an arm raised in greeting to a hose for drinking water or bathing.

Asian elephants differ in several ways from their African relatives. They are much smaller in size and their ears are straight at the bottom, unlike the large fan-shaped ears of the African species. The Asian elephant has four toes on the hind foot and five on the forefoot, while the African elephant has three on the hind foot and five on the forefoot.

Led by a matriarch, elephants are organised into complex social structures of females and calves, while male elephants tend to live in isolation. A single calf is born to a female once every 4-5 years and after a gestation period of 22 months-the longest of any mammal.

Word Meaning

Distinguished famous; **Massive** huge, very large.

- 1 Which species of elephants has fan-shaped ears?

(a) African elephant	(b) Asian elephant
(c) Both 'a' and 'b'	(d) Neither 'a' nor 'b'

- 2 In what all ways can an elephant use its trunk?
 (a) as a hose for drinking water or bathing
 (b) as a horn to trumpet warnings
 (c) as a hand to pick up objects
 (d) All of the above
- 3 Find a word from the passage which is the opposite of 'tiny'.
 (a) smaller (b) large (c) massive (d) long
- 4 'Led by a matriarch' as per the passage means
 (a) led by an old and powerful female in a family
 (b) led by an old and powerful male in a family
 (c) led by the youngest member in a family
 (d) led by the bravest member in a family

Passage 4

I was very fond of the old soldier in our little town. He had only one leg, having lost the other somewhere in Assam in 1942. He used to tell me about his adventures. He told me that he had run away from home to join the army. He had experienced his first battle in the Libyan Desert. Out of his dozens of war stories, the one I liked best was the one of his escape from a Japanese prison-of-war camp in Burma. He told me again and again how he walked two hundred miles in two weeks. On the way, he was bitten on the toe by a poisonous snake and he had to cut off part of the toe in order to survive. But by the time he got to an Indian camp the wound had turned septic and the leg had to be amputated. He is, however, quite contented with his lot.

Word Meaning

Wound injury; **Amputated** cut off by surgical operation;
Contented feeling or expressing happiness or satisfaction.

- 1 The author was very fond of the old soldier because
 (a) he had lost one of his legs in war
 (b) he used to tell the author about his adventures
 (c) he was contented with his lot
 (d) he had been to many countries
- 2 Why did the old soldier repeatedly tell that he walked two hundred miles?
 (a) He ran away from home to join the army
 (b) He had to cross the Libyan Desert
 (c) He had to escape from a prison-of-war camp
 (d) He was a strong soldier
- 3 The story of the old soldier that the author liked most was that about
 (a) his running away from home to join the army
 (b) his first battle in the Libyan Desert
 (c) the loss of his leg in Assam
 (d) his escape from a Japanese prison-of-war camp
- 4 The old soldier, according to the author, was
 (a) unhappy about his life
 (b) satisfied with his lot
 (c) angry about his fate
 (d) disgusted with his misfortune

Passage 5

Our voyage was very prosperous, but I shall not trouble the reader with a journal of it. The captain called in at one or two ports and sent in his long-boat for provisions and fresh water, but I never went out of the ship still we came into the Downs, which was on the 3rd day of June, 1706, about nine months after my escape. I offered to leave my goods in security for payment of my freight, but the captain protested he would not receive one farthing. We took kind leave of each other and I made him promise that he would come to see me at my house in Redriff. I hired a house and a guide for five shillings which I borrowed from the captain.

Word Meaning

Voyage a long journey involving travel by sea or in space;
Freight goods transported in bulk by truck, train, ship or aircraft;
Protested express an objection to what someone has said or done;
Farthing a former monetary unit and coin of the UK, equal to a quarter of an old penny; **Shilling** a former British coin and monetary unit equal to one twentieth of a pound.

- 1 When the writer uses the word 'prosperous' to describe the voyage, he means that
 (a) it made him rich
 (b) it made him healthy
 (c) it was very pleasant
 (d) it was uneventful
- 2 On the voyage, the author
 (a) left the ship at intervals
 (b) was not able to leave the ship because it did not stop
 (c) never left the ship at all
 (d) never left the ship till they came into the Downs
- 3 In the context of the passage, the word 'provisions' means
 (a) mainly food (b) mainly security
 (c) money (d) mainly ammunition
- 4 From the passage, it is clear that the captain's attitude to the author was
 (a) one of hostility
 (b) one of indifference
 (c) one of extreme friendliness and kindness
 (d) one of disgust and irritation

Passage 6

One day a wolf found a sheepskin. He covered himself with the sheepskin and got into a flock of sheep grazing in a field. He thought, "The shepherd will shut the sheep in the pen after sunset. At night I will run away with a fat sheep and eat it."

All went well till the shepherd shut the sheep in the pen and left. The wolf waited patiently for the night to advance and grow darker. But then an unexpected thing happened. One of the servants of the shepherd entered the pen. His master had sent him to bring a fat sheep for supper. As luck would have it, the servant picked up the wolf dressed in the sheepskin. That night the shepherd and his guests had wolf for supper.

Word Meaning

Sheepskin a sheep's skin with the wool on; **Patiently** in a way that shows tolerance of delays or problems; **Supper** an evening meal, typically a light or informal one.

- 1 Why did the wolf cover himself with the sheepskin and get into a flock of sheep?
 - (a) He wanted to look like a beautiful sheep.
 - (b) He wanted to eat a sheep.
 - (c) He wanted to enter into the pen.
 - (d) He wanted to make friends with the sheep.
- 2 How did the wolf meet his end?
 - (a) All the sheep attacked the wolf and killed him.
 - (b) The shepherd recognised the wolf in sheep's clothing and killed him.
 - (c) The shepherd's servant picked up the wolf dressed in the sheepskin for supper.
 - (d) The wolf died of a serious disease.
- 3 What is the moral of the passage?
 - (a) An evil design has an evil end
 - (b) Pen is mightier than the sword
 - (c) Might is right
 - (d) Die in harness
- 4 What is the antonym of the word 'shut' as used in the passage?

(a) kill	(b) close
(c) imprison	(d) free

Passage 7

There were four of us George and William Samuel Harris, and myself, and Montmorency. We were sitting in my room, smoking and talking about how bad we were—bad from a medical point of view I mean, of course.

We were all feeling seedy, and we were getting quite nervous about it. Harris said he felt such extraordinary fits of giddiness come over him at times, that he hardly knew what he was doing; and then George said that he had fits of giddiness too, and hardly knew what he was doing. With me, it was my liver that was out of order. I knew it was my liver that was out of order because I had just been reading a patent, liver-pill circular, in which were detailed the various symptoms by which a man could tell when his liver was out of order. I had them all.

It is a most extraordinary thing, but I never read a patent medicine advertisement without being impelled to the conclusion that I am suffering from the particular disease therein dealt with in its most virulent form. The diagnosis seems in every case to correspond exactly with all the sensations that I have ever felt.

Word Meaning

Seedy unwell, sick; **Extraordinary** very unusual or remarkable; **Giddiness** dizziness, light headedness; **Conclusion** judgement or decision; **Diagnosis** recognition, identification; **Virulent** extremely severe or harmful in its effects.

- 1 The four felt down and out because
 - (a) the room was too smoky
 - (b) they could never read a patent medicine advertisement
 - (c) they thought they were ill
 - (d) they had experienced a most extraordinary thing
- 2 Whenever the speaker read a liver pill circular
 - (a) he suffered from an extraordinary surge of giddiness
 - (b) he felt sure that he had a liver disorder
 - (c) he felt the urge to smoke
 - (d) All of the above
- 3 The author of the passage seems to be suffering from
 - (a) fits of morbid depression without real cause
 - (b) an abnormal anxiety about his health
 - (c) melancholia
 - (d) an unnecessarily dark, gloomy and pessimistic attitude to life
- 4 Harris was troubled by

(a) a symptom of vertigo	(b) garrulity
(c) tribulation	(d) frailty

Passage 8

The important thing in life is not what you have been but what you are reaching for and becoming. At my age, when I can see the end of the road more clearly than most, I can sit back and recollect in tranquility the varying vicissitudes of my life and what it has taught me.

When I look back, I find that the great and glorious hours of my life were those when I gave a helping hand to others without expecting anything in return and not when I struggled arid succeeded to gain my own ends and I can well imagine and appreciate that in this world those alone live who live for others.

I have no regrets for the past. Life has been kind to me. My only regret is that I received more from life than I gave.

Word Meaning

Tranquility peacefulness, restfulness;

Vicissitudes changes that happen at different times during the life or development of someone or something;

Glorious excellent, great, outstanding;

Arid unproductive, unfruitful.

- 1 What stage of life must the author be?

(a) Adolescence	(b) Youth
(c) Middle age	(d) Old age
- 2 What feelings does the author harbour about life?

(a) Regret	(b) Gratitude	(c) Sadness	(d) Ecstasy
------------	---------------	-------------	-------------
- 3 What, according to the author, is the most important thing in life?
 - (a) The achievements of one's life
 - (b) The struggles one has faced in life
 - (c) The thing one is striving for
 - (d) The memories one has in life
- 4 What is the inference of the passage?

(a) Reflective	(b) Argumentative
(c) Opinionated	(d) Satirical

Passage 9

An old man with steel-rimmed spectacles and very dusty clothes sat by the side of the road. There was a pontoon bridge across the river and carts, trucks and men, women and children were crossing it.

The muledrawn carts staggered up the steep bank from the bridge with soldiers helping to push against the spokes of the wheels. The trucks ground up and away heading out of it all. The peasants plodded along in the ankledeep dust. But the old man sat there without moving. He was too tired to go any farther.

Word Meaning

Muledrawn Carts a heavy two wheeled vehicle drawn by mules, oxen for the conveyance of heavy goods; **Staggered** walk unsteadily, move clumsily; **Plodded** walk slowly with heavy steps or with some weight.

- 1 What was the old man wearing?
 - (a) Iron-rimmed spectacles
 - (b) An old shirt and pant
 - (c) White clothes
 - (d) Steel-rimmed spectacles and very dusty clothes
- 2 Mention those which crossed the bridge besides human beings.
 - (a) Mules and horses
 - (b) Men, women and children
 - (c) Carts and trucks
 - (d) Soldiers and carts
- 3 Who were helping to push the muledrawn carts?
 - (a) Mules
 - (b) The villagers
 - (c) The horses
 - (d) Soldiers
- 4 Where was the old man sitting?
 - (a) In the cart
 - (b) Over the bridge
 - (c) By the side of the road
 - (d) On the banks of the river

Passage 10

Last year I suffered a stroke I had to be hospitalised. I was put in a general ward for there was no room in the intensive coronary care unit.

Not far from my bed was a patient in obvious *indigent circumstances* and on hospital diet. For breakfast, he used to get two eggs, besides other things.

The man was regularly visited by a twelve year old boy, perhaps his son, dressed in worn-out clothes. The man always kept one egg for that boy when he arrived soon after the doctors had done their rounds.

One day was a shortfall in the supply of eggs to the hospital and the man got only one egg. He looked at it for a long time, turning it over in his hands and then put it away. He thought the boy's need was greater than his perhaps.

Word Meaning

Stroke a medical emergency that occurs when the blood supply to part of brain is interrupted; **Indigent** poor, needy.

- 1 Why was the author hospitalised?
 - (a) Because he wanted a routine check-up
 - (b) Because he suffered a stroke
 - (c) Because he wanted to encash his medical insurance
 - (d) Because he liked the hospital life so much
- 2 What does the given passage focus on?
 - (a) Paternal affection of the man
 - (b) Poverty of the man
 - (c) Poor condition of the hospital
 - (d) Poor condition of the boy
- 3 What does it mean by 'indigent circumstances' as used in the passage?
 - (a) Miserly personality
 - (b) Rich background
 - (c) Miserable condition
 - (d) Poor condition
- 4 From which disease, the author is suffering in last year?
 - (a) Fever
 - (b) Cough
 - (c) Stomach pain
 - (d) Stroke

Passage 11

Patriotism is a very complex feeling built up out of primitive instincts and highly *intellectual convictions*. There is love of home, family and friends, making us peculiarly anxious to preserve our own country from invasion. There is the mild instinctive liking for compatriots as against foreigners. There is pride, which is bound up with the success of the community to which we feel that we belong.

There is a belief, suggested by pride but reinforced by history that one's own nation represents a great tradition and stands for ideals that are important to the human race. But besides all these, there is another element, at once nobler and more *open to attack*, an element of worship, of willing sacrifice, of joyful merging of the individual life in the life of the nation.

This religious element in patriotism is essential to the strength of the State, since it enlists the best that is in most men on the side of national sacrifice.

Word Meaning

Patriotism the quality of being devotion for one's country; **Primitive** ancient, primary; **Instincts** a natural or intuitive way of acting or thinking; **Peculiarly** more than usually, especially; **Invasion** an instance of invading a country or region with an armed force; **Compatriots** a fellow citizen or national of a country; **Bound up** closely involved or associated; **Reinforced** to make something stronger; **Nobler** having or showing fine personal qualities or high moral principles.

- 1 A suitable title for the passage could be
 - (a) Elements of Patriotism
 - (b) Historical Development of a Nation
 - (c) The Role of Religion and History in Patriotism
 - (d) Religion and Patriotism
- 2 Describing the element of worship 'open to attack', the author implies that it
 - (a) is unnecessary
 - (b) leads to national sacrifice
 - (c) has no historical basis
 - (d) cannot be justified on rational grounds

- 3 The tone of the passage can be described best as
- (a) critical (b) descriptive
(c) persuasive (d) analytical
- 4 Which of the following can clearly be grouped under 'intellectual convictions' the author mentions in the opening sentence?
- (a) Love of family (b) Love of compatriots
(c) The element of worship (d) None of these

Passage 12

Among the chief sources of education available to Tagore was a quiet garden adjoining his family house. Here, he used to spend much of his time, absorbing the peace and beauty of nature. It was through this early contact with nature that he acquired the serenity of mood that distinguished him all his life. It was in this garden that he came to understand the principle of harmony that was at work throughout the Universe. At the same time, he formed the habit of observing and reflecting on things.

Word Meaning

Serenity the state of being calm, peaceful and untroubled

- 1 How did Tagore spend much of his time in the garden adjoining his family house?
- (a) Reading literary books
(b) Plucking flowers and enjoying their fragrance
(c) Enjoying natural peace and beauty
(d) Sleeping in natural air and thinking in poetry
- 2 How did the garden near Tagore's house serve him?
- (a) As a means of peace
(b) As a means of education
(c) As a source of entertainment
(d) A good passing time to relax in natural beauty
- 3 By spending his time in the garden, Tagore developed the habit of
- (a) meditation
(b) serving things carefully
(c) taking life easy
(d) writing and relaxing
- 4 Which of the following words could replace the word 'Adjoining' as used in the passage?
- (a) behind to (b) separate
(c) away (d) be next to

Passage 13

Through the break between the trees, she looked into one of the lighted windows above the shop. She could see the cartons of biscuits neatly piled near the far wall. Against her conscious wishes Cissy's salivary glands started pumping fluid into her mouth. She felt her heart beating strongly, from the top of her throat into the back of her mouth. "There is nobody", she thought. "I can dash in and take a box and dash out again. I know it is a sin but the Lord will not punish us if we are so hungry."

Word Meaning

Cartons a small, light box or container in which drinks or foodstuffs are packed; **Piled** place things on top of the other.

- 1 Cissy's reaction when she saw the biscuit cartons
- (a) she wanted to take all the cartons
(b) her mouth started watering
(c) she felt hungry
(d) she was surprised to see the biscuits
- 2 The passage describes
- (a) Cissy's bad habit
(b) Cissy's temptation before stealing
(c) Cissy's courage to steal
(d) the good quality of biscuits
- 3 How was Cissy able to see the cartons of biscuits?
- (a) From the flavour of biscuits in the room
(b) She saw an opened carton
(c) She was aided by a light in the room
(d) Because some biscuit cartons were damaged
- 4 Why did her heart beat strongly?
- (a) She was thinking of stealing the biscuits
(b) The flavour of biscuits was tempting
(c) She thought nobody was watching her
(d) She was eager to eat the biscuits

Passage 14

Gandhiji recognised that, while all men should have equal opportunity, all did not have the same capacity. Some had the ability to earn more than others. But, he believed that those who had talent would be performing the work of society if they used their talent wisely and well. Gandhiji said that he would allow a man of intellect to earn more and not suppress his talent. But it was his view that the bulk of his larger earnings should go to the common fund. Those with talent and opportunity would find their fulfilment as trustees. Gandhiji extended this concept of trusteeship to cover all fields of life.

Word Meaning

Suppress Discontinue or forcibly put an end to

- 1 Gandhiji never believed in
- (a) social equality
(b) equality of opportunities
(c) political equality
(d) complete equality in all respects
- 2 Gandhiji's trusteeship concept is
- (a) a philosophy
(b) applicable to social life only
(c) applicable to all fields of life
(d) irrelevant today
- 3 According to Gandhiji, one can serve the society
- (a) if one is talented
(b) if one used his talent wisely
(c) if one earned well
(d) if one worked honestly

- 4 The meaning of 'trustee' is a
- person who has to hold his property in trust
 - state official who executes wills and trusts
 - person having confidence
 - number of trusts

Passage 15

Once, an ant who had come to drink at a stream fell into the water and was carried away by the swift current. He was in great danger of drowning. A dove, perched on a nearby tree, saw the ant's danger and dropped a leaf into the water. The ant climbed onto this, and was carried to safety. Sometime after this, a hunter, creeping through the bushes, saw the dove asleep, and took a careful aim with his gun. He was about to fire when the ant, who was nearby, crawled forward and bit him sharply on the ankle. The hunter missed his aim, and the loud noise of the gun awakened the dove from her sleep. She saw the danger and flew swiftly away to safety. Thus, the ant repaid the dove for having saved its life in the foaming current of the stream.

Word Meaning

Perched sit on something high; **Creeping** moving slowly or gradually; **Bushes** a low densely plant with many branches; **Crawled** to move on one's hand and knees.

- The ant came to the stream to
 - fall into it
 - to drink from it
 - look at the swift current
 - carry back some water
- The dove dropped a leaf into the water to
 - drown the ant
 - save the ant
 - help itself
 - perch on it
- The dove was in danger because
 - there was a bush nearby
 - a hunter was about to shoot it
 - it had fallen off the branch
 - a hunter wanted to care for it
- The word 'aim' in this passage means
 - to look at something
 - to have an ambition
 - to point a gun at something or someone
 - to try to reach somewhere

Passage 16

Birbal was renowned for his intelligence in Akbar's court. Everybody in Akbar's court praised Birbal's intelligence. Even the emperor himself did so. But there were some courtiers also who were envious of Birbal. One such courtier came to Birbal and challenged him that if he could outwit him and made him obey his orders, he would be his slave forever. Birbal accepted the challenge and said, "Come and stand in front of me". The courtier did so. Then Birbal asked him to follow him while walking. The courtier followed him. Then Birbal said, "Not this way, my friend. Come to my left". The courtier came to his left. "That is all my Lord", said Birbal, "I made him obey my orders". The courtier at once realised his mistake and went out of the court.

Word Meaning

Renowned famous, eminent; **Outwit** to get an advantage over someone by acting more cleverly and often by using a trick.

- Everyone in the court praised Birbal because
 - Emperor liked Birbal
 - Birbal was intelligent
 - Birbal was a fool
 - Birbal was the tallest among the courtiers
- What does the phrase 'did so' stand for?
 - Emperor was also wise
 - Courtier was also wise
 - Courtier followed Birbal's order
 - Emperor punished the courtier
- How did Birbal react to the courtier's challenge?
 - He ran away
 - He started quarrelling
 - He started crying
 - He accepted the challenge
- Which of the following words could replace the word 'Envious' as used in the passage?
 - Thankful
 - Jealous
 - Grateful
 - Optimistic

Passage 17

The Rajputs occupy an honoured place in the history of India. They were a war-like people, proud and patriotic. They were zealous of their honour, and would lay down their lives to uphold it. They loved their homes and fought bravely to defend the honour of their women-folk. Nothing would tame their spirits. Perils only called forth their courage and poverty only increased their power of resistance. None could fight like them. Their motto was 'Better death than dishonour'.

Word Meaning

Patriotic nationalist, loyal for one's country; **Resistance** the refusal to accept or comply with something; **Tame** reduced, break.

- Which of the following represents the central theme of the passage?
 - The pride of the Rajputs
 - Rajputs and their sacrifices
 - The rise and fall of the Rajputs
 - Rajputs-the spirited heroes of Indian history
- Which of the following is opposite in meaning to the word 'proud'?
 - kind
 - humble
 - cowardly
 - courteous
- The expression 'tame their spirits' in the passage means
 - curb their enthusiasm
 - arouse their enthusiasm
 - suppress their ambitions
 - develop their courage
- According to the writer, the Rajputs occupy an honoured place in history because
 - they were fond of wars
 - they were proud of their war
 - they were jealous of people's honour
 - they lived and died upholding their self-respect

Passage 18

At fifteen, he quit home and lived by his wits to support his passion for painting. The lad assembled and hawked radio from door to door to keep the wolf at bay. At 17, he launched his first venture on a 60-sq. ft plot across the Jamuna in Delhi, manufacturing small indicator lights for geyser and other electrical appliances. Three years later, after an art gallery sold a painting of his for ₹ 2,300, he took on partners and floated a small electrical components company. Quicko Electricals still flourishes, but Mukesh Sanyal has chucked up his artistic ambitions. Now 31, Sanyal presides over a clutch of firms that last year sold television sets and home appliances and switch gears worth ₹ 15 crore. Says Sanyal: "My aim was never just to make money. I wanted to set up a company and take it to the top." He recalls his rough years when he bought fans from the market on credit and sold them to raise cash for raw materials so that he could meet an order he had bagged, and concludes: "If you have determination, you can do everything."

Word Meaning

Wits intelligence, understanding; **Lad** a boy or young man;

Hawked the act of selling goods or things for a living;

Venture a new activity, usually in business;

Chucked up quit, to give up; **Bagged** to gain, acquire.

- 1 In his early days, Mr Sanyal lived
 - (a) by assembling and selling radios from door to door
 - (b) by looking young wolves
 - (c) for the sake of painting only
 - (d) by quitting home
- 2 The phrase 'quit home' in the passage means
 - (a) forgot home
 - (b) came home
 - (c) left home
 - (d) worked at home
- 3 Mr. Mukesh Sanyal sold his painting for ₹ 2300 at the age of
 - (a) seventeen
 - (b) fifteen
 - (c) twenty
 - (d) thirty one
- 4 Mukesh Sanyal floated a small company
 - (a) three years after leaving home
 - (b) at the age-of 17
 - (c) at the age of 15
 - (d) at the age of 20

Passage 19

Andaman and Nicobar Islands consist of mainly two groups of islands, with distinctive features of the original residents —Negroid and Mongolese. It is strange to see how these two different groups migrated to these islands so far from the mainland—from India and Myanmar. The aboriginals found in these islands are the Jarawas, Sentinelese, Onges, Shompenites, mainly found in Andaman and the Nicobarese in Nicobar. Of these the Nicobarese in general, and some of the Onges, have accepted the so-called modern

civilisation and learned the use of modern tools and facilities.

They can be seen frequently in the Port Blair market. The aboriginals are looked after by the Anthropological Department of the Government, who make regular visits to their islands and supply them with food-and other necessities.

These aboriginals still do not know how to use a matchbox and prepare fire by rubbing two pieces of wood; they also do not know the use of cloth. If the people from the Anthropological Department offer them clothes, they use them only as turbans and not to wrap their bodies.

Word Meaning

Distinctive distinguishing, particular; **Aboriginals** the natives, original inhabitant.

- 1 The original residents migrated to the islands from
 - (a) India
 - (b) Myanmar
 - (c) Sri Lanka
 - (d) India and Myanmar
- 2 The Jarawas, Sentinelese, Onges and Shompenites are mainly found in
 - (a) Andaman
 - (b) Nicobar
 - (c) Andaman and Nicobar
 - (d) Port Blair
- 3 The aboriginals are looked after by
 - (a) the government of India
 - (b) the Anthropological Department of the Government
 - (c) the Tourism Department
 - (d) some NGOs
- 4 Find out a word which means 'to cover.'
 - (a) turbans
 - (b) cloth
 - (c) wrap
 - (d) prepare

Passage 20

There is a need to preserve our natural resources. The growth of population leads to an increase in the demand for food which means more space is required for cultivation. Trees in the forests are cut down to make way for more land for farms and buildings. Animals are decreasing in number due to widespread poaching and the depletion of their natural habitat. Many species are getting extinct or are on the verge of extinction. There is a need to conserve forests and the wildlife within them. Trees are the lifeline of society. Excessive felling of trees can lead to various problems like floods, droughts, climate change and lack of resources, therefore, for sustainable development that is development that fulfils the need of future generations, it is important to save forest and wildlife.

Word Meaning

Widespread found or distributed over a large area or number of people; **Poaching** illegal hunting or capturing of wild animals; **Verge** be very close; **Extinction** it is termination of an organism, usually a species.

1 What is the lifeline of society?

- (a) Mountains (b) Rivers
(c) Trees (d) Humans

2 Why is it important to save forests and wildlife?

- (a) To improve tourism
(b) To save the animals
(c) For maintaining nature's beauty
(d) For sustainable development

3 Why is more space needed for cultivation?

- (a) Decrease in population
(b) Development
(c) Decrease in food supply
(d) Growth of population

4 What has led to animal extinction?

- (a) Trade and commerce (b) Poaching
(c) Lack of awareness (d) Industrial development

Answers

Passage 1	1 (d)	2 (c)	3 (a)	4 (b)	Passage 11	1 (a)	2 (d)	3 (d)	4 (b)
Passage 2	1 (a)	2 (c)	3 (a)	4 (d)	Passage 12	1 (c)	2 (b)	3 (b)	4 (d)
Passage 3	1 (a)	2 (d)	3 (c)	4 (a)	Passage 13	1 (b)	2 (b)	3 (c)	4 (a)
Passage 4	1 (b)	2 (c)	3 (d)	4 (b)	Passage 14	1 (d)	2 (c)	3 (b)	4 (a)
Passage 5	1 (c)	2 (d)	3 (a)	4 (c)	Passage 15	1 (b)	2 (b)	3 (b)	4 (c)
Passage 6	1 (b)	2 (c)	3 (a)	4 (d)	Passage 16	1 (b)	2 (c)	3 (d)	4 (b)
Passage 7	1 (c)	2 (b)	3 (c)	4 (a)	Passage 17	1 (d)	2 (b)	3 (a)	4 (d)
Passage 8	1 (d)	2 (b)	3 (d)	4 (b)	Passage 18	1 (a)	2 (c)	3 (c)	4 (d)
Passage 9	1 (d)	2 (c)	3 (d)	4 (c)	Passage 19	1 (d)	2 (a)	3 (b)	4 (c)
Passage 10	1 (b)	2 (a)	3 (c)	4 (d)	Passage 20	1 (c)	2 (d)	3 (d)	4 (b)

Chapter 02 Noun

In the examination, sometimes one question of fill up or spotting error type has been asked from this chapter. This chapter deals with brief description of noun, its kind and important rules of noun that are helpful for spotting error type questions.

Noun is a word that is used as the name of a person, thing, place, idea and quality of a person.
e.g. Akshay, Delhi, Chair, Truth, Love, etc.

Kinds of Noun

1. **Proper Noun** It is the name of some particular person, thing or place.
e.g. India, Taj Mahal, Shiva, Yamuna, etc.

2. **Common Noun** It is a name given to every person or thing of the same class or kind.
e.g. Boy, girl, teacher, doctor, tree, books, etc.
3. **Collective Noun** It is the name of a collection or a group of persons or things treated as a whole.
e.g. Class, pack, crowd, army, team, etc.
4. **Material Noun** It is the name of a material or substance out of which things are made.
e.g. Iron, gold, copper, wheat, milk, water, etc.
5. **Abstract Noun** It is the name of a quality, idea, concept or a state. e.g.
 - (i) **Feeling** Love, fear, anger, respect, pleasure, etc.
 - (ii) **Quality** Strength, innocence, obedience, beauty, etc.
 - (iii) **State** Weariness, tiredness, mercy, birth, death, etc.

Classification of Nouns

- Nouns can be classified into singular and plural.
e.g.
Bus, Ox, Country, Leaf, etc. (Singular)
Buses, Oxen, Countries, Leaves, etc. (Plural)
- Nouns can be classified into masculine, feminine, common and neuter gender. e.g.
Tiger, Man, King, Lion, etc. (Masculine)
Tigress, Woman, Queen, Lioness, etc. (Feminine)
Child, Baby, Teacher, Servant, etc. (Common)
Copy, Book, Room, Paper etc. (Neuter)
- Nouns can be classified into countable and uncountable nouns. e.g.
Tables, Chairs, Branches, Socks, etc. (Countables)
Oxygen, Happiness, Honesty, Bravery, etc. (Uncountables)

Some Important Rules of Noun

Rule 1

Some uncountable nouns are used in the singular forms only. We should not use article *a/an* with such nouns. These nouns are-Scenery, poetry, furniture, advice, jewellery, information, language, knowledge, bread, stationary, employment, food, mischief, fuel, work, etc.

- e.g. (i) He has no *knowledge* of grammar.
(ii) This *luggage* is very *heavy*.
Here, uncountable nouns (knowledge and luggage) are used in singular forms.

Rule 2

Some countable nouns are generally used in the plural forms only, with plural verb. These nouns are - Assets, scissors, spectacles, tongs, trousers, breeches, odds, credentials, pants, clippers, belongings, earnings, riches, remains, spectacles, vegetables, wages, etc.

- e.g. (i) My *scissors* are not sharp.
(ii) His *credentials* are not trustworthy.
In the above examples, Plural verb 'are' is used with words 'Scissors' and 'Credentials'.

Rule 3

Some nouns that have the singular and plural forms alike, are expressed singular or plural only by the use of verb. Such nouns are : Deer, fish, crew, jury, counsel, aircraft, sheep, family, team, etc.

- e.g. (i) Our *team* is the best.
Our *team* are wearing their new uniform.
(ii) *Sheep* are economically useful.
A *sheep* is grazing in the field.
Here, 'team' and 'sheep' are used in both singular and plural forms.

Rule 4

Following nouns look like plural but have singular meaning and takes singular verb. Such nouns are – News, innings, politics, physics, mathematics, gymnastics, rickets, measles, etc.

- e.g. (i) The *measles* has broken out in the town.
(ii) This *news* is disappointing.
Here, singular verbs (has, is) are used in both the examples.

But some of the nouns look singular but always used in plural form with plural verb. Such nouns are :

- Cattle, poultry, people, majority, gentry, peasantry, artillery, infantry, clergy, police, children, etc.
e.g. (i) There *are* no *gentry* in the colony.
(ii) *Majority* *are* in favour of this proposal.
Here, plural verb (are) is used in both the examples.

Rule 5

Some nouns (pair, score, gross, hundred, dozen, thousand, million, pounds, etc.) have plural meaning but if a definite numeral adjective is used before them, they are not pluralised and retain in their singular form.

- e.g. (i) A *hundred mile* distance is not much for an aeroplane. (Not miles)
(ii) I gave him *two hundred* rupees. (Not hundreds)
Here, definite numeral adjective (hundred, two) are used.

Rules 6

We should use Apostrophe in following situations only.

- (i) **Living Things** e.g. Mohan's book, A cow's horn
(ii) **Thing Personified** e.g. Week's holiday, Earth's surface
(iii) **Space Time or Weight** e.g. A day's leave, A pound's weight
(iv) **Certain Dignified Objects** e.g. The court's orders, At duty's call, etc.

Rule 7

When two nouns depict a common possession, apostrophe is used after the second noun functioning as one unit, and expresses in singular form.

- e.g. (i) Sheela and Rohit's father *has* died. (Father of both)
Here, singular verb 'has' is used

But apostrophe is used after each noun functioning separately and expresses in plural form.

- e.g. (ii) Sheela's and Rohit's father *are* meeting today.
Here, plural verb 'are' is used.

Rule 8

Material nouns (silver, gold, iron, wood, etc.) and Abstract nouns (honesty, care, bravery, beauty, etc.) are not used in plural form.

- e.g. (i) *Care* of old *is* necessary.
(ii) Jewellery of *gold* *is* very costly.
Here, singular verb (is) is used in both the cases.

Exam Pattern Questions

Directions (Q. Nos. 1-15) *Choose the correct alternative for the following questions.*

- 1 We met at McDonalds at noon. The word 'McDonalds' is a noun.
(a) Common (b) Collective
(c) Abstract (d) Proper
- 2 Select the proper noun in the given sentence.
He could not remember who signed the Declaration of Independence.
(a) Remember (b) Signed
(c) Declaration of Independence (d) He
- 3 I study in Springdales School. Here, 'Springdales School' is a
(a) Proper noun (b) Material noun
(c) Common noun (d) Collective noun
- 4 Fill in the blank with the correct collective noun.
The were on the march for several days.
(a) officers (b) armies
(c) soldiers (d) cadets
- 5 The singular of 'Agenda' is....
(a) agenda (b) agend
(c) agendum (d) agendas
- 6 My family lives in different parts of India. Here, 'family' is
(a) Collective noun (b) Abstract noun
(c) Common noun (d) Proper noun
- 7 Select all the common nouns in the given sentence.
Rohan took his bike to the hills for a ride.
(a) Rohan, bike, his
(b) His, bike, hills
(c) Bike, hills, ride
(d) Rohan, hills, ride
- 8 Masons build houses. Here, 'masons' is a
(a) Collective noun (b) Abstract noun
(c) Common noun (d) Proper noun
- 9 Find the material noun in the given sentence.
Lomani Paris is my favourite perfume.
(a) Lomani Paris (b) favourite
(c) my (d) perfume
- 10 Fill in the blank with correct noun.
..... dresses are very cheap and comfortable.
(a) Cotton (b) Silk
(c) Jute (d) Nylon
- 11 What is the plural of 'Father-in-law'?
(a) Father-in-laws
(b) Fathers-in-law
(c) Fathers-ins-laws
(d) Father-ins-law
- 12 Select the noun which is used as it is in its plural form.
(a) Bottle (b) Deer
(c) Tiger (d) Shirt

- 13 Select the abstract noun in the given sentence.

It's a pleasure to meet you after five years.

- (a) you (b) meet
(c) five years (d) pleasure

- 14 What is the feminine gender of 'gander'?

- (a) goose (b) horse
(c) bull (d) sheep

- 15 Childhood is the best part of life. Here, 'childhood' is

.....

- (a) Collective noun (b) Common noun
(c) Proper noun (d) Abstract noun

Directions (Q. Nos. 16-30) *Find out which part of the sentence has an error.*

- 16 There was (a)/a bunch of parrots (b)/ roosting on the Mango tree. (c)/ No error (d)
- 17 The jewelleryes (a)/ displayed in the showroom (b)/ was stunning. (c)/ No error (d)
- 18 No news (a)/ is (b)/ good news. (c)/ No error (d)
- 19 My spectacle (a)/ are lying (b)/on the table. (c)/ No error (d)
- 20 In spite of the doctor's stern warning (a)/Latika continued taking (b)/sugars in her milk (c)/No error (d)
- 21 Professor Amartya Sen (a)/ is an alumunus of (b)/ Presidency College, Kolkata. (c)/ No error (d)
- 22 My two daughter-in-laws (a)/ work at (b)/ the government hospital in the city. (c)/ No error (d)
- 23 It is very difficult (a)/to chase a huge (b)/score in the second inning. (c)/No error (d)
- 24 Wordsworth wrote (a)/ poetries on(b)/ romantic themes. (c)/ No error (d)
- 25 Israel has made (a)/ a large investment in research (b)/ which has resulted in much progresses on the technical front. (c)/ No error (d)
- 26 They bought (a)/ a pen, an inkpot, a pencil (b)/and a soap from a store. (c)/ No error (d)
- 27 Rahul regards negotiating (a)/prices with customers as (b)/his special expertise. (c)/ No error (d)
- 28 He says that he (a)/has given you (b)/twenty-rupees note. (c)/ No error (d)
- 29 All the boys students are (a)/advised to attend (b)/the meeting positively. (c)/ No error (d)
- 30 You shall get (a)/all the informations (b)/if you read this book carefully. (c)/ No error (d)

Answers

1 (d)	2 (c)	3 (a)	4 (b)	5 (c)	6 (a)	7 (c)	8 (c)
9 (d)	10 (a)	11 (b)	12 (b)	13 (d)	14 (a)	15 (d)	16 (b)
17 (a)	18 (d)	19 (a)	20 (c)	21 (d)	22 (a)	23 (c)	24 (b)
25 (c)	26 (c)	27 (c)	28 (c)	29 (a)	30 (b)		

Explanations

16. (b) 'bunch' is not used for a group of parrots. It should be changed to 'pandemonium'. (As per text)
17. (a) There is no plural form of 'jewellery'. Hence, 'jewellery' should be used. (As per Rule 1)
18. (d) The given sentence is correct.
19. (a) 'Spectacle' should be replaced by 'spectacles' as 'spectacles' is used in its plural form only. (As per Rule 2)
20. (c) Use 'sugar' in place of 'sugars' as 'sugar' is uncountable noun and we cannot add 's' or 'es' to make it plural.
21. (d) The given sentence has no error.
22. (a) 'daughters-in-law' should be used as it is the correct plural form.
23. (c) Use 'innings' in place of 'inning' because this type of noun looks plural but used as singularly and takes singular verb. (As per Rule 4)
24. (b) 'poetry' should be used in place of 'poetries' as the plural of word 'poetry' is also 'poetry'.
25. (c) 'Progress' does not have a plural form, it is used as 'progress'.
26. (c) Remove 'a' before soap because 'soap' is used as uncountable noun in the sentence.
27. (c) Use of 'special' with 'expertise' is superfluous in the sentence.
28. (c) Use 'twenty rupee note' in place of 'twenty rupees note' because 'note' indicates the singular unit. (As per Rule 5)
29. (a) Replace 'boys' to 'boy' because in the sentence 'boy' is used as an adjective and we cannot make the plural of adjective.
30. (b) Use 'information' in place of 'informations' as information is an uncountable noun and we cannot make it plural by adding 's' or 'es'. (As per Rule 1)

Chapter

03

Pronoun

From this chapter, sometimes a fill up or spotting error type question, based on correct use of pronouns has been asked.

A pronoun is a word which is used instead of a noun to avoid repetition. He, she, you, they, herself, this, that, etc. are called pronouns.

e.g. My friend and her brother like to play chess. *They* play whenever *they* can.

In the above example, pronoun, 'they' is used instead of repeating the nouns 'friend' and 'brother'.

Kinds of Pronoun

1. Personal Pronoun

It refers to a specific person or object or group of things used in place of noun. e.g. He, I, she, you, it, they, me, who, him, whom, her, them, etc.

A personal pronoun describes a person or a thing in following ways

1st Person (the person who speaks) e.g. I, we.

2nd Person (the person who is spoken to) e.g. You.

3rd Person (a person or a thing which is spoken about).

e.g. She, he, they, it.

(i) This is *your* pen.

(ii) Everyman must love *his* country.

2. Reflexive Pronoun

These are the pronouns ending in '-self or-selves' and are used when subject and object of a sentence are the same.

Herself, yourself, himself, ourselves, itself, themselves are few reflexive pronouns.

e.g. (i) She was looking *herself* in the picture.

(ii) They considered *themselves* the happiest people of the world.

3. Reciprocal Pronoun

It is used when two or more nouns (subjects) are acting to each other or one another in some action.

Each other and *One another* are two reciprocal pronouns.

e.g. (i) Two girls pushed *each other*.

(ii) The people in the party greeted *one another*.

4. Relative Pronoun

These are those pronouns that join clauses or phrase to noun or pronoun e.g. *which*, *who*, *that*, *whom*, *whose*, etc.

(i) She is the girl, *who* sings songs.

(ii) It is the dog *which* barks at strangers.

5. Demonstrative Pronoun

It is the pronoun which points to a noun (a thing or things). e.g. that, this, those, these, such, etc.

In a short distance : This, these are used.

In a long distance : That, those are used.

- (i) *This* is a book. (ii) *That* is a car.

6. Indefinite Pronoun

A pronoun that refers to person or thing in a general way (not in a definite number) is called indefinite pronoun.

e.g. anybody, anyone, either, neither, nobody, someone, everyone, many, etc.

- (i) *Many* are called, but *few* are chosen.

- (ii) *Everyone* says she is beautiful inside and out.

7. Interrogative Pronoun

It is a pronoun that are used for asking questions or making queries.

e.g. Who, What, Whose, Whom, etc.

- (i) *Who* wrote the Ramayana?

- (ii) *What* did you say?

Importance Uses/Rules of Pronoun

Rule 1

Possessive pronoun (mine, yours, ours, theirs, hers) are not followed by noun as they already possess the noun used before it.

e.g. (i) This is my *pen* and that is *yours*.

- (ii) Their *teacher* is stricter than *ours*.

Here, '*pen*' and '*teacher*' are nouns.

Rule 2

If all the pronouns are in singular form then the second person pronoun should come before the third and the third person pronoun comes before the first,

i.e. 2nd person → 3rd person → 1st person

e.g. (i) *You, he* and *I* are the partners. (Not *I, he* and *you*)

- (ii) *You* and *I* can do this work.

Rule 3

If all the pronouns are in plural form and the sentence has some confessing sense, negative sense or committing a crime then 2, 3, 1 rule gets changed to 1, 2, 3 i.e.,

1st Person → 2nd Person → 3rd Person

e.g. (i) *We* and *you* cannot live together.

- (ii) *I, you* and *he* will be punished for the crime.

Rule 4

When two singular nouns are joined by 'and' and preceded by 'each or every', the pronoun used would be singular.

e.g. (i) Every *teacher* and every *boy* was in *his* room.

- (ii) Each *officer* and each *clerk* has joined *his* duty.

In the given examples, *teacher* and *boy*, '*officer* and *clerk*' are singular nouns.

Rule 5

A reflexive pronoun is used with the following verbs : absent, avail, apply, enjoy, pride, resign, acquit, revenge, exert, adopt, adjust, etc.

e.g. (i) I *revenged* myself upon her.

- (ii) He *availed* himself the opportunity.

But, with the verbs-keep, break, set, bath, make, stop, steal, keep, rest, qualify, hide, etc., reflexive pronoun is not used.

e.g. (i) He *kept* away from the function.

- (ii) Let us *rest* at the bed.

Rule 6

The component of the verb to be (is, am, are, was, were, will, shall), when it is expressed by a pronoun, should be in the nominative case.

e.g. (i) It will be *he* who is going to win.

- (ii) Was it *she* who did it for you?

Rule 7

'Either' is replaced by 'anyone' when we are talking about more than two persons or things. In same way 'neither' is also replaced by 'none'.

e.g. (i) I couldn't contact *anyone* of the three.

(Not 'either' of the three)

- (ii) *None* of his body parts is defective.

(Not 'neither' of his body)

Rule 8

In relative pronoun, 'whom' and 'who' are used only for persons and 'which' is used for animals and non-living things.

e.g. (i) The woman *who* is wearing saree is a doctor.

- (ii) The door, *which* is dark blue is very tight.

Rule 9

In relative pronoun, 'whose' is used to refer to persons only; 'of which' is used while referring to lifeless objects.

e.g. (i) I have a friend *whose* father is a doctor.

- (ii) I saw a watch, the dial *of which* was made of gold.

Rule 10

In interrogative pronouns, 'which' is used in place of 'who' and 'what', when we are referring to a choice between two or more than two things or persons.

e.g. (i) Of the two brothers, *which* is more intelligent?

- (ii) *Which* is your mother in the crowd?

Exam Pattern Questions

Directions (Q. Nos. 1-15) Fill in the blanks with suitable pronoun.

- 1 Abha is more beautiful and intelligent than
(a) I (b) me (c) myself (d) mine
- 2 Have you any objection to going to your house.
(a) mine (b) I (c) my (d) me
- 3 This is only thing I want.
(a) as (b) that (c) which (d) whose
- 4 I do not like of these two magazines.
(a) any (b) one (c) either (d) some
- 5 My views are quite different from
(a) you (b) your (c) yourself (d) yours
- 6 Come and have supper with us if you are not doing thing tonight.
(a) some (b) any (c) one (d) all
- 7 I was unable to say whether was a boy or not.
(a) it (b) he (c) she (d) that
- 8 Rakhi is the girl has failed.
(a) whom (b) who (c) which (d) whose
- 9 There was none did not enjoy the show.
(a) who (b) which (c) that (d) whom
- 10 You and she have cheated neighbour.
(a) our (b) their
(c) her (d) your
- 11 Hello Harish, Kavita and Praveen. Help.....to buy some food and I'll be with you in a moment.
(a) you (b) yours
(c) yourself (d) yourselves
- 12 The dog caught tail in the door when it closed.
(a) it's (b) itself
(c) its (d) it
- 13 When Sunanda won the lottery, she pinched to make sure she wasn't dreaming.
(a) hers (b) herself
(c) her (d) himself
- 14 Almost no friend of.... came to the funeral.
(a) her (b) myself
(c) theirs (d) them
- 15 It's partly finished. There is left.
(a) nothing (b) everything
(c) anything (d) something

Directions (Q. Nos. 16-25) Do as directed.

- 16 Fill in the blank with correct pronoun.
Jason and James took their bike with
(a) they (b) them
(c) their (d) us
- 17 Find the personal pronoun in the given sentence.
Jerry's mother asked him to clean the garden.
(a) Jerry (b) mother
(c) him (d) garden

- 18 Fill in the blank with correct pronoun.
Don't blame yourself for the mistake. is perfect.
(a) nobody (b) anybody
(c) everybody (d) somebody
- 19 Someone caught twelve fish. Here 'someone' is
(a) Personal pronoun (b) Possessive pronoun
(c) Reflexive pronoun (d) Indefinite pronoun
- 20 Fill in the blank with correct pronoun.
Someone must do about the human rights in that country or it will be too late.
(a) anything (b) everything
(c) something (d) nothing
- 21 Fill in the blank with correct interrogative pronoun.
What is the name of the man car you borrowed?
(a) whose (b) whom
(c) what (d) how
- 22 Select the distributive pronouns from the following options.
(a) Himself, Herself, Ourselves
(b) Every, Each, Both
(c) Anybody, Somebody, Nobody
(d) What, Which, Whom
- 23 None of the books are hers. They belong to Mary's sons.
Here, 'none' is
(a) Distributive pronoun (b) Personal pronoun
(c) Possessive pronoun (d) Reflexive pronoun
- 24 Select the distributive pronoun in the given sentence.
I enjoyed every minute of my stay in Africa.
(a) I (b) my stay (c) Africa (d) every
- 25 Fill in the blank with correct Possessive pronoun.
The computer quickly stores information on huge memory.
(a) yours (b) theirs (c) its (d) hers

Directions (Q. Nos. 26-35) Find out which part of the sentence has an error.

- 26 One should (a)/do your duty (b)/ honestly and sincerely. (c)
No error (d)
- 27 The movie who (a)/was really good (b)/came out last week.
(c)/No error (d)
- 28 You, he and I (a)/ have broken (b)/ the glass of the window.
(c)/No error (d)
- 29 Only (a)/ you and him (b) can do this work fast. (c) No error
(d)
- 30 The coach and mentor (a)/ of the team (b)/ blamed themselves for the defeat. (c)/ No error (d)
- 31 When I am (a)/ sick, it is (b)/ her who cures me. (c)/ No error (d).
- 32 Neither of the boys (a) has (b) / submitted their records. (c) /
No error (d)
- 33 She availed of (a)/ the (b)/ opportunity. (c)/ No error (d)
- 34 India and Pakistan (a)/ should cooperate with (b)/one another in this matter. (c)/ No error (d)

35. Anyone of these two students (a)/ can be sent to participate (b)/ in the drawing competition. (c)/No error (d)

Answers

1 (a)	2 (c)	3 (b)	4 (c)	5 (d)	6 (b)	7 (a)	8 (b)
9 (a)	10 (d)	11 (d)	12 (c)	13 (b)	14 (c)	15 (d)	16 (b)
17 (c)	18 (a)	19 (d)	20 (c)	21 (a)	22 (b)	23 (a)	24 (d)
25 (c)	26 (b)	27 (a)	28 (a)	29 (b)	30 (c)	31 (c)	32 (c)
33 (a)	34 (c)	35 (a)					

Explanations

26. (b) Replace 'your duty' by 'one's duty' because if 'one' is used as a subject in a sentence then we use one's or oneself as per the rule.
27. (a) The Relative pronoun 'who' should be replaced by pronoun 'which' as which is used for lifeless objects or things.
28. (a) Use the order of Pronoun 'I, you and he' as they admitted their fault. (As per Rule 3)
29. (b) Use 'he' in place of 'him' as subjective case of a pronoun will be used here. (As per text)
30. (c) Use 'himself' in place of 'themselves' as both the nouns (coach and mentor) refer to same person.
31. (c) Replace objective case 'her' by the nominative (subjective) case 'she' because the subjective case of pronoun is used when it is to be placed after 'to be'. (As per Rule 6)
32. (c) Pronoun 'neither' is used for a singular noun, so use 'his' in place of 'their'.
33. (a) Use reflexive pronoun 'herself' after 'availed'. (As per Rule 5)
34. (c) Use 'each other' in place of one another as reciprocal pronoun 'each other' is used for two nouns (subjects) while 'one another' is used for more than two nouns (subjects).
35. (a) Use 'either' in place of 'anyone' as either is used only for the persons or things while 'anyone' is used for more than two. (As per Rule 7)

Chapter 04

Forms of Verbs and Errors in the Use of Verbs

Generally 2-3 questions have been asked from this chapter which are based on fill ups with correct form of verbs or spotting errors. This chapter deals with forms of verb and errors in the use of verbs.

Verb is a word that tells about an action or state. The verb is the main word in a sentence. No sentence can be completed without a verb.

e.g. (i) Supriya *Painted* the wall.

(ii) The house is *being whitewashed*.

In the above examples, 'Painted' and 'being whitewashed' are verbs.

Types of Verbs

There are mainly two types of verbs i.e. Main verb and Helping verb.

Main Verb

Main verbs or action verbs are used to express an action (sings, reads, writes, etc.) in a sentence.

e.g. (i) The Sun *shines*.

(ii) The monkey *jumps*.

Main verbs are also of two types

1. **Transitive Verbs** These are the verbs which need an object to complete the sentence. e.g.

(i) Never *eat* any fruit without cleaning.

(ii) She *writes* a letter on every Sunday.

In the above examples, the verb 'eat' and 'writes' require an object to make the sentence complete.

2. **Intransitive Verbs** These are the verbs which do not need an object to make the sentence complete. e.g.

(i) They *jumped*.

(ii) The dog *ran*.

In the above examples, the verb 'jumped' and 'ran' do not require an object and can alone make the sentence complete.

Helping Verb

Helping verbs are used before the main verb to convey additional information of possibility (may, can, could, etc.) or time (was, is, has, etc). e.g.

(i) We *are* learning about the thesis.

(ii) You *should* complete the work by tomorrow.

In the above examples, 'are' and 'should' are used as helping verbs and 'learning' and 'complete' are used as main verb.

Helping verbs can be divided in Primary and Modal Auxiliary Verbs.

- Primary Auxiliary Verbs** These verbs can be further divided as following
Verbs 'to be' –Is/Am/Are/Was/Were/Being
Verbs 'to do' –Do/Does/Did/Doing/Done
Verbs 'to have' –Has/Have/Had/Having
- Modal Auxiliary Verbs** Some common modal auxiliaries are : May, Might, Can, Could, Will, Shall, Should, etc.

Forms of Verbs

Basically, there are three forms of verbs, i.e.

- Base Form (V₁) (Present Tense)
- Past Form (V₂)
- Past Participle Form (V₃) (-ed)

Here, some important points are given regarding uses of forms of verbs

- First form of verb is used with the following words : Always, daily, every, usually and generally.
- If habitual facts or Natural facts are used in a sentence, then also first form of verb is used.
- With the words : last, yesterday, ago, second form of verb will be used.
- If the sentence is in interrogative or negative form then 'did' is used. Only first form of verb is used with 'did'.
- Third form of verb is used in Present, Past or Future Perfect tenses.

Following is the list of some forms of Verbs

Present Tense (V ₁)	Past Tense (V ₂)	Past Participle (V ₃)
Act	Acted	Acted
Add	Added	Added
Adore	Adored	Adored
Adorn	Adorned	Adorned
Attract	Attracted	Attracted
Be	Was/Were	Been
Become	Became	Became
Begin	Began	Begun
Bend	Bent	Bent
Bite	Bit	Bitten
Blow	Blew	Blown
Boil	Boiled	Boiled
Bore	Bored	Bored
Borrow	Borrowed	Borrowed
Breed	Bred	Bred
Bring	Brought	Brought
Build	Built	Built
Burn	Burnt	Burnt
Call	Called	Called

Present Tense (V ₁)	Past Tense (V ₂)	Past Participle (V ₃)
Cancel	Cancelled	Cancelled
Carve	Carved	Carved
Catch	Caught	Caught
Choose	Chose	Chosen
Do	Did	Done
Draw	Drew	Drawn
Dream	Dreamed/Dreamt	Dreamed/Dreamt
Dress	Dressed	Dressed
Earn	Earned	Earned
Eat	Ate	Eaten
Fall	Fell	Fallen
Feed	Fed	Fed
Fly	Flew	Flown
Grow	Grew	Grown
Keep	Kept	Kept
Lie	Lay	Lain
Make	Made	Made
Sing	Sang	Sung
Sink	Sank	Sunk
Speak	Spoke	Spoken
Spring	Sprang	Sprung
Take	Took	Taken
Write	Wrote	Written

Errors/Rules in the Use of Verbs

Rule 1

Auxiliary verbs 'is/am/are' are used in Present tense while 'was/were' are used in Past tense.

'Am' is used with 'I' only, while 'is' is used with other singulars. 'Are/Were' are used with plurals and 'was' is used with singulars in Past tense. e.g.

- I am* to go to USA next month.
- She was* angry.

Rule 2

A plural noun denoting quantity or measurements of time, money, distance and weight as a unit, takes singular verb. e.g.

- Five *kilograms* is not a heavy weight.
- Six *miles* is not a long distance.
In the above examples, plural nouns (kilograms, miles) takes singular verb (is).

Rule 3

'Each' and 'Every' takes singular noun and singular verb. e.g.

- Each* boy and girl *has* to attend the function.
- Every* man, woman and child *was* happy to meet with the President.
In the above examples, 'Each' and 'Every' is followed by singular nouns (boy, girl, man, woman, child) and singular verb (has, was).

Rule 4

One of, Either of, Neither of, None of; always take plural noun and singular verb. e.g.

(i) *None of those reasons is valid.*

(ii) *Neither of the girls is here.*

Here, plural nouns (reasons, girls) takes singular verb (is) .

Rule 5

When two nouns are joined together by-besides, as well as, and not, in addition to, like, with, together with accompanied by, then the verb is used according to the first noun. e.g.

(i) *Ram and not his friends was present there.*

Here, Ram (singular) is the former noun, so the verb (is) used 'is' in singular form.

(ii) *Four questions in addition to the first question have to be answered.*

Here, 'Four questions' (Plural) is the former noun so the verb 'were' is used in plural form.

Rule 6

Singular verb and singular noun are used with 'another' while plural verb and plural noun are used with 'other'.

e.g. (i) *There is another bag in the cupboard.*

(ii) *There are other bags in the cupboard.*

Rule 7

If a countable noun follows 'all' or 'some' in a sentence, then the noun as well as the verb used will be in plural form. e.g.

(i) *All the tigers are wild animals.*

(ii) *Some animals are faithful.*

In the above examples, 'All' and 'Some' is followed by plural nouns (tigers, animals) also denote plural form, so verb 'are' is used in these sentences.

But if the noun following is uncountable, the verb used will be singular. e.g.

(i) *All the money was taken away by the thief.*

(ii) *Some milk is needed.*

Rule 8

Following are some verbs that are not used in '-ing' forms. Such verbs are See, Taste, Smell, Here, Please, Think, Love, Know, Certain, Belong, Like, Dislike, Want, Desire, etc.

e.g. (i) *He tastes the dish.* (Not tasting)

(ii) *My father loves my younger brother.* (Not loving)

Exam Pattern Questions

Directions (Q. Nos. 1-25) *Fill in the blanks with correct form of verbs.*

- 1 She's been to music all day.
(a) listening (b) listen (c) listened (d) listens
- 2 When was the last time you a new shirt.
(a) buys (b) buying (c) buy (d) bought
- 3 Do you still tennis on Sunday.
(a) play (b) plays (c) played (d) playing
- 4 Simon's living here for 6 months.
(a) are (b) been (c) is (d) was
- 5 Being a philanthropist, he this institution.
(a) founded (b) was founded
(c) find (d) found
- 6 When calamity the family, he faced it boldly.
(a) fell (b) fall (c) be fell (d) fallen
- 7 The bridge up by the terrorists last week.
(a) blowed (b) was blowed
(c) was blown (d) blew over
- 8 Corruption has tremendous on our political system.
(a) effect (b) affect (c) affected (d) effected
- 9 The noise in the bedroom me up.
(a) awoke (b) awake
(c) woke (d) awaken
- 10 What is he doing to his car now? I think he it.
(a) has polished (b) was polishing
(c) is polishing (d) has been polishing
- 11 Ten miles a long way to walk.
(a) are (b) is
(c) are being (d) None of these
- 12 We the matter yesterday.
(a) discussed about (b) discussed of
(c) discussed (d) discussed well
- 13 She was walking along the road when she him.
(a) met (b) have met
(c) was meeting (d) meet
- 14 Roshan would have failed if he not studied throughout the year.
(a) has (b) had (c) will have (d) have
- 15 By the time the doctor arrived the patient
(a) has died (b) had died
(c) died (d) will die
- 16 I don't have ever on that sofa.
(a) sat (b) sit
(c) sitting (d) sitted
- 17 The train before we reach the station.
(a) left (b) has left
(c) had left (d) will have left
- 18 To his horror, he found that he for nearly 24 hours.
(a) sleeps (b) slept
(c) was sleeping (d) had slept
- 19 This pen me ₹ 20.
(a) costed (b) costs
(c) cost (d) will cost

- 20 I for a pen to write this composition.
 (a) looked (b) look
 (c) looks (d) am looking
- 21 What time does he dinner?
 (a) ate (b) eats (c) eaten (d) eat
- 22 What you doing last night?
 (a) was (b) is (c) were (d) are
- 23 They as fast as they could, but they missed the bus.
 (a) ran (b) running (c) runs (d) run
- 24 My family is lunch now.
 (a) have (b) had (c) having (d) has
- 25 She didn't want to me at the station.
 (a) meet (b) met (c) meets (d) meeting

Directions (Q. Nos. 26-35) *In the given sentences, an error has been underlined, choose the correct word from the options given to replace the underlined word.*

- 26 She buys a new dress last week.
 (a) was buying (b) is buying
 (c) bought (d) buy
- 27 Varun prefer milk to tea.
 (a) prefers (b) has preferred
 (c) preferring (d) No improvement
- 28 My mother is fond of travel.
 (a) travelled (b) travelling
 (c) has travel (d) travels
- 29 The Earth revolved around the Sun.
 (a) was revolving (b) is revolving
 (c) had revolved (d) revolves
- 30 Four miles are not a long distance for a person like you.
 (a) had (b) is
 (c) were (d) No improvement
- 31 The traders suddenly rise the prices of crude oil last year.
 (a) rose (b) raised (c) raise (d) risen
- 32 In old age neither of his two sons are prepared to come to help him.
 (a) is prepared (b) were prepared
 (c) is preparing (d) No improvement
- 33 In the morning, I found it was raining the whole night.
 (a) is raining (b) has been raining
 (c) had been raining (d) No improvement
- 34 Manav has broken a cup last evening.
 (a) break (b) broke
 (c) broken (d) No improvement
- 35 One is bounded in duty to help the ageing parents.
 (a) bound (b) binding
 (c) bind (d) No improvement
- 36 Various species of birds (a)/ can be saw during (b)/ the monsoon season in northern part of India. (c)/ No error (d)
- 37 I was got defeated (a)/ by my best friend (b)/ in the online typing speed test. (c)/ No error (d)
- 38 Three people were arrested (a)/ by the police but (b)/ one released. (c)/ No error (d)
- 39 The coach (a)/ alongwith the players (b)/ is watching a movie. (c)/ No error (d)
- 40 One hundred and eight thousand (a)/ miles are (b)/ the speed of light. (c)/ No error (d)
- 41 Every participant (a)/ in the meeting (b)/ are required to make this script. (c)/ No error (d)
- 42 Neither of the teams (a)/ are sensible enough (b)/ to do this task. (c)/ No error (d)
- 43 All the boys (a)/ has been (b)/ selected. (c)/ No error (d)
- 44 The Chairman as well as (a)/ six other members of (b)/ the committee were present. (c)/ No error (d)

Answers

1 (a)	2 (d)	3 (a)	4 (b)	5 (a)	6 (c)	7 (c)	8 (a)
9 (c)	10 (c)	11 (b)	12 (c)	13 (a)	14 (b)	15 (b)	16 (a)
17 (d)	18 (d)	19 (c)	20 (d)	21 (d)	22 (c)	23 (a)	24 (c)
25 (a)	26 (c)	27 (a)	28 (b)	29 (d)	30 (b)	31 (b)	32 (a)
33 (c)	34 (b)	35 (a)	36 (b)	37 (b)	38 (a)	39 (c)	40 (c)
41 (b)	42 (c)	43 (b)	44 (b)	45 (c)			

Explanations

36. (b) When 'did not' is used in a sentence, the verb must be in its base form. So, the verb 'begun' should be replaced by 'begin'.
(As per form of verb)
37. (b) The given sentence is of passive voice, so, third form of verb should be used in the sentence. Thus, replace 'saw' with 'seen'.
(As per forms of verb)
38. (a) We cannot use two verbs consecutively after the auxiliary verb. So, we can write part (a) as 'I got defeated' or 'I was defeated'.
(As per text)
39. (c) The auxiliary verb 'was' is missing in the sentence.
(As per text)
40. (d) No error.
41. (b) Use 'is' in place of 'are' as distance, money, time etc. when used as a unit takes singular verb.
(As per Rule 2)
42. (c) Helping verb 'are' will be replaced by 'is' as 'every' takes singular noun and singular verb.
(As per Rule 3)
43. (b) Verb should be used singular after neither of, either of, none of, one of etc.
(As per Rule 4)
44. (b) 'All' and 'Some' will be followed by plural verb and plural noun. Hence, 'has' will be replaced by 'have' to make the sentence correct.
(As per Rule 7)
45. (c) Change 'were' into 'was' because the verb should be used according to former subject (the chairman) which is singular, so, the verb should also be used in singular form.
(As per Rule 5)

Directions (Q. Nos. 36-45) *In the following questions, find out the part which has an error.*

- 36 The students were nervous (a)/ as the exam did not begun (b)/ on time. (c)/ No error (d)

Chapter 05

Subject-Verb Concord

In group Y Examination, one fill up type or spotting error type question, can be asked from this chapter. This chapter studies about the agreement between the subject and its verb.

Subject-verb concord or agreement simply means that the subject of a sentence must agree with the verb of the sentence. Thus, if a subject of the sentence is singular, its verb must also be singular and if a subject is plural, its verb must also be plural.

e.g. (i) *Ram plays* football.

Here, 'Ram' is the singular subject so verb (plays) used is also in singular form.

(ii) *We are* swimming.

Here, the subject (we) is in the plural form, so plural verb (are) is used.

Some singular/plural subjects with their singular/plural verbs are given as follows

Singular Subjects	Singular Verbs	Plural Subjects	Plural Verbs
I	Am	We	Are
He/She	Was	You	Were
It	Has	They	Have

Rules of Subject-Verb Concord

Rule 1

The plural verb is used in the sentences that express some imaginary wish or assumption.

e.g. (i) I wish I *were* the Prime Minister.

(ii) She ordered as if she *were* my mother.

In the above examples, the verb 'were' used in both cases, is in plural form.

Rule 2

When two or more independent singular subjects are connected by 'and', the verb must be used in plural form.

e.g. (i) He and I *are* well.

(ii) Deepak and Kapil *are* brothers.

In the given examples, Plural verb 'are' is used with two singular subjects ('He and I', 'Deepak and Kapil').

Rule 3

The verb used after 'there' will be singular or plural depends upon the subject it follows. If the subject is singular, use singular verb and if it is plural, use plural verb.

e.g. (i) There *is* a girl in the room.

(ii) There *were* several ministers in the party.

In the given example (i) The subject 'girl' is singular and in the example (ii) The subject 'ministers' is plural and the verb are also used according to subjects.

Rule 4

When two or more subjects are joined by 'as well as, like, unlike, besides, no less than, nothing but, etc', the verb is used according to the first subject. e.g.

(i) *The Director as well as the dancers was* honoured by the public.

(ii) *My mother no less than my father is* strict.

In the above example, first subject of both the sentences (the director, my mother) are singular in form, so the verb (was, is) also used in singular form.

Rule 5

If 'no' is used before each of the two singular nouns in a sentence, the verb should be used in singular form.

e.g. (i) No boy and no girl *was* present in the party.

(ii) No man and no woman *was* swimming at the time.

In the above examples, 'No' is used before each noun, so the verb used is also in singular form.

Rule 6

When two or more subjects are connected by 'not only-but also, neither-nor, either-or, or none-but', the verb is used according to the nearest subject.

e.g. (i) One or two books *are* needed.

(ii) None but *the leaders are* responsible for this state of affairs.

In the above examples, the nearest subject (two books, the leaders) are plural in form, so the verb used is also in plural form.

Rule 7

'A number of' is followed by plural noun and plural verb, while 'the number of' is followed by plural noun but singular verb.

e.g. (i) A number of girls *have* participated in the competition.

(ii) The number of boys in adventurous sports *has* gone up.

In the example (i), plural noun (girls) is followed by plural verb (have) but, in the example (ii), plural noun (boys) is followed by singular verb (has).

Rule 8

When two nouns almost identical in meaning used in a sentence, just for the sake of emphasis, we use singular verb.

e.g. (i) The *scheme and plan* of my life differs from that of yours.

(ii) The *benefit and advantage* from this business is enormous.

Here, 'scheme and plan' and 'benefit and advantage' are two identical nouns, so, the verbs used is in singular form.

Rule 9

When two nouns are not identical (similar, alike) in meaning but part of the same idea and used as a phrase, the verb used is also in singular form.

e.g. (i) Bread and Butter *is* a healthy breakfast.

(ii) Slow and steady *wins* the race.

Here, 'Bread and Butter,' 'Slow and Steady' are not identical in meaning but part of same idea, so, verbs are used in singular form.

Rule 10

If phrase; a number of/lots of/a lot of/plenty of/a quarter of/part of/per cent of/proportion of/none of/remainder of/two third of/most of/some of/majority of/much of/many of/a good deal of/a great deal of/heaps of, etc. is followed by a plural countable noun, then the verb used will also be plural.

e.g. (i) Most of the persons *are* dishonest.

(ii) Plenty of chairs *have* been purchased.

In the above examples, plural verbs (*are, have*) are used with plural countable nouns (*Persons, Chairs*).

But if the noun followed is uncountable, the verb used will be singular.

e.g. (i) Most of the sugar *was* wet with water.

(ii) Lot of milk *was* sent there.

Here, in both conditions, singular verb (*was*) is used with uncountable nouns (*sugar, milk*).

Rule 11

The relative pronouns (who, whom, which and that) are either singular or plural depending on the words they refer to. If the word referred is singular, verb will also be singular, otherwise plural.

e.g. (i) It is *he* who *is* responsible for this loss.

(ii) The *book* that *is* here is mine.

Rule 12

Following indefinite words can have singular or plural verb. If the subject is singular, verb will also be singular, if the subject is plural, verb will also be plural.

Such commonly used words are : all, any, enough, most, some.

e.g. (i) All *she* wants *is* to be happy.

(ii) Any *friend* of yours *is* a friend of mine.

Rule 13

If in a sentence; infinitive, gerund, phrase, or a clause, functions as subject, then verb is used in singular form.

e.g. (i) *Swimming* *is* a good exercise.

Here, 'Swimming' is used as gerund with singular verb (*is*).

(ii) *To Swim* *is* good for you.

'To Swim' is used as infinitive with singular verb (*is*).

Rule 14

When two nouns refer to the same person or thing, the verb used must be singular.

e.g. (i) The poet and painter *has* died.

(ii) The director and producer of the film *has* arrived.

But if definite article 'the' has been used before both the subjects and joined by 'and', this means the subjects are two different persons and will take plural verb. e.g.

(i) *The* musician and *the* singer *have* died in a car accident.

(ii) *The* poet and *the* writer *have* been awarded by the President.

Exam Pattern Questions

Directions (Q. Nos. 1-30) Choose the most appropriate alternative to make a proper sentence.

1 The owner of these books

- (a) have gone (b) were gone
(c) has gone (d) is gone

2 Ten books of this library

- (a) is missing (b) are missing
(c) has been missing (d) has missed

3 Either he or you

- (a) has to go (b) have to go
(c) is to go (d) was going

4 The father with his sons

- (a) was sleeping (b) have slept
(c) are sleeping (d) sleep

5 He and I like them.

- (a) does not (b) has not (c) do not (d) cannot

6 The news by him.

- (a) were brought (b) have brought
(c) has brought (d) was brought

7 Neither he nor I

- (a) is going (b) am going
(c) were going (d) has gone

- 8 The frogs at the cottage very loudly.
(a) croaks (b) croak
(c) croaked (d) croaking
- 9 Many a girl
(a) has seen this movie (b) have seen this movie
(c) see this movie (d) are going to see this movie
- 10 There a cow and a horse in the field.
(a) was (b) is (c) were (d) will
- 11 Your friend too much.
(a) talk (b) talks
(c) talking (d) None of these
- 12 The man with the roses like your brother.
(a) look (b) looks
(c) looking (d) None of these
- 13 The women in the pool well.
(a) swimming (b) swims
(c) swim (d) had swimming
- 14 Basant a cab.
(a) drives (b) drive
(c) driving (d) were driving
- 15 The football players five kilometres every day.
(a) run (b) running
(c) was running (d) were run
- 16 That red-haired lady in the fur hat across the street.
(a) live (b) lives (c) living (d) were lived
- 17 Each of the girls good on stage.
(a) look (b) looks (c) looking (d) are looking
- 18 Everybody asked to remain quiet.
(a) are (b) is (c) were (d) was
- 19 Neither of the men here yet.
(a) is (b) were (c) are (d) was
- 20 Some members of the faculty present.
(a) is (b) are (c) was (d) has
- 21 Nobody in the class the answer.
(a) have (b) has (c) has been (d) have been
- 22 each of the girls ready to leave?
(a) Are (b) Was (c) Is (d) Were
- 23 Each of the girls all the regulations.
(a) observe (b) observes (c) observing (d) None of these
- 24 Each of these options its own benefit.
(a) has (b) have (c) have been (d) has been
- 25 The level of drunkenness for person to person for the same amount of wine.
(a) vary (b) varies (c) varying (d) None of these
- 26 Mr Sanyal's family members going to USA next week.
(a) are (b) is (c) was (d) has
- 27 Many of my friends working in the private sector.
(a) is (b) are (c) was (d) had
- 28 A large number of people in the earthquake in London.
(a) dies (b) die (c) died (d) dying
- 29 The decoration of Mayank's home it look impressive.
(a) make (b) makes
(c) making (d) are making
- 30 Nobody come for the party yet we're still waiting.
(a) has (b) have
(c) was (d) is

Directions (Q. Nos. 31-40) Find out which part of the sentence has an error. If a sentence is free from error then choose option (d) as your answer.

- 31 The safety of (a)/my brothers and (b)/sisters are in danger. (c)/No error (d)
- 32 There is only (a)/a few companies that can (b)/ handle projects of this magnitude. (c)/ No error (d)
- 33 Neither the woman (a)/nor the children (b)/was admitted. (c)/No error (d).
- 34 Do you know that it was(a)/ I who has done (b)/ this piece of beautiful work? (c)/ No error (d)
- 35 Curry and Rice are (a)/the favourite food (b)/of the Punjabis. (c)/No error (d)
- 36 Much of your success (a)/and prosperity depend (b)/on your own efforts. (c)/No error (d)
- 37 The branch manager (a)/ and the area officer (b)/ is on leave today. (c)/ No error (d)
- 38 The Prime Minister (a)/ as well as his ministers are (b)/ busy in campaigning for elections. (c)/ No error (d)
- 39 Rohit and Suneel (a)/ has played very well (b)/ in the recent cricket tournament. (c)/ No error (d)
- 40 The number of accidents are (a)/ increasing day by day (b)/ on the Delhi Metro Route. (c)/ No error (d)

Answers

1 (c)	2 (b)	3 (b)	4 (a)	5 (c)	6 (d)	7 (b)	8 (b)
9 (a)	10 (c)	11 (b)	12 (b)	13 (c)	14 (a)	15 (a)	16 (b)
17 (b)	18 (d)	19 (a)	20 (b)	21 (b)	22 (c)	23 (b)	24 (a)
25 (b)	26 (a)	27 (b)	28 (c)	29 (b)	30 (a)	31 (c)	32 (a)
33 (c)	34 (b)	35 (a)	36 (b)	37 (c)	38 (b)	39 (b)	40 (a)

Explanations

31. (c) Change 'are' into 'is', as the subject 'safety' is singular.
32. (a) Use 'are' in place of 'is' as here verb must be used according to plural subject (a few companies). (as per Rule 3)
33. (c) When two subjects are connected by neither-nor, the verb should be used according to the closest subject (children). So, here, 'were' should be used in place of 'was'. (As per Rule 6)
34. (b) Use 'have' in place of 'has' because the subject in the given sentence is 'I' and with 'I', 'have' is correct usage.

35. (a) When two nouns of the same idea (Curry and Rice) used as a phrase, the verb should be used singular. Hence, change 'are' into 'is'. (As per Rule 9)
36. (b) Change 'depend' into 'depends' because the subjects 'success' and 'prosperity' are identical in meaning, so verb must be used in singular form. (As per Rule 8)
37. (c) Here, plural verb 'are' must be used. Article 'the' is used before both nouns and denote different peoples. In such case verb should be used in plural form. (As per Rule 14)
38. (b) Here, the two subjects are joined by 'as well as' and the first subject (Prime Minister) is singular, so verb must be in singular form. Hence, 'is' should be used in place of 'are'? (As per Rule 4)
39. (b) When two singular subjects or nouns joined by 'and', the verb should be kept as plural. So, it should be 'have' in place of 'has'. (As per Rule 2)
40. (a) 'The number of ' is always followed by a plural noun but a singular verb. So, 'are' should be replaced by 'is'. (As per Rule 7)

Chapter 06 Modals

In the examination, mostly fill up type questions have been asked from this topic. This chapter deals with modals (may, might, can, could etc.) and how to use modals correctly in a sentence.

A verb used to express the mode or attitude of a speaker is called modal auxiliary or modals. e.g.

- (i) You *should* go for a morning walk regularly.
(ii) They *must* attend tomorrow's meeting.

Some common modals are : may, might, can, could, will, shall, would, should, must, etc.

Uses of Modals

May

'May' is used

- To show or ask for permission.
e.g. (i) *May* I go now?
(ii) *May* I borrow two books from the library?
- For making informal request.
e.g. (i) *May* I have the salt please?
(ii) *May* I borrow your pen?
- For expressing good wishes, desire, wish or prayer.
e.g. (i) *May* you live long!
(ii) *May* you enjoy marital happiness!
- For expressing purpose.
e.g. (i) She works hard so that she *may* pass.
(ii) We eat so that we *may* live.

Might

'Might' is used

- For making request that expresses more politeness, hesitation or lack of confidence of the speaker.

- e.g. (i) *Might* I borrow your golden necklace?
(ii) *Might* I talk to the PM?

- When something did not happen but it was possible then 'might' is used in perfect tense.
e.g. (i) You *might* have invited me to your wedding.
(ii) She *might* have come, if we asked her.
- In conditional sentences, when the expression is introduced by a verb in the past tense.
e.g. (i) If you invited her, she *might* attend the party.
(ii) If he came, he *might* sing a song.

May/Might + Have

'May/Might + Have' is used

- To express possibility/ desirability relating to the past action.
e.g. (i) He *may/might* have left yesterday. (*It is possible he left*)
(ii) He *might* have failed. (*It is possible he failed*)

Can

'Can' is used

- To express physical or mental ability/ capacity/capability.
e.g. (i) I *can* solve this puzzle.
(ii) *Can* you lift this suitcase?
- To take permission or giving an order.
e.g. (i) Yes, you *can* go now.
(ii) You *can* take my book.
- In questions with 'Wh' words to denote puzzleness/impatience/anger of the speaker.
e.g. (i) What *can* he do?
(ii) How *can* she resign?
- To show the circumstantial possibility.
e.g. (i) You *can* ski on the hills now-a-days.
(ii) You *can* go there by road now.

Could

'Could' is used

- For making a request more polite and courteous.
 - e.g. (i) *Could* you lend me your car for a day?
 - (ii) *Could* you please send me an application form?
- Use of 'could' refers past ability.
 - e.g. (i) When I was young, I *could* climb any tree.
 - (ii) When Ram was young, he *could* swim across this river.
- To express general permission in the past.
 - e.g. (i) On Sundays, we *could* (were allowed to) stay up late.
 - (ii) On holidays, I *could* use company's car.
- In unreal conditions.
 - e.g. (i) If I had ten crores, I *could* build a temple.
 - (ii) If I had wings, I *could* fly to Himalayas.

Could + Have

'Could + Have' is used

For past ability while indicating that the action did not take place.

- e.g. (i) I *could have* revealed the secret. *(But I did not)*
- (ii) You *could have* borrowed money. *(But you did not)*

Should

'Should' is used to express

- **Duty/Obligation**
 - e.g. (i) You *should* stand by your brother.
 - (ii) Promises *should* be kept.
- **Future in the past**
 - e.g. (i) I told him that I *should* go there.
 - (ii) Did I not tell you that I *should* qualify?
- **Condition**
 - e.g. Should you work hard, you will get success. *(Should' is used in the sense of 'if')*
- **Should + Have** This form is used to express obligation in the past. It may imply the non-performance of the action.
 - e.g. (i) You *should have* stood by your brother.
 - (ii) He *should have* left a message.

Must

'Must' is used to express

- **Necessity or Obligation** (In place of 'should')
 - e.g. (i) You *must* follow instructions.
 - (ii) I *must* leave now.
- **Order of the Speaker**
 - e.g. (i) You *must* not leave now.
 - (ii) They *must* not play here.

- **Strong Possibility** (in place of 'may')

- e.g. (i) It is ten. The teacher *must* be in the class.
- (ii) She *must* be working in the office now.

- **Deduction, Inference**

- e.g. (i) He has a big house. He *must* be rich.
- (ii) She reads a lot. She *must* be learned.

- **Must + Have** This form is used for a past action or situation indicating non-performance of action.

- e.g. (i) You *must have* followed instructions.
- (ii) You *must have* left them.

Ought

'Ought' is used to *express*

- **Duty or Moral Obligation** It is normally used for 'should' and 'must', when there is strong sense of moral duty, advice or indication of correct action.

- e.g. (i) You *ought to* serve your motherland.
- (ii) You *ought not to* take fatty food.

- **Ought to + Have** This construction is used in relation to past action of duty that was not fulfilled or an action that was neglected in the past.

- e.g. (i) He *ought to have* been present at the wedding of his friend.
- (ii) He *ought not to have* smoked in the bus.

Used to

'Used to' is used

- To denote habitual action or the past routine of the subject.
 - e.g. (i) He *used to* go to Delhi by car.
 - (ii) He *used to* smoke.
- To denote discontinued action.
 - e.g. (i) He *used to* play hockey. *(Now he has stopped)*
 - (ii) She *used to* work in office before marriage. *(Not now)*
- 'Used to' is also used as an Adjective (be used to). It is equal to 'accustomed to' as.
 - (i) He is *used to* getting up early.
 - (ii) I was *used to* driving through crowded streets.

Would

- 'Would' is used in the following cases

- (i) *Would* you please help my son? *(Polite request)*
- (ii) She told me that she *would* give me money. *(Future in the past)*
- (iii) I *would/should* like to play now. *(Wish)*