

PART—A

Directions (Q. Nos. 1 to 5) : Given below are some idioms/phrases followed by four alternatives to each. Select the most appropriate alternative which gives the correct meaning of the idiom/phrase and mark your response on the Answer Sheet accordingly.

1. 'Nuts and bolts'

- (a) To complete the first step in a process
- (b) To get down to practical details
- (c) To receive harm or punishment for one's actions
- (d) To irritate people and make them go away

2. 'Hat in hand'

- (a) With humility
- (b) Easy to use
- (c) Available for anyone
- (d) To marry someone

3. 'Straight from the horse's mouth'

- (a) Ready and eager to engage in an activity
- (b) Significantly disturbing business
- (c) Information from reliable and authoritative source
- (d) Sudden feelings of fear and embarrassment

4. 'Bite off more than you can chew'

- (a) To suddenly wrap out of conversation
- (b) To try to do more than you can manage
- (c) To do something in the easiest or cheapest way
- (d) To exaggerate something wildly

5. 'A piece of cake'

- (a) Something difficult to extract from the original
- (b) Something very difficult to understand
- (c) Something that appears very inviting
- (d) Something very easy to accomplish

Directions (Q. Nos. 6 to 10) : Each of the following sentences has word/words underlined. Read the sentence carefully and identify which word class the underlined word/words belongs/belong to. Indicate your response on the Answer Sheet accordingly.

6. He claimed his half share of the booty.

- (a) Adverb
- (b) Adjective
- (c) Noun
- (d) Determiner

7. Swimming is a healthy exercise.

- (a) Verb
- (b) Gerund
- (c) Adjective
- (d) Adverb

8. I have told you now and again that you must not read such trash.

- (a) Conjunction
- (b) Preposition
- (c) Noun
- (d) Adverb

9. He succeeded by dint of perseverance and sheer hard work.

- (a) Conjunctive phrase
- (b) Adjectival phrase
- (c) Prepositional phrase
- (d) Adverbial phrase

10. I need you to return those books I lent you last month.

- (a) Modal
- (b) Determiner
- (c) Noun
- (d) Adjective

Directions (Q. Nos. 11 to 20) : Each item in this section consists of a sentence with underlined word/words followed by four words. Select the word that is nearest in meaning to the underlined word/words and mark your response on the Answer Sheet accordingly.

11. The 'Jataka Tales' present moral narratives in the form of allegories.

- (a) aphorisms
- (b) adages
- (c) enjambments
- (d) parables

12. He was upbraided for appearing in court in a state of inebriation.

- (a) ululation
- (b) intoxication
- (c) confabulation
- (d) sublimation

13. The obstreperous behavior of the students inside the classroom drew the attention of the Principal.

- (a) compliant
- (b) obnoxious
- (c) inconspicuous
- (d) disorderly

14. These were based primarily in Himachal Pradesh, where the treks were as gruelling as the terrain.

- (a) rigorous
- (b) egregious
- (c) unctuous
- (d) ominous

15. I think they would wish for some more adornment around the school campus for the special function.

- (a) subsummation
- (b) decoration
- (c) coloration
- (d) inculcation

16. The travel company tried to identify destinations that were off the beaten track.

- (a) untenanted
- (b) unfrequented
- (c) unattended
- (d) untoward

17. Women gather in the community park on a regular basis to chant prayers for the benefit of all.

- (a) confound
- (b) inculcate
- (c) indite
- (d) recite

18. The HR Manager was able to utilize the specific skills of each member of the team assembled for the project.

- (a) harness
- (b) harbor
- (c) harangue
- (d) herald

19. The oppressive pollution was noticed to have abated after the unseasonal rainfall.

- (a) mitigated
- (b) enhanced
- (c) discontinued
- (d) suppressed

20. Often, the context and structure of an ambiguous statement is difficult to discern.

- (a) absolutistic
- (b) explicit
- (c) cryptic
- (d) solipsistic

Directions (Q. Nos. 21 to 30) : Each item in this section consists of a sentence with an underlined word followed by four words. Select the word that is opposite in meaning to the underlined word and mark your response on the Answer Sheet accordingly.

21. She had a ruddy, open face and an oddly guileless manner.
(a) cacophonous
 (b) cadaverous
(c) nauseous
(d) bumptious
22. He used to be known among his colleagues for his righteousness.
 (a) iniquity
(b) ingenuity
(c) absorptivity
(d) incredulity
23. He found the musical rendition by the septuagenarian maestro to be listless.
(a) wearying
(b) unedifying
(c) unengaging
 (d) scintillating
24. The official accused of espionage was found to be disingenuous.
 (a) scrupulous
(b) duplicitous
(c) mendacious
(d) perfidious
25. The young are easily excitable when presented with strong emotional triggers.
 (a) composed
(b) agitated
~~(c)~~ (c) aggrieved
(d) alarmed
26. Our professor was perplexed by the answers we wrote in the examination.
(a) misled
 (b) enlightened
(c) confused
(d) befuddled
27. Effective governance seeks to optimize public resource allocation.
(a) upgrade
(b) rationalize
(c) maximize
 (d) degrade
28. The student's striking audaciousness disturbed long-standing social hierarchies on campus.
(a) boldness
(b) fearlessness
 (c) timidness
(d) insightfulness
29. There are four concurrent handloom fairs around the city.
 (a) consecutive
(b) distributive
(c) aberrative
(d) abstersive
30. Lucidity is a desired quality in effective communication.
(a) Clarity
~~(b)~~ (b) Felicity
(c) Facility
 (d) Ambiguity

Directions (Q. Nos. 31 to 35) : Each item in this section has a sentence with four underlined parts labeled (a), (b), (c) and (d). Read each sentence to find out whether there is any error in any underlined part. Indicate your response in the Answer Sheet accordingly.

31. The project staff are working on the weekend so as not to delay
(a) (b) (c)

the project any further.
(d)

32. When I saw Arnab he said he had taken his driving test yesterday.
(a) (b) (c) (d)

33. Of all the players it was Ramesh who plan his tactics with utmost care.
(a) (b) (c) (d)

34. Many people in India are still not aware of India's indigenous fabrics
(a) (b) (c)

that reflects the rich heritage of craftsmanship.
(d)

35. Meaningful ecological affects of the handloom sector can be optimized
(a) (b) (c)

through recycling practices.
(d)

36. Read the following pairs :

<i>Active Voice</i>	<i>Passive Voice</i>
I. They laughed at his warnings and objected to all his proposals.	His warnings were laughed at and his proposals were objected to.
II. Do not insult the weak.	You are advised to not insult the weak.

Identify the pair(s) wherein the Passive Voice is correctly stated and mark your response on the Answer Sheet accordingly.

- (a) I only
- (b) II only
- (c) Both I and II
- (d) Neither I nor II

37. Read the following pairs :

<i>Direct Speech</i>	<i>Indirect Speech</i>
I. The policeman said to us, "Where are you going?"	The policeman asked where we were going.
II. "Call the first witness", said the Judge.	The Judge said them to call the witness first.

Identify the pair(s) wherein the Indirect Speech is correctly stated and mark your response on the Answer Sheet accordingly.

- (a) I only
- (b) II only
- (c) Both I and II
- (d) Neither I nor II

38. Read the following pairs :

<i>Idiom/Phrase</i>	<i>Meaning</i>
I. Have one foot in the grave	To be in the last stage of life
II. Get your feet wet	Establish yourself securely in an establishment
III. Follow suit	Correctly conform to another's action

Identify the pair(s) wherein the meaning is correctly stated and mark your response on the Answer Sheet accordingly.

- (a) I only
- (b) III only
- (c) I and III
- (d) II and III

39. Read the following pairs :

<i>Group of words</i>	<i>One-word substitution</i>
I. Decayed with usually a very bad or disgusting smell	Putrid
II. Humorous in a clever and often ironic way	Wry
III. In a state of tremulous excitement	Aflutter

Identify the pairs wherein the one-word substitution is correctly stated and mark your response on the Answer Sheet accordingly.

- (a) I and II only
- (b) II and III only
- (c) I and III only
- (d) I, II and III

40. Fill in the blanks (X, Y) in the following sentences with the appropriate word/phrase given in the brackets :

- I. I spent X (less/the least) money on clothes in the whole family.
- II. The people who work the hardest make Y (a few/the fewest) mistakes.

Identify the words/phrases and mark your response on the Answer Sheet accordingly.

- (a) I—the least, II—the fewest
- (b) I—the least, II—a few
- (c) I—less, II—a few
- (d) I—less, II—the fewest

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Directions (Q. Nos. 41 to 45) : Each of the following items features one part of a sentence, followed by four alternatives. Complete the sentence by choosing the correct alternative and mark your response on the Answer Sheet accordingly.

- 41. I will not pay for the goods
 - (a) till he sends me the bill again
 - (b) until he sends me the bill again
 - (c) if he sends me the bill again
 - (d) unless he sends me the bill again

- 42. I did not buy it
 - (a) because I did not like the look of it
 - (b) as far as I did not like the look of it
 - (c) anyway I did not like the look of it
 - (d) if I did not like the look of it

- 43. I sent her a bouquet of orchids
 - (a) for which she was absolutely delighted
 - (b) with which she was absolutely delighted
 - (c) of which she was absolutely delighted
 - (d) on which she was absolutely delighted

- 44. You must stay inside
 - (a) where it starts raining
 - (b) when it starts raining
 - (c) because it starts raining
 - (d) till it starts raining

- 45. We must wait
 - (a) until you see the light turn green
 - (b) till you see the green light
 - (c) because you can see the green light
 - (d) unless you see the red signal

Directions (Q. Nos. 46 to 50) : The following items have four sentences, one of which is correct. Select the correct sentence and mark your response on the Answer Sheet accordingly.

- 46. (a) Although it was raining, we had the picnic.
 - (b) Although it was raining, still we had the picnic.
 - (c) Although it was raining, yet we had the picnic.
 - (d) Although it was raining, even then we had the picnic.

- 47. (a) When I would arrive, I will call you.
 - (b) When I shall arrive, I will call you.
 - (c) When I will arrive, I will call you.
 - (d) When I arrive, I will call you.

- 48. (a) Who among you has the answer?
 - (b) Whom among you has the answer?
 - (c) Whom amongst you has the answer?
 - (d) Who amid you has the answer?

- 49. (a) No sooner than he reached the station the train left.
 - (b) No sooner had he reached the station than the train left.
 - (c) No sooner he had reached the station than the train left.
 - (d) No sooner had he reached the station then the train left.

- 50. (a) Hardly had I arrived at the airport than the plane departed.
 - (b) Scarcely had I arrived at the airport when the plane departed.
 - (c) Hardly I had arrived at the airport when the plane departed.
 - (d) Scarcely had I arrived at the airport then the plane departed.

PART—B

51. Which of the following properties of alveoli is/are helpful in gaseous exchange during respiration in human beings?

- I. The epithelial lining of alveoli is very thin.
- II. Elastic fibres are present in alveolar wall.
- III. Wall of alveoli is surrounded by many blood capillaries.

Select the correct answer using the code given below.

- (a) I and II only
- (b) I and III only
- (c) III only
- (d) I, II and III

52. In which one of the following groups of animals, oestrus cycle is **not** observed?

- (a) Cows
- (b) Monkeys
- (c) Rats
- (d) Tigers

53. Which one of the following tissues in plants is usually without protoplast and regarded as dead cells?

- (a) Collenchyma
- (b) Parenchyma
- (c) Sclerenchyma
- (d) Xylem parenchyma

54. In which cell does the first meiotic cell division take place during the process of spermatogenesis?

- (a) Spermatogonium
- (b) Primary spermatocyte
- (c) Secondary spermatocyte
- (d) Sertoli cell

55. Consider the following statements in respect of cell and its structure :

- I. All cells possess cell wall.
- H. All cells have ribosomes present inside.
- III. All cells have well-organized nucleus.
- IV. All cells have linear DNA molecules present in them.

Which of the statements given above is/are correct?

- (a) II and III
- (b) II only
- (c) II and IV
- (d) I and III

56. Which part of the plant or flower contributes in the form of false fruit like apple?

- (a) Petal
- (b) Sepal
- (c) Stamen
- (d) Thalamus

57. In which of the following parts of organisms, the process of gaseous exchange during respiration does **not** take place?

- (a) Skin of earthworms
- (b) Bronchi of humans
- (c) Gills of Pila
- (d) Alveoli of humans

58. Which one of the following parts of an ovule possesses reserve food?

(a) Integument

(b) Funicle

(c) Chalaza

(d) Nucellus

59. Which one of the following respiratory volumes of human lung is the lowest?

(a) Residual volume

(b) Tidal volume

(c) Inspiratory reserve volume

(d) Expiratory reserve volume

60. Which one of the following valves guards the opening between the right ventricle and the pulmonary artery?

(a) Bicuspid valve

(b) Semilunar valve

(c) Mitral valve

(d) Tricuspid valve

61. If x is the number of electrons and y is the number of nucleons present in ${}_{16}^{32}\text{S}^{2-}$, then which one of the following is correct?

(a) $x = 14$ and $y = 32$

~~(b)~~ $x = 16$ and $y = 30$

(c) $x = 18$ and $y = 32$

(d) $x = 18$ and $y = 30$

62. Which one of the following forms of carbon is thermodynamically most stable?

(a) Coal

(b) Graphite

(c) Diamond

(d) Fullerene

63. Consider the following statements :

~~I.~~ A colloid and a suspension are heterogeneous mixtures.

II. Colloids can be separated from the mixture by the process of centrifugation.

III. Particles of colloids and suspensions can be seen by naked eye.

IV. The aqueous solution of copper sulphate does not show Tyndall effect; however, the mixture of milk and water shows Tyndall effect.

Which of the statements given above is/are correct?

(a) I only

(b) II and III only

~~(c)~~ I, II and III

(d) I, II and IV

64. A non-volatile solid solute may be separated from a solution by which of the following processes?

- I. Evaporation
- II. Crystallization

Select the correct answer using the code given below.

- ~~(a)~~ I only
(b) II only
(c) Both I and II
(d) Neither I nor II

65. Which of the following are oxidation reactions?

- ~~I.~~ Rusting of iron ✓
- II. Burning of fuel
- III. Rancidity of oils and fats
- IV. Browning of fruits ✓

Select the correct answer using the code given below.

- (a) I, II and III only
~~(b)~~ I, II and IV only
(c) III and IV only
(d) I, II, III and IV

66. Consider the following statement :

"Acids are substances that dissociate in water to give hydrogen ions H^+ (aq), and bases are substances that produce hydroxyl ions OH^- (aq)."

The above statement is based on which one of the following concepts?

- ~~(a)~~ Brønsted-Lowry concept
(b) Lewis acid-base concept
(c) Arrhenius concept
(d) Conjugate acid-base concept

67. Superphosphate of lime—a phosphate fertilizer—is obtained by the reaction of

- (a) calcium phosphate with sodium hydroxide
(b) calcium phosphate with sulphuric acid
(c) calcium phosphate with hydrogen chloride
(d) calcium phosphate with nitric acid

68. 1.7 g of silver nitrate is dissolved in 100 g of water, and 0.585 g of sodium chloride is dissolved in 100 g of water. Both are mixed and a chemical reaction occurs. 1.435 g of silver chloride and 0.85 g of sodium nitrate are formed. Which law of chemical combination is shown by the above reaction?

- ~~(a)~~ Law of multiple proportions
(b) Law of conservation of mass
(c) Law of reciprocal proportions
(d) Law of constant proportions

69. Which of the following statements is/are correct with regard to Nitrolim?

- I. It is prepared by heating calcium carbide with nitrogen.
- II. It decomposes into ammonia in soil.
- III. It is an NPK fertilizer.
- IV. It is an organic fertilizer.

Select the answer using the code given below.

- (a)** I and II only
(b) I, II and III
(c) IV only
(d) I, II and IV

70. Consider the following pairs :

- I. Pigment : TiO_2
- II. Drier : Turpentine
- III. Thinner : Naphthenates
- IV. Antiskinning agent : Polyhydroxy phenol

How many of the pairs given above are correctly matched?

- (a) One
- (b) Two
- (c) Three
- (d) All the four

71. Consider the following statements :

- I. Pine oil is used as antifoaming agent in the emulsion paints.
- II. Protective colloids are used in the emulsion paints to decrease their stability.
- III. Driers having oxidizable oils are added to the emulsion paints to accelerate drying process.

Which of the statements given above is/are correct?

- (a) I and II
- (b) I only
- (c) II and III
- (d) I and III

72. Consider the following :

- I. AlCl_3
- II. NH_3
- III. BF_3
- IV. FeCl_3

How many of the above are Lewis acids?

- (a) One
- (b) Two
- (c) Three
- (d) All the four

73. Consider the following statements :

- I. Soaps are sodium or potassium salts of long-chain carboxylic acids.
- II. The properties of catenation and isomerism in the element carbon are attributed to existence of large number of organic compounds than inorganic compounds.
- III. Carbon dioxide is acidic but carbon monoxide is neutral molecule.

Which of the statements given above are correct?

- (a) I and II only
- ~~(b)~~ II and III only
- (c) I and III only
- (d) I, II and III

74. Which of the following is/are the physical test(s) employed for the manufacture of paper?

- I. Mechanical and strength properties
- II. Surface properties
- III. Optical properties
- IV. Permeability to fluids

Select the correct answer using the code given below.

- (a) I only
- (b) II and III only
- (c) I, II and III only
- (d) I, II, III and IV

75. Consider the following pairs of reactions and properties :

Reactions	Properties
I. $\text{Fe(s)} + 2\text{HCl(aq)} \rightarrow \text{FeCl}_2(\text{aq}) + \text{H}_2(\text{g})$	Fe is reductant
II. $\text{Zn(s)} + \text{CuSO}_4(\text{aq}) \rightarrow \text{ZnSO}_4(\text{aq}) + \text{Cu(s)}$	Cu is being reduced
III. $\text{Br}_2(\text{l}) + 2\text{I}^-(\text{aq}) \rightarrow 2\text{Br}^-(\text{aq}) + \text{I}_2(\text{s})$	Br_2 is reductant
IV. $\text{CH}_4(\text{g}) + 2\text{O}_2(\text{g}) \rightarrow \text{CO}_2(\text{g}) + 2\text{H}_2\text{O}(\text{l})$	C atom in CH_4 is oxidized

Which of the above pairs are correct?

- (a) I and II only
- (b) II, III and IV
- (c) I, II and IV
- (d) I, III and IV

76. A 5 g piece of ice at -20°C is put into m kg of water at 30°C temperature. The heat is exchanged only between the ice and the water. The final temperature of the mixture is 0°C in liquid phase. What is the value of m in kg?

- (a) 0.050
- (b) 0.010
- (c) 0.015
- (d) 0.150

77. A very large container consists of an ideal gas. The speed of sound in the gas is x . When the pressure of the gas is doubled while keeping the temperature constant, the speed of sound now becomes y . What is the ratio of x to y ?

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

78. A person jumps from a height on soft sand. Which one of the following is the correct reason for less likely injury to the person?

- (a) The sand exerts no reaction force.
- (b) The sand reduces the change in momentum.
- (c) The sand increases the impact time.
- (d) The sand increases the momentum.

79. An object is placed far beyond the centre of curvature of a concave mirror. The object then starts accelerating towards the mirror. Which one of the following is correct?

- (a) The image will accelerate towards the centre of curvature.
- (b) The image will accelerate towards the focus.
- (c) The image will accelerate towards the pole of the mirror.
- (d) The image will move with a constant speed towards the focus.

80. A particle is moved from point X to point Y under a force field. The work done depends only on the initial and final speeds. Which one of the following is correct?

- (a) The force is conservative.
- (b) The net work equals the change in kinetic energy.
- (c) The force is constant.
- (d) The velocity must always increase.

81. One year at a planet is 8 times as large as compared to the one year at the Earth. Which one of the following is correct about the planet's orbit?

- (a) The semimajor axis of the planet's orbit is same as that of the Earth.
- (b) The semimajor axis of the planet's orbit is twice as compared to that of the Earth.
- (c) The semimajor axis of the planet's orbit is thrice as compared to that of the Earth.
- (d) The semimajor axis of the planet's orbit is four times as compared to that of the Earth.

82. A lightning rod with sharp tip reduces damage risk. Which one of the following is the primary reason for it?

- (a) It attracts lightning directly.
- (b) The sharp tip reduces the local electric field.
- (c) It enhances field and promotes continuous corona discharge.
- (d) It repels charged clouds.

83. A periscope uses two plane mirrors inclined at 45° . If the tube of the periscope is filled with a complete transparent liquid of refractive index 1.5, then which one of the following is correct in respect of the image seen?

- (a) The image will remain unchanged.
- (b) The image will appear laterally shifted.
- (c) The image will appear 1.5 times brighter.
- (d) The image will appear 1.5 times darker.

84. It has been observed that a mirror always forms the image between the pole and the focus, irrespective of the location of the object. Which one of the following is correct in respect of the nature of the mirror?

- (a) It is a plane mirror.
- (b) It is a convex mirror.
- (c) It is a concave mirror of small focal length.
- (d) It is a concave mirror of large focal length.

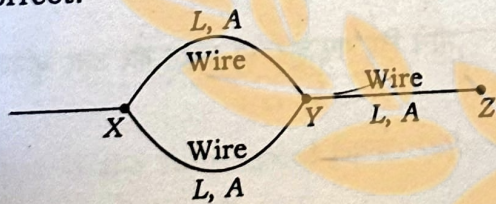
85. What is the upward force acting on a skydiver of mass 60 kg who is falling at a uniform speed of 2 m/s?

- (a) 0
- (b) 60 N
- (c) 588 N**
- (d) 708 N

86. With respect to electromagnetic waves, the human eye is sensitive to

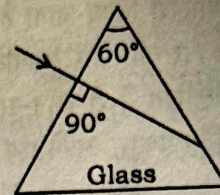
- (a) both electric and magnetic fields
- (b) electric field only**
- (c) magnetic field only
- ~~(d) infrared part of the electromagnetic spectrum~~

87. Three wires each of length L , cross-sectional area A and resistivity ρ are connected as shown in the figure. These are to be replaced by another wire of same resistivity such that the resistance between points X and Z does not change. If L_1 is the length and A_1 is the cross-sectional area of the new wire, then which one among the following is correct?

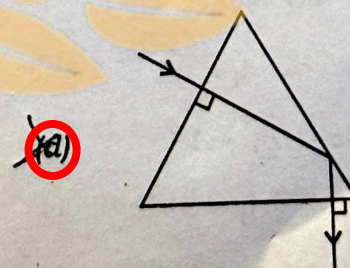
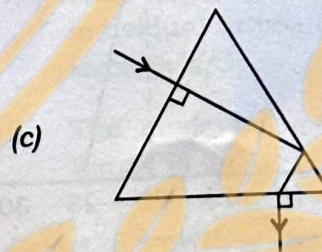
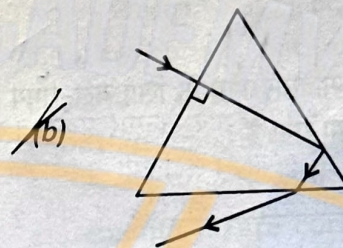
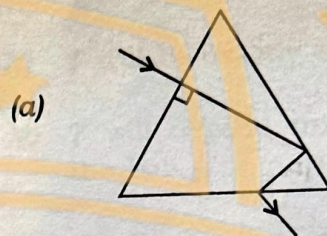


- (a) $L_1 = 3L$ and $A_1 = 2A$**
- (b) $L_1 = L$ and $A_1 = A$
- (c) $L_1 = 2L$ and $A_1 = 3A$
- (d) $L_1 = 2L$ and $A_1 = 2A$

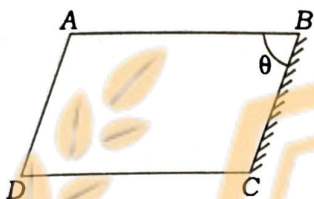
88. A light ray is falling on a face of an equilateral glass prism as shown in the figure :



Which one of the following diagrams correctly shows the complete path of the ray through the glass prism?

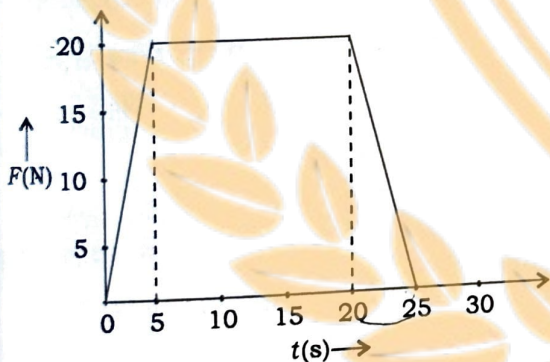


89. A glass slab of refractive index 1.5 is cut in the shape of a parallelepiped ABCD as shown in the figure. Surface BC is polished to form a perfect reflector. Light is incident at surface AB from inside at an angle $\pi/3$. Which one of the following is the correct angle ABC (θ) such that the reflected light retraces its path?



- (a) $\pi/6$
 (b) $\pi/3$
 (c) $\pi/4$
 (d) $5\pi/12$

90. The force-time ($F-t$) graph of a 10 kg moving object is shown below :



What is the final speed of the object?

- (a) 0
 (b) 15 m/s
 (c) 30 m/s
 (d) 40 m/s

91. A pendulum of length L oscillates with an angular amplitude of $\theta = 60^\circ$ and time period T . Let $T_0 = 2\pi\sqrt{\frac{L}{g}}$ be the time period for small angle of oscillations, where g is the acceleration due to gravity. If air resistance is negligibly small and the string remains straight, then which one of the following is correct?

- (a) T will be slightly greater than T_0 .
 (b) T will be slightly smaller than T_0 .
 (c) T will be exactly equal to T_0 .
 (d) T will depend upon the mass of the bob.

92. Two forces of equal magnitude simultaneously act at a point. It is observed that the resultant force is equal in magnitude to the individual forces. Which of the following statements is/are correct?

- I. The angle between one of the individual forces and the resultant force is $\pi/3$.
 II. The angle between the individual forces is $2\pi/3$.

Select the answer using the code given below.

- (a) I only
 (b) II only
 (c) Both I and II
 (d) Neither I nor II

93. A solid of mass m has temperature-dependent specific heat as $C(T) = C_0 + \alpha T$, where C_0 and α are constants. The solid is heated from T_1 to T_2 . Which one of the following is the correct expression for quantity of heat (Q) of the solid mass?

(a) $Q = mC_0(T_2 - T_1)$

(b) $Q = m(T_2 - T_1)[C_0 + \alpha(T_1 + T_2)]$

(c) $Q = m(T_2 - T_1)[C_0(T_1 + T_2) + \alpha]$

(d) $Q = m(T_2 - T_1)\left[C_0 + \frac{\alpha}{2}(T_1 + T_2)\right]$

94. In a certain process, the relation between pressure (P) and volume (V), for an ideal gas, is given by $PV^2 = \text{constant}$. If the initial temperature is T_1 and the final temperature is T_2 ; and the initial volume is V_1 and the final volume is V_2 , then which one of the following is correct?

(a) $\frac{T_1}{T_2} = \frac{V_1}{V_2}$

(b) $\frac{T_1}{T_2} = \left(\frac{V_1}{V_2}\right)^2$

(c) $\frac{T_1}{T_2} = \frac{V_2}{V_1}$

(d) $\frac{T_1}{T_2} = \left(\frac{V_2}{V_1}\right)^2$

95. For an ideal gas, a process is described by $P = kT$, where k is a constant. If the molar heat capacity for this process is C , then which one of the following is correct (where the symbols have their usual meanings)?

(a) $C = C_p$

(b) $C = C_v$

(c) $C = (C_p + C_v) / 2$

(d) C is never constant

96. For an object in gravitational field, the gravitational potential is the same at two points A and B , but the gravitational field is not the same at these two points. Which one of the following statements is correct?

(a) Positive work is done by gravity in moving the object from point A to point B .

(b) Negative work is done by gravity in moving the object from point A to point B .

(c) Gravity must be non-conservative in such a region.

(d) No work is done by gravity in moving the object from point A to point B .

97. The position vector of a particle is given by $\vec{r} = \sqrt{3}t^2\hat{i} + \sqrt{2}t\hat{j} + \sqrt{5}\hat{k}$. Which one of the following statements is correct?

(a) The force acting on the particle is parallel to the instantaneous momentum of the particle.

(b) The force acting on the particle is perpendicular to the instantaneous momentum of the particle.

(c) The particle experiences zero force.

(d) The force acting on the particle is not parallel to the instantaneous momentum of the particle.

98. A ball is dropped from rest from height h above the ground in frame S (the Earth's frame). Another frame S' is moving upwards with constant speed u relative to the Earth. In frame S' , the ball has initial downward speed v . Pertaining to the change in kinetic energy (ΔK) of the ball from release to just before hitting the ground as measured in frames S and S' separately, which one of the following is correct?

- (a) ΔK is the same in both the frames.
- (b) ΔK is larger in frame S .
- (c) ΔK is larger in frame S' .
- (d) ΔK cannot be compared without the information of mass of the ball.

99. A floating body is in stable state. Which one of the following is correct?

- (a) The centre of gravity of the body is above its centre of buoyancy.
- (b) The centre of gravity of the body is below its centre of buoyancy.
- (c) The centre of gravity of the body coincides with its centre of buoyancy.
- (d) The centre of gravity of the body is below the metacentre.

100. A constant power machine pulls a block on a smooth horizontal surface. Which one of the following correctly describes the relation between speed of the block (v) and time (t)?

- (a) $v \propto t$
- (b) $v \propto \sqrt{t}$
- (c) $v \propto t^2$
- (d) $v \propto t^{3/2}$

101. With reference to defence cooperation between India and Russia, which of the following statements is/are correct?

- I. BrahMos Cruise Missile system is jointly developed by India's DRDO and Russia's NPO Mashinostroyeniya (NPOM).
- II. The production site of the Indo-Russia Rifles Private Limited (IRRPL) joint venture is in Korwa, Madhya Pradesh under the 'Atmanirbhar Bharat' initiative.

Select the answer using the code given below.

- (a) I only
- (b) II only
- (c) Both I and II
- (d) Neither I nor II

102. Which one among the following Departments is **not** under the Ministry of Home Affairs?

- (a) The Department of States
- (b) The Department of Official Language
- (c) The Department of Border Management
- (d) The Department of Drinking Water and Sanitation

103. The Atal Innovation Mission (AIM) is set up by the

- (a) Department of Science and Technology, Government of India
- (b) NITI Aayog
- (c) Ministry of Statistics and Programme Implementation, Government of India
- (d) Ministry of Corporate Affairs, Government of India

104. Which one amongst the following cities has been designated as the UNESCO Creative City of Gastronomy in 2025?

- (a) Agra
- (b) Lucknow
- (c) Indore
- (d) Ludhiana

105. PM MITRA Parks relate to which one of the following industries?

- (a) Automobile
- (b) Shipbuilding
- (c) Textile
- (d) Pottery

106. Which one of the following countries became the 11th member of ASEAN in 2025?

- (a) Timor-Leste
- (b) Vietnam
- (c) Brunei
- (d) Cambodia

107. Who among the following is the winner of the 2024–2025 Ranji Trophy?

- (a) Vidarbha
- (b) Kerala
- (c) Karnataka
- (d) Saurashtra

108. Choose the correct set of the following cities in descending order (according to the Degree of Urbanization definitions in 2025) in terms of population.

- (a) Tokyo, Dhaka, Manila, New Delhi, Jakarta
- (b) Jakarta, Dhaka, Tokyo, New Delhi, Manila
- (c) Tokyo, Manila, Dhaka, Jakarta, New Delhi
- (d) Jakarta, Tokyo, Dhaka, New Delhi, Manila

109. Consider the following countries :

- I. Haiti
- II. Philippines
- III. Nicaragua
- IV. India

According to the Climate Risk Index 2026, which of the above countries were affected by recurring extreme events during 1995–2024?

- (a) I and III only
- (b) II and IV only
- (c) I, II and IV only
- (d) I, II, III and IV

110. Match List-I with List-II and select the correct answer using the code given below the Lists :

List-I
(Rescue Operations carried out by the Government of India)

- A. Operation Kaveri
- B. Operation Indravati
- C. Operation Ajay
- D. Operation Ganga

List-II
(Countries)

- I. Israel
- II. Haiti
- III. Ukraine
- IV. Sudan

Code :

- (a) A B C D
III II I IV
- (b) A B C D
III I II IV
- (c) A B C D
IV II I III
- (d) A B C D
IV I II III

111. Which one of the following is *not* a strategy in the Rainfed Area Development (RAD) scheme of India?

- (a) Diversified farming
- (b) Soil health management
- (c) Adaptation of cluster-based approaches
- (d) Optimizing canal irrigation

112. Consider the following statements about Kamarajar Port :

- I. It is an example of corporatized public company.
- II. It was earlier known as Ennore Port.
- III. It is a natural port.

Which of the statements given above are correct?

- (a) I and II only
- (b) II and III only
- (c) I and III only
- (d) I, II and III

113. Consider the following statements :

- I. Earthquake waves are basically of two types, namely body waves and surface waves.
- II. The body waves interact with the surface rocks and generate surface waves.

Which of the statements given above is/are correct?

- (a) I only
- (b) II only
- (c) Both I and II
- (d) Neither I nor II

114. Consider the following statements regarding the Earth's crust :

- I. The continental crust is thinner under fold mountains.
- II. The mean thickness of ocean crust is 30 km.
- III. The Earth's crust is brittle in nature.

Which of the statements given above is/are correct?

- (a) I only
- (b) I and II
- (c) III only
- (d) I and III

115. Which of the following are associated with composite volcanoes?

- I. They result in explosive eruptions.
- II. They eject pyroclastic materials.
- III. Pyroclastic materials and ashes accumulate near the vent, forming layers.

Select the correct answer using the code given below.

- (a) I and II only
- (b) II and III only
- (c) I and III only
- (d) I, II and III

116. Loose sediments are transformed into sedimentary rocks by the process of

- (a) lithification
- (b) weathering
- (c) mass wasting
- (d) solifluction

117. Consider the following statements about temperature inversion :

- I. This happens when normal lapse rate gets inverted.
- II. Winter nights with cloudy skies are conducive for temperature inversion.
- III. Polar areas experience inversion throughout the year.

Which of the statements given above are correct?

- (a) I and II only
(b) II and III only
(c) I and III only
(d) I, II and III

118. Consider the following statements regarding extratropical cyclones :

- I. They usually develop in the mid and high latitudes.
- II. They affect a much larger area as compared to tropical cyclone.
- III. They move from east to west.

Which of the statements given above are correct?

- (a) I and II only
(b) II and III only
(c) I and III only
(d) I, II and III

119. Which one of the following receives an average annual rainfall of below 50 cm in India, indicating highest inadequacy?

- (a) Madhya Pradesh
(b) Haryana
(c) Ladakh
(d) Jharkhand

120. As per the land-use categories in the Land Revenue Records of India, "a cultivable land which is left uncultivated for more than a year but less than 5 years" is called

- (a) current fallow
(b) fallow, other than current fallow
(c) barren land
(d) culturable wasteland

121. Consider the following pairs :

Types of Chemical Weathering

Characteristics

- | | |
|-----------------|---|
| I. Solution | Results in leaching of minerals |
| II. Carbonation | Helps in breaking down feldspars |
| III. Hydration | Causes an increase in the volume of rocks |
| IV. Oxidation | Changes the colour of rocks |

How many pairs given above are correctly matched?

- (a) One
(b) Two
(c) Three
(d) All the four

122. Quartzite is metamorphosed from which one of the following rocks?

- (a) Pegmatite
(b) Limestone
(c) Sandstone
(d) Shale

123. Consider the following statements :

- I. In a seismograph, P waves are recorded earlier than S waves.
- II. In P waves, the individual particles vibrate to and fro in the direction of wave propagation whereas in S waves, the particles vibrate up and down at right angles to the direction of wave propagation.

Which of the statements given above is/are correct?

- (a) I only
(b) II only
(c) Both I and II
(d) Neither I nor II

124. Consider the following statements regarding hypocentre :

- I. It is the point where the energy is released and is called the focus of an earthquake.
- II. It is the point where the earthquake starts and may be many kilometers deep within the Earth.

Which of the statements given above is/are correct?

- (a) I only
 (b) II only
 (c) Both I and II
 (d) Neither I nor II

125. Consider the following critical minerals :

- I. Neodymium
- II. Tellurium
- III. Dysprosium
- IV. Gallium

Which of the above minerals are *not* used for the production of photovoltaic cells used in solar panels?

- (a) I and IV
 (b) II and III
 (c) I and III
 (d) II and IV

126. Which one of the following winds is responsible for wildfires in Southern California?

- (a) Diablo wind
 (b) Chinook wind
 (c) Santa Ana wind
 (d) Jarbo Gap wind

127. Which one of the following is *not* a pass of Arunachal Pradesh?

- (a) Kumjawng Pass
 (b) Yonggyap Pass
 (c) Muling La
 (d) Bomdi La

128. Mount Ibu, which recently erupted in Indonesia, is a

- (a) shield volcano
 (b) composite volcano
 (c) volcanic dome
 (d) cinder cone

129. Consider the following statements in case of terrestrial planets :

- I. Mercury, Venus, Earth and Mars are terrestrial planets having low densities as compared to other planets.
- II. They lie between the Sun and the belt of asteroids.
- III. Their lower gravity can hold the escaping gases.

Which of the statements given above is/are correct?

- (a) I and II
 (b) II and III
 (c) I and III
 (d) II only

130. Consider the following pairs :

Layers of Atmosphere	Characteristics
I. Troposphere	Absorbs ultraviolet radiation
II. Stratosphere	Changes in weather and climate
III. Mesosphere	Reflects radio waves back to the Earth

How many of the pairs given above are correctly matched?

- (a) None
 (b) One
 (c) Two
 (d) All the three

131. Consider the following pairs :

Books	Authors
I. <i>Dayabhaga</i>	Jimutavahana
II. <i>Prithviraj Raso</i>	Chandbardai
III. <i>Lilavati</i>	Bhaskaracharya
IV. <i>Mitakshara</i>	Vijnaneshvara

How many pairs given above are correctly matched?

- (a) One
- (b) Two
- (c) Three
- (d) All the four

132. Arrange the following in chronological order from the earliest to recent :

- I. British East India Company formed
- II. Magellan circumnavigated the globe
- III. Dutch East India Company formed
- IV. Vasco da Gama reached Calicut/ Kozhikode

Select the correct answer using the code given below.

- (a) IV, I, II, III
- (b) IV, II, I, III
- (c) II, IV, III, I
- (d) II, IV, I, III

133. Consider the following pairs :

Inventions	Inventors
I. Flying shuttle loom	John Kay
II. Water frame	James Hargreaves
III. Spinning jenny	Richard Arkwright

How many of the pairs given above are correctly matched?

- (a) One
- (b) Two
- (c) All the three
- (d) None

134. Consider the following statements in respect of the Rowlatt Act of 1919 :

- I. Gandhiji launched a nationwide Satyagraha against the proposed Rowlatt Act, 1919.
- II. The Act had been hurriedly passed through the Imperial Legislative Council despite the opposition of Indian members.
- III. The Act gave the Government enormous powers to repress political activities.

Which of the statements given above is/are correct?

- (a) I only
- (b) III only
- (c) I and II only
- (d) I, II and III

135. Consider the following statements regarding the Industrial Revolution in Britain :

- I. There was availability of banks which could loan money to set up industries.
- II. There was a good transport network.

Which of the statements given above is/are correct?

- (a) I only
- (b) II only
- (c) Both I and II
- (d) Neither I nor II

136. Consider the following statements regarding the Russian Revolution :

- I. The incident known as 'Bloody Sunday' started a series of events known as the 1905 Revolution.
- II. Lawyers, doctors, engineers and other middle-class workers established the Union of Unions and demanded a Constituent Assembly.

Which of the statements given above is/are correct?

- (a) I only
(b) II only
 (c) Both I and II
(d) Neither I nor II

137. Who among the following advocated the construction of initial railways in India for facilitating army movement?

- (a) Lord Dalhousie
(b) Lord Lytton
(c) Winston Churchill
(d) Lord Wellesley

138. The large well supplying water to the Great Bath of Mohenjo-daro was located

- (a) near the drain of the tank
 (b) at the top of one of the staircases
 (c) in one of the adjoining rooms on the eastern side
(d) at the bottom of the tank in a corner

139. If you like to visit famous Jain pilgrimage sites, which of the following towns you will have to travel to?

- I. Moodabidri
- II. Madurai
- III. Sonagiri

Select the correct answer using the code given below.

- (a) I and II only
(b) I and III only
(c) II and III only
 (d) I, II and III

140. Consider the following statements with regard to bead production in Harappan towns :

- I. The materials used to make beads included carnelian, quartz and steatite.
- II. The beads were cylindrical, barrel-shaped and disc-shaped.
- III. Specialized stone drills were used for making holes through the beads.

Which of the statements given above are correct?

- (a) I and II only
(b) II and III only
(c) I and III only
 (d) I, II and III

141. Consider the following statements :

- I. The Second Five-Year Plan sought to promote development which would establish socialistic pattern of society in India.
- II. Between 1966 and 1969, three Annual Plans were formulated.
- III. The Ninth Five-Year Plan could not take off at its stipulated time in the 60th year of India's Independence.

Which of the statements given above are correct?

- (a) I and II only
(b) I and III only
(c) II and III only
(d) I, II and III

142. With reference to the Constitution of India, consider the following statements about the Comptroller and Auditor General (CAG) of India :

- I. The CAG shall be appointed by the President of India.
- II. The CAG is not eligible for further office under the Government of India after he has ceased to hold his office.
- III. The reports of the CAG relating to the accounts of the Union shall be submitted to the Prime Minister who shall cause them to be laid before the House of the People.

Which of the statements given above are correct?

- (a) I and II only
(b) II and III only
(c) I and III only
(d) I, II and III

143. Consider the following offices :

- I. The Vice President of India
- II. The Governors within their respective States
- III. The Prime Minister of India
- IV. The Speaker of the Lok Sabha

Which one of the following options represents the correct order of these offices for ceremonial occasions in the Table of Precedence as approved by the President of India?

- (a) III, I, II, IV
(b) I, III, II, IV
(c) I, III, IV, II
(d) III, I, IV, II

144. Consider the following pairs with reference to the Constitution of India :

- I. Part IX A : The Municipalities
- II. Part IX B : The Cooperative Societies
- III. Part X : Relations between the Union and States
- IV. Part XII : Finance, Property, Contracts and Suits

How many of the pairs given above are correctly matched?

- (a) One
(b) Two
(c) Three
(d) All the four

145. Consider the following pairs related to the United Nations (UN) Sustainable Development Goals :

- I. Goal 1 : End poverty in all forms everywhere
- II. Goal 2 : Ensure healthy lives
- III. Goal 3 : Ensure quality education
- IV. Goal 4 : Achieve gender equality

How many of the pairs given above are correctly matched?

- (a) One
(b) Two
(c) Three
(d) All the four

146. Consider the following statements :

- I. A Money Bill shall not be introduced in the Rajya Sabha.
- II. The Rajya Sabha has no power to reject a Money Bill but can suggest amendment(s).

Which of the statements given above is/are correct?

- (a) I only
(b) II only
(c) Both I and II
(d) Neither I nor II

147. Consider the following statements :

- I. The Constitution of India mentions that the Speaker has the power to adjourn both the Houses sine die.
- II. On prorogation, it is only the Speaker who can summon the Houses.

Which of the statements given above is/are correct?

- (a) I only
(b) II only
(c) Both I and II
(d) Neither I nor II

148. With reference to the United Nations (UN), consider the following pairs :

United Nations Peacekeeping Operations	Countries
I. UNMOGIP	India and Pakistan
II. UNFICYP	Cyprus
III. UNMIK	Kosovo
IV. UNTSO	Haiti

How many of the pairs given above are correctly matched?

- (a) One
(b) Two
(c) Three
(d) All the four

149. With reference to the territorial jurisdictions of High Courts in India, consider the following pairs :

High Courts	Territorial Jurisdictions
I. Calcutta High Court	Lakshadweep
II. Madras High Court	Puducherry
III. Gauhati High Court	Manipur
IV. Kerala High Court	Andaman and Nicobar Islands

How many of the pairs given above are correctly matched?

- (a) One
(b) Two
(c) Three
(d) All the four

150. As per Article 324 of the Constitution of India, the Chief Election Commissioner shall not be removed from his office except in like manner and on the like grounds as

- (a) a Judge of the Supreme Court
(b) a Judge of a High Court
(c) the Speaker of the Lok Sabha
(d) the Governor of a State