

DO NOT BREAK THE SEAL OF THE BOOKLET UNTIL YOU ARE TOLD TO DO SO

QUESTION BOOKLET

SERIES : I

Subjects : General English, General Knowledge and Aptitude,
General Science and Arithmetic

Full Marks : 300

Time Allowed : 2½ Hours

Read the following instructions carefully before you begin to answer the questions.

INSTRUCTIONS TO CANDIDATES

- This Booklet contains 150 questions to be answered in a separate OMR Answer Sheet using Black Ballpoint Pen in the following four Parts :

Part—A : General English	: 25 questions
Part—B : General Knowledge and Aptitude	: 50 questions
Part—C : General Science	: 25 questions
Part—D : Arithmetic	: 50 questions

2. All questions are compulsory.

3. You will be supplied the Answer Sheet separately by the Invigilator. You must complete the details of particulars asked for.

4. Answer must be shown by completely blackening the corresponding circle in the Answer Sheet against the relevant question number by Black Ballpoint Pen. OMR Answer Sheet without marking Series shall not be evaluated.

Example :

Suppose the following question is asked :

The Capital of Meghalaya is

- (A) Guwahati
(B) Kohima
(C) Shillong
(D) Delhi

You will have four alternatives in the Answer Sheet for your response corresponding to each question of the Question Booklet as below :

(A) (B) (C) (D)

In the above illustration, if your chosen response is alternative (C), i.e., Shillong, then the same should be marked on the Answer Sheet by blackening the relevant circle with a Black Ballpoint Pen only as below :

(A) (B) ● (D)

The example shown above is the only correct method of answering.

- Answer the questions as quickly and as carefully as you can. Some questions may be difficult and others easy. Do not spend too much time on any one question.
- There will NOT be any negative marking for wrong answers.
- The Answer Sheet must be handed over to the Invigilator before you leave the Examination Hall.
- No Rough Work is to be done on the Answer Sheet. Space for Rough Work has been provided in the Question Booklet.

PART—A : GENERAL ENGLISH

(Marks : 50)

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Each question carries 2 marks :

Directions (Q. Nos. 1–4) : Read the following passage and answer the questions by selecting the answer choice from the alternatives given. Mark the correct answer in your answer sheet.

“A principal fruit of friendship,” Francis Bacon wrote in his timeless meditation on the subject, “is the ease and discharge of the fullness and swellings of the heart, which passions of all kinds do cause and induce.” For Thoreau, friendship was one of life’s great rewards. But in today’s cultural landscape of muddled relationships scattered across various platforms for connecting, amidst constant debates about whether our Facebook ‘friendships’ are making us more or less happy, it pays to consider what friendship actually is. That’s precisely what CUNY philosophy professor Massimo Pigliucci explores in his book titled, *Answers for Aristotle : How Science and Philosophy Can Lead Us to A More Meaningful Life*, which also gave us this provocative read on the science of what we call ‘intuition’.

Philosophers and cognitive scientists agree that friendship is an essential ingredient of human happiness. But beyond the dry academic definitions—like, say, “voluntary interdependence between two persons over time, which is intended to facilitate socio-emotional goals of the participants, and may involve varying types and degrees of companionship, intimacy, affection and mutual assistance”—lies a body of compelling research that sheds light on how, precisely, friendship augments happiness.

The way friendship enhances well-being, it turns out, has nothing to do with quantity and everything to do with quality—researchers confirm that it isn’t the number of friends (or, in the case of Facebook, ‘friends’).

1. Name one change effected in the present situation which hassled to a re-thinking of the concept of friendship.
 - (A) Bacon and Thoreau’s theories are no longer available to read
 - (B) The arrival of social media on the scene
 - (C) There is more interest in the sciences
 - (D) Friendships are not possible in the real world anymore, due to over-competition
2. Friendship leads to happiness. Is it true?
 - (A) Yes, researches have proven that friendship does lead to happiness
 - (B) No, there is no relationship between friendship and happiness
 - (C) Friends cannot make each other happy
 - (D) One needs to find one’s happiness alone, with peace of mind
3. Is the quality of friends important?
 - (A) No, it is important to have more number of friends, quality does not matter
 - (B) No, number of comments on social networking sites is important, not the quality of friends
 - (C) Yes, it matters
 - (D) No, quality comes automatically with quantity

4. As per the first paragraph, what are the debates about?

- (A) They are centred around whether our Facebook friends are helping us become more or less happy
- (B) There are no debates around friendship
- (C) The quality of comments of social media is debatable
- (D) Thoreau and Aristotle's thinking is at loggerheads

Directions (Q. Nos. 5-7) : For the given underlined idioms, choose the best alternative which expresses the closest meaning of the idiom. Mark the correct answer in your answer sheet.

5. Life is an event of give and take.

- (A) make believe
- (B) always taking
- (C) always giving
- (D) adjustment

6. The personality development class started with an ice breaking session.

- (A) starting conversation
- (B) introducing chief guest
- (C) making speeches
- (D) having breakfast

7. He chickened out when he confronted opposition.

- (A) bought chicken
- (B) sold chicken
- (C) withdrew
- (D) None of the above

Directions (Q. Nos. 8-10) : In the following questions, substitute each with a single word from among the given alternatives. Mark the correct answer in your answer sheet.

8. A person who abstains from all kinds of alcoholic drinks

- (A) Tenant
- (B) Teetotaller

(C) Drunkard

(D) Truant

9. The process in which a business or an organization starts operating on an international scale

- (A) Proliferation
- (B) Development

(C) Globalization

(D) Revolution

10. To throw an event into confusion and disorder

- (A) Disrupt
- (B) Detonate
- (C) Erupt
- (D) Explode

Directions (Q. Nos. 11–13) : In the following questions, choose a word that is opposite in meaning with the given word from among the given alternatives. Mark the correct answer in your answer sheet.

11. Eminent

- (A) Noted (B) Acclaimed
(C) Unknown (D) Leading

12. Impossible

- (A) Unfeasible (B) Unworkable
(C) Attainable (D) Non-viable

13. Modest

- (A) Unhappy (B) Solemn
(C) Glum (D) Conceited

Directions (Q. Nos. 14–16) : In the following questions, choose a word that is most similar in meaning with the given word from among the given alternatives. Mark the correct answer in your answer sheet.

14. Inevitable

- (A) Uncertain (B) Doubtful
(C) Unavoidable (D) Dubious

15. Confront

- (A) Mingle (B) Challenge
(C) Conceal (D) Scheme

16. Toddler

- (A) Ancestor (B) Adult
(C) Offspring (D) Infant

Directions (Q. Nos. 17–19) : In the following questions, a sentence is given in Direct/Indirect speech. Out of the four alternatives suggested, choose the one which best expresses the same sentence in Indirect/Direct speech. Mark the correct answer in your answer sheet.

17. Lisa said to Marba, "Joshua will leave for Kolkata tomorrow."

- (A) Lisa told Marba that Joshua will leave for Kolkata tomorrow.
(B) Lisa told Marba that Joshua left for Kolkata the next day.
(C) Lisa told Marba that Joshua would be leaving for Kolkata tomorrow.
(D) Lisa told Marba that Joshua would leave for Kolkata the next day.

18. He said to her, "What a cold day!"

- (A) He told her that it was a cold day.
(B) He exclaimed to her that it was a cold day.
(C) He exclaimed that it was a rather cold day.
(D) He exclaimed that it was a very cold day.

19. He told her that he wants to meet her family.

- (A) He told her, "I want to meet your family."
(B) He told her, "I wanted to meet your family."
(C) He told her, "I wanted to meet their family."
(D) He told her, "I wanted to meet her family."

Directions (Q. Nos. 20–22) : In the following questions, there are jumbled up sentence parts. Rearrange these parts, which are labelled (a), (b), (c), (d) and (e) to produce the correct sentence. Choose the correct sequence from the given set of alternatives. Mark the correct answer in your answer sheet.

20. (a) give/(b) armies/(c) forests/(d) cover to/(e) our

- (A) baced
- (B) cbaed
- (C) cadeb
- (D) dceba

21. (a) platform/(b) was unusually/(c) crowded/(d) the railway/(e) last Sunday

- (A) ebacd
- (B) bdace
- (C) daceb
- (D) dabce

22. (a) hardly/(b) stepped out/(c) had he/(d) to rain/(e) when it began

- (A) acbed
- (B) dcbae
- (C) edcab
- (D) cbaed

Directions (Q. Nos. 23–25) : In the following questions, some sentences have errors and some do not. The underlined words are the key words where you can identify whether the sentence is erroneous or not. From the given set of choices, choose the correct alternative from the identified error. Where there is no error, choose the specified option (D). Mark the correct answer in your answer sheet.

23. The big round tables in the sitting room is made of teak.

- (A) have
- (B) had
- (C) are
- (D) No error

24. He was asking for my opinion for the song he had composed.

- (A) opinion on
- (B) opinion of
- (C) opinion with
- (D) No error

25. The judge had the wisdom to rise to the occasion.

- (A) rise from
- (B) rise for
- (C) rise at
- (D) No error

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PART—B : GENERAL KNOWLEDGE AND APTITUDE

(Marks : 100)

Each question carries 2 marks :

26. Which Union Ministry launched 'PM-Kisan Mobile App with Face Authentication Feature'?

- (A) The Ministry of Electronics and IT
- (B) The Ministry of Agriculture and Family Welfare
- (C) The Ministry of MSME
- (D) The Ministry of Home Affairs

27. Egypt conferred the 'Order of the Nile' honour to which personality?

- (A) Ratan Tata
- (B) Narendra Modi
- (C) Droupadi Murmu
- (D) Rajnath Singh

28. What is the name of the Rover, which is a part of the Chandrayaan-3 Mission?

- (A) Surya
- (B) Pragyan
- (C) Agni
- (D) Chandra

29. 'Flying Taj Mahal' is the nickname of the aircraft of which country's Prime Minister?

- (A) USA
- (B) India
- (C) UK
- (D) Canada

30. Which country is associated with 'Arrow Missile Defense System'?

- (A) Israel
- (B) Italy
- (C) Russia
- (D) USA

31. Which is the regulatory authority for civil aviation security in India?

- (A) BCAS
- (B) NITI Aayog
- (C) DRDO
- (D) ISRO

32. US-based Hindenburg Research published a report accusing which business group for stock manipulation?
- (A) Reliance Industries
(B) Adani Group
(C) ITC Limited
(D) Aditya Birla Group
33. After the RBI Monetary Policy Statement announced in February 2023, what is the repo rate?
- (A) 5.50%
(B) 5.75%
(C) 6.25%
(D) 6.50%
34. Who topped the Forbes List of the World's 100 Most Powerful Women?
- (A) Christine Lagarde
(B) Ursula von der Leyen
(C) Kamala Harris
(D) Sanna Marin
35. Dilip Mahalanabis, who was awarded the Padma Vibhushan Award in 2023, was associated with which profession?
- (A) Statistician
(B) Politician
(C) Doctor
(D) Businessperson
36. The Nobel Prize in Medicine, 2023 was awarded to Katalin Kariko and Drew Weissman for their work in
- (A) hepatitis C virus
(B) mRNA vaccines
(C) human evolution
(D) receptors for temperature
37. Tashigang, world's highest polling booth, is located in which State/UT?
- (A) Himachal Pradesh
(B) Assam
(C) Sikkim
(D) Jammu and Kashmir
38. Rafah Border Crossing, which was seen in the news, is an exclusive crossing point between
- (A) Israel and Gaza Strip
(B) Egypt and Gaza Strip
(C) Israel and Jordan
(D) Israel and Lebanon
39. Which State hosted the Second Edition of North-East Olympic Games in 2022?
- (A) Assam
(B) Meghalaya
(C) Manipur
(D) Sikkim

40. Who is the only Indian player in the Top 25 in Forbes' Annual List of the highest-paid female athletes in the world?

- (A) Mary Kom
- (B) P. V. Sindhu
- (C) Mirabai Chanu
- (D) Sania Mirza

41. Who is the first Asian man to be nominated for International Tennis Hall of Fame?

- (A) Leander Paes
- (B) Mahesh Bhupathi
- (C) Rohan Bopanna
- (D) Yuki Bhambri

42. What is the name of the world's first robot CEO?

- (A) Tina
- (B) Mika
- (C) Yo-yo
- (D) Harry

43. Arrange the following in correct chronological order of their years of establishment?

RBI, SBI, IFCI, ICICI, NABARD, UTI

- (A) RBI, SBI, IFCI, ICICI, NABARD, UTI
- (B) RBI, IFCI, ICICI, SBI, NABARD, UTI
- (C) RBI, IFCI, NABARD, ICICI, SBI, UTI
- (D) RBI, IFCI, ICICI, SBI, UTI, NABARD

44. Which of the following correctly defines the economic profit?

- (A) Total Revenue – Total Cost
- (B) Total Cost – Total Sold
- (C) Total Cost – Total Revenue
- (D) None of the above

45. Which of the following lies within the CPU?

- (A) Primary memory
- (B) Secondary memory
- (C) Mouse
- (D) Keyboard

46. Which of the following devices is used for video games, flight simulators, training simulators and for controlling industrial robots?

- (A) Mouse
- (B) Light pen
- (C) Joystick
- (D) Keyboard

47. What is the total area of Meghalaya?

- (A) 42429 km²
- (B) 12429 km²
- (C) 22429 km²
- (D) 32429 km²

48. What is the State Bird of Meghalaya?

- (A) Nongin
- (B) Emerald Dove
- (C) Blyth's Tragopan
- (D) Hill Myna

49. Which tree had been used in the making of the Living Root Bridges in Meghalaya?

- (A) *Ficus elastica*
- (B) *Quercus alba*
- (C) *Platanus occidentalis*
- (D) *Juglans microcarpa nigra*

50. Who is the shortest-serving Chief Minister of Meghalaya?

- (A) D. D. Lapang
- (B) Darwin Diengdoh Pugh
- (C) E. K. Mawlong
- (D) J. D. Rymbai

51. Which smallest number should be added to 5537 to make it divisible by 34?

- (A) 27
- (B) 29
- (C) 7
- (D) 5

52. Which of the following fractions is the largest?

- (A) $\frac{1}{8}$
- (B) $\frac{2}{12}$
- (C) $\frac{3}{16}$
- (D) $\frac{4}{20}$

53. By what least number should 1200 be multiplied so that it becomes a perfect square?

- (A) 2
- (B) 3
- (C) 4
- (D) 5

54. The HCF of 144, 180 and 192 is

- (A) 540
- (B) 432
- (C) 36
- (D) 12

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55. The LCM of 36, 90 and 24 is

- (A) 810
- (B) 360
- (C) 450
- (D) 90

56. The average age of 24 students and the class teacher is 16 years. If the class teacher's age is excluded, the average reduces by one year. What is the age of the class teacher?

- (A) 50 years
- (B) 45 years
- (C) 40 years
- (D) Data inadequate

57. A mixture of certain quantity of milk with 16 litres of water is worth 90 paise per litre. If pure milk be worth ₹ 1.08 per litre, how much milk is there in the mixture?

- (A) 60 litres
- (B) 70 litres
- (C) 80 litres
- (D) 90 litres

58. In a pocket there are ₹ 25 consisting of only the denominations of 20 paise and 50 paise. Thus there are total 80 coins in the pocket. The number of coins of the denomination of 50 paise is

- (A) 30
- (B) 70
- (C) 50
- (D) 25

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59. A number which when increased by 16% becomes 1914. The number is

- (A) 2220
- (B) 1650
- (C) 2010
- (D) 1980

60. The ratio of the cost price and the selling price of an article is 20 : 21. The gain percent is

- (A) 3
- (B) 4
- (C) 5
- (D) 6

61. The cost price of a calculator is ₹ 495. If the profit percentage is 40%, then what is the value (in ₹) of profit?

- (A) 226
- (B) 198
- (C) 186
- (D) 218

62. A table with marked price ₹ 1,200 was sold to a customer for ₹ 1,100. Find the rate of discount allowed on the table.
- (A) 9%
(B) 8.33%
(C) 9.33%
(D) 10%
63. The interest paid on ₹ 1,600 at the rate of 5% simple interest per annum for 6 years is
- (A) ₹ 2,080
(B) ₹ 450
(C) ₹ 496
(D) ₹ 480
64. At which rate of simple interest, ₹ 925 becomes ₹ 1,110 in 5 years?
- (A) 6%
(B) 4%
(C) 5%
(D) 3%
65. In what time will ₹ 1,000 become ₹ 1,331 at 10% per annum compounded annually?
- (A) 2.5 years
(B) 3 years
(C) 4.5 years
(D) 4 years
66. In a business, partners A and B invest ₹ 3,000 and ₹ 9,000 respectively. Find the ratio of their profits after 1 year.
- (A) 1 : 3
(B) 3 : 1
(C) 2 : 1
(D) 1 : 1
67. A can do a piece of work in 12 days and B in 15 days. They work together for 5 days and then B left. The number of days taken by A to finish the remaining work is
- (A) 3 days
(B) 5 days
(C) 10 days
(D) 12 days
68. A car covers a distance in 4 hours at a speed of 60 km/hr. By what percent should the speed of the car be increased to cover the same distance in 2.5 hours?
- (A) 60
(B) 40
(C) 50
(D) 100

69. A train without stoppage travels with an average speed of 72 km/hr and with stoppage it travels with an average speed of 60 km/hr. For how many minutes does the train stop on an average per hour?

- (A) 10
- (B) 12
- (C) 6
- (D) 8

70. The speed of a boat downstream is 150% more than its speed upstream. If the time taken by the boat for going 80 km downstream and 50 km upstream in 8.2 hours, what is the speed in km/hr of the boat downstream?

- (A) 16
- (B) 30
- (C) 24
- (D) 25

71. A train of length 350 m takes 96 seconds to cross a tunnel of length 450 metres. What is the speed of the train in km/hr?

- (A) 20
- (B) 25
- (C) 30
- (D) 35

72. What day of the week was 15 August, 1947?

- (A) Saturday
- (B) Monday
- (C) Sunday
- (D) Friday

73. By looking in a mirror, it appears that it is 6:30 in the clock. What is the real time?

- (A) 5:30
- (B) 11:00
- (C) 6:30
- (D) 1:00

74. In how many ways can the letters of the word 'MOMENT' be arranged?

- (A) 360
- (B) 60
- (C) 720
- (D) 120

75. The ages of X and Y are in the ratio of 8 : 7. After 10 years, the ratio of their ages will be 13 : 12. What is the difference between their ages?

- (A) 2 years
- (B) 4 years
- (C) 8 years
- (D) 6 years

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PART—C : GENERAL SCIENCE

(Marks : 50)

Each question carries 2 marks :

76. Chitinous exoskeleton is found in

- (A) birds
- (B) turtle
- (C) insects
- (D) fishes

77. Corals are formed by

- (A) molluscs
- (B) coelenterates
- (C) protozoans
- (D) echinoderms

78. Bile is secreted by

- (A) liver
- (B) pancreas
- (C) gallbladder
- (D) duodenum

79. The site of gaseous exchange in the lungs is

- (A) bronchi
- (B) alveoli
- (C) bronchioles
- (D) tracheas

80. Human skeleton consists of

- (A) 200 bones
- (B) 206 bones
- (C) 300 bones
- (D) 306 bones

81. According to chromosomal theory of inheritance

- (A) Mendelian factors are present in the chromosomes
- (B) Mendelian factors are called as genes
- (C) linked genes do assort independently
- (D) crossing-over occurs between the genes

82. The agents that cause mutations are called as

- (A) mutagens
- (B) mutataants
- (C) chromosomes
- (D) genes

83. The study of interaction between living organisms and their environment is called

- (A) phytogeography
- (B) ecology
- (C) phytosociology
- (D) None of the above

84. Which of the following sugars is present in DNA?

- (A) Deoxyribose
- (B) Ribose
- (C) Fructose
- (D) Glucose

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85. The pyramids which are always upright are
- (A) pyramids of energy
 - (B) pyramids of number
 - (C) pyramids of biomass
 - (D) None of the above
86. A constant force is acting perpendicular to the velocity of a particle. For this situation, which one is correct?
- (A) Velocity is constant
 - (B) Acceleration is constant
 - (C) Momentum will be constant
 - (D) Particle will follow elliptical path
87. Two bodies with kinetic energies in the ratio of 4 : 1 are moving with equal linear momentum. The ratio of their masses is
- (A) 1 : 2
 - (B) 1 : 1
 - (C) 4 : 1
 - (D) 1 : 4
88. The Bernoulli's theorem is based on the conservation of
- (A) mass
 - (B) energy
 - (C) momentum
 - (D) All of the above
89. For a diatomic gas, the number of translational degrees of freedom is
- (A) 4
 - (B) 5
 - (C) 3
 - (D) 6
90. At what temperature is the r.m.s. velocity of a hydrogen molecule equal to that of an oxygen molecule at 47 °C?
- (A) 80 K
 - (B) -73 K
 - (C) 3 K
 - (D) 20 K
91. The most commonly used bleaching agent is
- (A) alcohol
 - (B) carbon dioxide
 - (C) chlorine
 - (D) sodium chloride
92. Which element is present in chlorophyll?
- (A) Magnesium
 - (B) Calcium
 - (C) Iron
 - (D) Manganese

93. Which acid is present in ant sting?

- (A) Acetic acid
- (B) Formic acid
- (C) Hydrochloric acid
- (D) Butyric acid

94. Which among the following is the main constituent of biogas?

- (A) Methane
- (B) Propane
- (C) Butane
- (D) Ethane

95. What is the chemical name of baking powder?

- (A) Sodium carbonate
- (B) Calcium sulphate
- (C) Sodium hydrogencarbonate
- (D) Sodium acetate

96. If $f(a-x) = -f(x)$, then the value of $\int_0^a f(x) dx$ is

- (A) 0
- (B) $f(a)$
- (C) 1
- (D) $\frac{1}{a}$

97. Let $A = \{1, 2, 3\}$. Then the relation $R = \{(1, 2)\}$ is

- (A) reflexive
- (B) symmetric
- (C) transitive
- (D) None of the above

98. Which of the following is a point of local maxima of the function $f(x) = \sin x(1 + \cos x)$?

- (A) $x = \frac{\pi}{3}$
- (B) $x = \frac{\pi}{6}$
- (C) $x = \frac{\pi}{2}$
- (D) $x = \frac{\pi}{4}$

99. Which among the following is an integrating factor of the differential equation $x \frac{dy}{dx} - 2y = 2x$?

- (A) $\frac{1}{x^2}$
- (B) x^2
- (C) $\log x^2$
- (D) None of the above

100. If $x \notin A \cup B$, then which of the following is valid?

- (A) $x \notin A$ or $x \notin B$
- (B) $x \notin A$ and $x \notin B$
- (C) $x \in A$ or $x \in B$
- (D) $x \in A$ and $x \in B$

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PART—D : ARITHMETIC

(Marks : 100)

Each question carries 2 marks :

- 101.** The radius of a wheel is 84 cm. The number of revolutions it will make to go 52.8 km is
- (A) 1000
(B) 100000
(C) 10000
(D) 100
- 102.** A card is drawn from a pack of 52 cards. The probability that the card drawn is a heart card is
- (A) $\frac{1}{2}$
(B) $\frac{1}{4}$
(C) $\frac{15}{52}$
(D) None of the above
- 103.** $\sqrt[3]{27} + \sqrt[3]{0.008} + \sqrt[3]{0.064}$ is
- (A) 3
(B) 3.6
(C) 4.6
(D) 3.2
- 104.** The value of $4.4 - [2 - 0.64 \{3 - 1.2 \div (0.63 - 0.03)\}]$ is
- (A) 3.02
(B) 3.05
(C) 3.04
(D) 3.01
- 105.** Paul scores 88, 86 and 90 in his first three examinations. What must he score on his fourth examination to get an average of 91?
- (A) 90
(B) 92
(C) 98
(D) 100
- 106.** If $12 : x = 6 : 7$, then the value of x is
- (A) 12
(B) 13
(C) 14
(D) 15
- 107.** The solutions of $x^2 - 16 = 0$ are
- (A) 4, -4
(B) 4, 4
(C) 4, 0
(D) -4, -4
- 108.** If $4\sqrt{5}x^2 + 7x = 3\sqrt{5}$, then the value of x is
- (A) $-\frac{3\sqrt{5}}{5}, \frac{\sqrt{5}}{4}$
(B) $\sqrt{5}, 3\sqrt{5}$
(C) $-\frac{2\sqrt{5}}{5}, 5$
(D) None of the above

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109. In any equilateral triangle with side a , the area of the triangle is

(A) $\frac{3a^2}{4}$ (B) $\frac{\sqrt{3}}{4}a^2$

(C) $\sqrt{3}a^2$ (D) $\frac{a}{2}\sqrt{3}$

110. The sum of two numbers is 15. If one of the numbers is x , then the other number is

(A) $x - 15$

(B) $15 - x$

(C) 14

(D) None of the above

111. A certain fraction becomes 2, when 7 is added to its numerator and becomes 1, when 2 is subtracted from its denominator. The fraction is

(A) $\frac{3}{4}$ (B) $\frac{3}{5}$

(C) $\frac{1}{5}$ (D) $\frac{2}{5}$

112. Five times a certain whole number is equal to three less than twice the square of the number. The number is

(A) 5

(B) 3

(C) 4

(D) None of the above

113. In a class, there are 24 girls and 20 boys. The minimum number of books that can be distributed equally among girls and boys are

(A) 130

(B) 140

(C) 120

(D) 110

114. If 2 is a zero of the polynomial

$P(x) = kx^2 + (3k - 2)x + k$

then the value of k is

(A) $\frac{4}{13}$

(B) $\frac{4}{11}$

(C) $\frac{3}{7}$

(D) $\frac{3}{5}$

115. Discriminant of the quadratic equation

$x^2 - 4x + 3 = 0$

is

(A) 13

(B) 10

(C) 11

(D) 2

116. The hypotenuse of a right triangle is 1 m less than twice the shortest side. If the third side is 1 m more than the shortest side, then the length of the shortest side is

(A) 4 m

(B) 3 m

(C) 5 m

(D) 2 m

117. The n th term of the sequence

5, 2, -1, -4, -7, ...

is

- (A) $3n$
- (B) $3n - 4$
- (C) $8 - 3n$
- (D) $3n - 8$

118. A sector is cut from a circle of radius

21 cm. The angle of the sector is 150° .

The length of the arc is

- (A) 50 cm
- (B) 51 cm
- (C) 52 cm
- (D) 55 cm

119. The area of a circle that can be inscribed in a circle of radius 8 cm is

- (A) 256 cm^2
- (B) 128 cm^2
- (C) $64\sqrt{2} \text{ cm}^2$
- (D) 64 cm^2

120. If the circumference of a circle increases from 2π to 4π , then its area is

- (A) halved
- (B) doubled
- (C) tripled
- (D) four times

121. The number of solid spheres each of diameter 6 cm that can be made by melting a solid metal cylinder of height 45 cm and diameter 4 cm is

- (A) 2
- (B) 4
- (C) 5
- (D) 6

122. If (3, 2), (4, k) and (5, 3) are collinear, then k is equal to

- (A) $\frac{3}{2}$
- (B) $\frac{5}{2}$
- (C) $\frac{2}{5}$
- (D) $\frac{3}{5}$

123. The mean of n observations is \bar{x} . If the first term is increased by 1, second by 2 and so on, then the new mean is

- (A) $\bar{x} + n$
- (B) $\bar{x} + \frac{n}{2}$
- (C) $\bar{x} + \frac{n+1}{2}$
- (D) $\bar{x} - \frac{n}{2}$

124. If the mean of first n natural numbers is 15, then n is

- (A) 15
- (B) 16
- (C) 29
- (D) 30

125. The probability that a number selected at random from the numbers

3, 4, 5, ..., 25

is prime, is

- (A) $\frac{8}{21}$
- (B) $\frac{8}{23}$
- (C) $\frac{8}{19}$
- (D) None of the above

126. The product of two numbers is 4025 and their LCM is 25. Then their HCF is

- (A) 131
- (B) 141
- (C) 151
- (D) 161

127. How many boxes are required for filling 15 kg of sweet, if each box is filled with 250 gm of sweet?

- (A) 60
- (B) 70
- (C) 80
- (D) 90

128. The smallest number that must be added to 1780 to make it a perfect square is

- (A) 49
- (B) 59
- (C) 69
- (D) 79

129. A number consists of two digits. The sum of the digits is 9. If 63 is subtracted from the number its digits are reversed. The number is

- (A) 18
- (B) 81
- (C) 91
- (D) 41

130. If $\log_x 4 = \frac{1}{4}$, then x is equal to

- (A) 16
- (B) 64
- (C) 256
- (D) 1024

131. In an examination, 35% of total students failed in Hindi, 45% failed in English and 20% in both. The percentage of students who passed in both the subjects is

- (A) 25%
- (B) 30%
- (C) 35%
- (D) 40%

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132. If a gold ring is sold for ₹ 14,500 at a loss of 20%, then the cost price of the ring is

- (A) ₹ 18,125
- (B) ₹ 18,000
- (C) ₹ 17,750
- (D) ₹ 17,500

133. If $(2x + 3y) : (3x + 5y) = 18 : 29$, then $x : y$ is

- (A) 2 : 3
- (B) 3 : 4
- (C) 4 : 3
- (D) 3 : 2

134. A and B can do a piece of work in 9 days; B and C can do it in 12 days; A and C can do it in 18 days. In how many days will A, B and C finish it, working together?

- (A) 4 days
- (B) 6 days
- (C) 8 days
- (D) 10 days

135. The speed of a bus is 72 km/hr. The distance covered by the bus in 5 seconds is

- (A) 25 m
- (B) 50 m
- (C) 75 m
- (D) 100 m

136. The simple interest on ₹68,000 at $16\frac{2}{3}\%$ per annum for 9 months is

- (A) ₹8,000
- (B) ₹8,250
- (C) ₹8,500
- (D) ₹8,750

137. In how many years, ₹1,00,000 will become ₹1,33,100 at compound interest rate of 10% per annum?

- (A) 2 years
- (B) 3 years
- (C) 4 years
- (D) 5 years

138. The ratio of the circumferences of two circles is 2 : 3. Then the ratio of their areas is

- (A) 4 : 9
- (B) 8 : 27
- (C) 4 : 6
- (D) 6 : 8

139. Three spheres of radii 3 cm, 4 cm and 5 cm are melted to form a new sphere. The radius of the new sphere is

- (A) 12 cm
- (B) 10 cm
- (C) 8 cm
- (D) 6 cm

140. In how many ways can a cricket team of 11 players be chosen out of 14 players?

- (A) 154
- (B) 364
- (C) 284
- (D) 444

141. The sum of three consecutive odd natural numbers is always divisible by

- (A) 3
- (B) 6
- (C) 9
- (D) 15

142. If $a + b + c = 13$; $a^2 + b^2 + c^2 = 69$, then $ab + bc + ca$ is equal to

- (A) 25
- (B) 75
- (C) 50
- (D) 100

143. If $5^{(x+3)} = 25^{(3x-4)}$, then x is equal to
- (A) $\frac{5}{11}$
(B) $\frac{3}{11}$
(C) $\frac{1}{11}$
(D) $\frac{11}{5}$
144. The average of all prime numbers lying between 30 and 50 is
- (A) 39.2
(B) 39.4
(C) 39.6
(D) 39.8
145. The age of a mother today is thrice that of her daughter. After 12 years, the age of the mother will be twice that of her daughter. The age of the daughter today is
- (A) 12 years
(B) 14 years
(C) 16 years
(D) 18 years
146. The mean proportional between 0.08 and 0.18 is
- (A) 0.10
(B) 0.12
(C) 0.14
(D) 0.16
147. A 160 m long train crosses a 160 m long platform in 16 seconds. The speed of the train is
- (A) 20 km/h
(B) 36 km/h
(C) 72 km/h
(D) 80 km/h
148. The three sides of a triangular field are 20 m, 21 m and 29 m long respectively. The area of the field is
- (A) 210 sq. m
(B) 215 sq. m
(C) 220 sq. m
(D) 225 sq. m
149. In a simultaneous throw of a pair of dice, the probability of getting a total of more than 7 is
- (A) $\frac{11}{12}$
(B) $\frac{7}{12}$
(C) $\frac{1}{12}$
(D) $\frac{5}{12}$
150. A canteen requires 105 kg of wheat for a week. How many kg of wheat will it require for 58 days?
- (A) 860 kg
(B) 870 kg
(C) 880 kg
(D) 890 kg