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

QUESTION BOOKLET | SERIES III

Subjects : General English, General Knowledge & Mathematics

BOOKLET SERIAL NO.   **4503**

Marks : 350
Time : $2\frac{1}{2}$ hours

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

INSTRUCTIONS TO CANDIDATES

1. This booklet contains **175 questions** to be answered in a separate OMR Answer Sheet using Black Ball Pen in following three parts:

   Part-A-General English : 50 questions, Part-B-General Knowledge : 50 questions,

   Part-C- Mathematics : 75 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. Answers must be shown by completely blackening the corresponding circles in the Answer Sheet against the relevant question number by Black Ball Pen. OMR Answer Sheet without marking series/ double series marking shall not be evaluated.

Example :

   Supposing 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 :-

   Ⓐ Ⓑ Ⓒ Ⓓ

   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 Ball Point Pen only as below :-

   Ⓐ Ⓑ ⬤ Ⓓ

   ### WHICH IS THE ONLY CORRECT METHOD OF ANSWERING

5. 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.

6. There will be NOT be any negative marking for wrong answers.

7. The Answer Sheet must be handed over to the invigilator before you leave the Examination Hall.

8. 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 :100

Each question carries 2 marks :

Directions : Give one word for the following. Choose from the options given below.

1. The study of pre-historic people and their cultures
a) History b) Archaeology
c) Geography d) Neurology

2. One who is outgoing and outspoken
a) Vulnerable b) Introvert
c) Extrovert d) Friendly

3. Equally skillful with each hand
a) Flexible b) Ambidextrous
c) Luscious d) Misanthrope

4. A person who teaches dance moves
a) Dancer b) Artist
c) Producer d) Choreographer

5. An imaginary ideal society free of poverty and suffering
a) Paradise b) Eden
c) Utopia d) Arcadia

Directions : In the sentences given below, fill in the blanks with an appropriate and suitable word from the four options that have been supplied.

6. That has got to be the ____ game I have ever seen
a) Worse b) Worst
c) Worsted d) Worsed

7. The young man was as ____ as a peacock on buying his first car.
a) Proud b) Pleasant
c) Happy d) Cocky

8. In the past, a feast was an ____ for informal trade.
a) Incident b) Occasion
c) Impulse d) Agreement

9. I put my phone ____ silent mode when I entered the Doctor's chamber.
a) Through b) On
c) In d) At

10. The arrested thief was as ____ as a cucumber
a) Cool b) Gluity
c) Clean d) Green

Directions : In the sentences given below, fill in the blanks with an appropriate and suitable word from the options provided.

11. I don't think these plants are ___ to Meghalaya.
a) Ingenuous b) Indigenous
c) Ingenious d) Indogenic

12. I just wanted to ___ you for the wonderful speech you gave tonight.
a) Complement b) Compliment
c) Comprehend d) Compliance

13. A paperback ___ of the book was released yesterday.
a) Edition b) Addition
c) Editorial d) Additional

14. There was no one else in the room ___ for Jim.
a) Accept b) Except
c) Exception d) Expect

15. The ___ of the medicine on her illness was surprisingly fast
a) Affect b) Effect
c) Impact d) Elect

Directions : Complete the phrase by filling in the appropriate answer from the given options.

16. A blessing in ___
a) Disguise b) Plenty
c) Winning d) Money

17. Beat around the ____
a) Barrel b) Broom
c) Ground d) Bush

18. A stitch in time saves ____
a) Hours   b) Ten
c) Nine   d) Money

19. We'll cross that ____ when we come to it
a) River   b) Road
c) Bridge   d) Junction

20. Birds of a feather flock ____
a) In cold weather   b) In warm weather
c) Separately   d) Together

Directions : Choose the option which best expresses the meaning of the following idioms and phrases.

21. At the drop of a hat
a) Very clumsy
b) Tendency to be nervous
c) Without any hesitation
d) Always fashionable

22. Under the weather
a) A weather forecast
b) Caught in the rain
c) Unpredictable weather
d) Feeling ill or sick

23. Tie the knot
a) To tie a packet securely
b) To get married
c) A magician's rope trick
d) A sailor's rope

24. Cut corners
a) A tailor's skill
b) A reckless driver
c) A good job done
d) When something is done badly to save money

25. Zero tolerance
a) No credit given for work badly done
b) Someone who is bad tempered
c) Severest punishment possible for committing a crime
d) Being extremely unreasonable

Directions : From the options provided below, choose the word opposite in meaning to the given word.

26. Adversity
a) Industrious   b) Prosperity

c) Charity   d) Calamity

27. Barren
a) Sterile   b) Evergreen
c) Undergrowth   d) Fertile

28. Capable
a) Worthy   b) Incompetent
c) Still   d) Bustle

29. Haughty
a) Arrogant   b) Powerful
c) Humble   d) Timid

30. Admit
a) Allow   b) Hesitate
c) Deny   d) Disagree

Directions : Fill in the blanks with appropriate prepositions from the options provided.

31. The store I was telling you about is ____ the street.
a) Over   b) Under
c) Across   d) From

32. She is scared to go out ____ night.
a) Across   b) Beyond
c) At   d) On

33. We have been living ____ Chandigarh for the past eight years.
a) in   b) Out
c) At   d) Of

34. My cousins arrived here yesterday ____ Chennai.
a) With   b) Through
c) From   d) By

35. We travelled by boat ____ get to the island.
a) With   b) On
c) To   d) In

Directions : Fill in the blanks with appropriate articles from the options provided.

36. They usually spend their holidays in ____ hills.
a) The   b) An
c) This   d) A

37. Bangalore is _____ ideal place for one's education.
a) A
b) Some
c) Really
d) An

38. Kobe Bryant is _____ basketball player.
a) Some
b) A
c) The
d) An

39. Tennis is _____ very interesting game.
a) The
b) An
c) A
d) Our

40. My uncle's car can do over 200 kilometres _____ hour.
a) Per
b) Every
c) An
d) On

Directions : Identify the correct sentence from the options given below.

41. a) He went to work despite of his illness
b) He went to work despite his illness
c) He went to worked despite his illness
d) All options above are correct

42. a) Raju, who he is my best friend, is a writer.
b) Raju, who my best friend is, is a writer,
c) Raju, who is my best friend, is a writer
d) All options above are correct

43. a) No matter what that I do, I can't make her happy
b) No matter what I do, I can't make her happy
c) No matter what I did, I can't make her happy
d) All options above are correct

44. a) She is busy at work and won't be home before 10.30
b) She is busy at the work and won't be home before 10.30.
c) She is busy at work and won't been home before 10.30
d) All options above are correct

45. a) I have decided to quit my job a month ago
b) I had decided to quit my job a week ago
c) I have decided to quit my job a week ago.
d) All options above are correct

Directions : From the options provided below, choose the word closest in meaning to the given word.

46. Lavish
a) Opulent
b) Scarce
c) Colourful
d) Deficient

47. Savage
a) Civilized
b) Average.
c) Illiterate
d) Wild

48. Timid
a) Clever
b) Bold
c) Meek
d) Diplomatic

49. Yoke
a) Instrument
b) Burden
c) Wheel
d) Log

50. Authentic
a) Abrupt
b) Fictitious
c) Trustworthy
d) Impolite

PART - B - GENERAL KNOWLEDGE

Marks : 100

Each question carries 2 marks :

51. 'Checkpoint Tipline' which was in news is
a) Electronic toll collection on Toll plazas on National Highways
b) E-filling of Income tax by an individual
c) Platform launched by whatsApp to address the issue of fake news during Lok Sabha elections
d) Resolving border issues between neighbouring countries

52. Mount Agung which witnessed volcanic eruption is located in
a) Indonesia   b) Philippines
c) Japan   d) Mexico

53. 'Param Shivay' is a
a) Indigenously built Supercomputer
b) Anti-tank missile system
c) Solar powered airplane
d) A device to predict weather in a particular region

54. 'Lord Howe Island' which is a UNESCO world heritage site is located near
a) Australia   b) USA
c) Peru   d) South Africa

55. 'Garia Puja' is a puja done by the tribes of
a) Tripura   b) Madhya Pradesh
c) Kerala   d) Meghalaya

56. India is in the process of procuring the Spike-LR Anti Tank Missiles from
a) Israel   b) Russia
c) USA   d) Japan

57. Global Talent competitiveness Index has been released by
a) United Nations conference on Trade and development
b) World bank
c) International Monetary Fund
d) INSEAD Business School

58. National Science Day is observed on
a) 28th February   b) 5th January
c) 14th March   d) 2nd June

59. Who fixes REPO rate in India ?
a) IMF   b) RBI
c) WTO   d) SEBI

60. The book 'Gokhale, My Political Guru' was written by
a) C.R. Das   b) M.A. Jinnah
c) Shaukat Ali   d) M.K. Gandhi

61. Bodo and Dogri were added in the 8th schedule of the Constitution of India by the following amendment -
a) 81st Amendment   b) 92nd Amendment
c) 85th Amendment   d) 91st Amendment

62. The largest proven oil reserve of the world lies in
a) Saudi Arabia   b) Iraq
c) Iran   d) Venezuela

63. Which of the following statement is wrong?
a) Fundamental rights are not absolute
b) Fundamental rights are non-enforceable
c) Fundamental rights are Justiciable
d) Fundamental rights cannot be suspended during a national emergency

64. Who among the following was responsible for the founding of Anglo-Muhammadan Oriental College ?
a) Altaf Hussain
b) Sir Sayyid Ahmed Khan
c) Muhammad Iqbal
d) Yusuf Ali

65. India's first honey testing laboratory has been set up in which of the following states ?
a) Madhya Pradesh   b) Gujarat
c) Uttar Pradesh   d) Haryana

66. The 'Bold Kurukshetra 2019' is a joint military exercise between
a) India and Singapore
b) India and Indonesia
c) India and Nepal
d) India and Australia

67. In which country of the world the largest

Buddhist temple is located ?
a) Japan
b) Indonesia
c) China
d) India

68. Which of the following rights was considered by Dr. Ambedkar as the 'Heart and Soul' of the Indian Constitution ?
a) Right to equality
b) Right to freedom of Religion
c) Right against exploitation
d) Right to Constitutional remedies

69. Who is known as 'Lauh Purush' of India ?
a) Jawaharlal Nehru
b) Mahatma Gandhi
c) Vallabhbhai Patel
d) Atal Bihari Vajpayee

70. National Unity Day is celebrated on
a) 31st July
b) 31st August
c) 31st October
d) 31st December

71. Who among the following is the author of the book 'The Audacity of Hope' ?
a) Al Gore
b) Barack Obama
c) Bill Clinton
d) Hillary Clinton

72. Where is the city of Yangon ?
a) Thailand
b) Myanmar
c) Ethiopia
d) Estonia

73. Who gave the first evidence of the Big-Bang theory ?
a) Edwin Hubble
b) Albert Einstein
c) S. Chandrasekhar
d) Stephen Hawking

74. The Olympic Flame symbolises
a) Speed, Perfection and Strength
b) Unity among various nations of the world
c) Continuity between the ancient and the modern games
d) Sports as a means of securing harmony among nations

75. Attorney General of India is appointed by
a) Chief Justice of Supreme Court
b) Parliament
c) Law Minister
d) President

76. What is the motto of the 2020 Summer Olympic which was held in Tokyo during Covid-19 pandemic ?

a) Live your passion
b) One world, one dream
c) Friends forever
d) United by emotion

77. In the context of Planning in India, when was NITI Aayog established ?
a) August 15, 2015
b) January 01, 2016
c) January 01, 2015
d) August 15, 2016

78. Who among the following climbed the Mount Everest for the 25th time in May 2021 ?
a) Kami Rita
b) Apa
c) Phurba Tashi
d) Pemba Gyalje

79. Mother Teresa was born in
a) Switzerland
b) India
c) Germany
d) Macedonia

80 'Kundankulam Project' is located in which state ?
a) Tamil Nadu
b) Karnataka
c) Telangana
d) Kerala

81. Which of the following Schedules to the Constitution of India relates to languages ?
a) 7th Schedule
b) 8th Schedule
c) 9th Schedule
d) 10th Schedule

82. Who wrote "Saare jahan se achha Hindustan humara" ?
a) Muhammad Iqbal
b) Sarat Chandra Chatterjee
c) Bankim Chandra Chatterjee
d) Rabindranath Tagore

83. Who authored the book 'India from Midnight to Millennium' ?
a) Khushwant Singh
b) Mira Nair
c) Sashi Tharoor
d) Arun Jaitley

84. Who is the Ex-officio Chairman of Rajya Sabha ?
a) President of India
b) Leader of the Ruling Party
c) Vice President of India
d) Speaker of Lok Sabha

85. Which of the following is the first state to have been formed on the liguistic basis ?
a) Gujarat
b) Andhra Pradesh
c) Punjab
d) Karnataka

86. Which of the following Articles of Indian Constitution deal with 'Right to Religion' ?
a) Articles 14 to 18   b) Articles 19 to 22
c) Articles 23 and 24   d) Articles 25 to 28

87. The largest population of Scheduled Tribes in India is in the state of (as per 2011 census)
a) Bihar   b) Maharashtra
c) Madhya Pradesh   d) Orissa

88. What is the full form of RAM in a computer?
a) Random Access Memory
b) Readily Available Memory
c) Ready At-a-time Memory
d) Ready to Access Memory

89. 'Eco mark' is given to the Indian products that are
a) Pure and unadulterated
b) Rich in proteins
c) Environment friendly
d) Economically viable

90. In which date the prestigious Nobel Prize is awarded (i.e. the anniversary of Alfred Nobel's death) ?
a) November 30   b) December 10
c) January 17   d) January 21

91. 'Habeas Corpus' writ is associated with
a) Anticipatory bail
b) Quashing the order of Un-administrative authority
c) An order of freedom of speech
d) Produce a person before court

92. On a sudden cardiac arrest, which of the following is advised as a first step to revive the functioning of human heart ?
a) Mouth to mouth resuscitation
b) Giving external cardiac massage
c) Sprinkling water on the face
d) Giving cool water to drink

93. Which of the following is needed by a person suffering from diabetes ?
a) Antibiotics   b) Insulin
c) Penicillin   d) Streptomycin

94. Pressure cooker cooks rice faster because
a) It always lets the steam escape
b) High pressure crushes the hard covering of rice grains
c) It does not let the heat energy escape easily
d) High pressure raises the boiling point of water

95. The clear sky looks blue because of
a) Reflection of light
b) Refraction of light
c) Diffraction of light
d) Scattering of light

96. The drug quinine is used in the treatment of
a) Bubonic plague   b) Malaria
c) Typhus   d) Yellow fever

97. The words of which poem are inscribed on the entrance to the players tunnel at Wimbledon?
a) The Tyger (by William Blake)
b) Forest Fire (by Kamala Das)
c) If (by Rudyard Kipling)
d) The Lesson for Today (by Robert Frost)

98. Which of the following International organization releases the Global Environment outlook Report ?
a) International Union for Conservation of Nature
b) United Nations Environment Programme
c) Food and Agriculture organization
d) World Wide Fund for nature

99. What is 'Staphylococcus epidermidis' ?
a) A flowering plant found in upper Himalayas
b) A virus found on International space station
c) A bacteria found on human skin
d) A new species of frog

100. The scheme 'Kishan Kalyan Pradhikaran' was launched to increase farm productivity and farmers income. Which of the following states has launched the scheme ?
a) Maharashtra   b) Punjab
c) Haryana   d) Madhya Pradesh

PART - C - MATHEMATICS

Marks: 150

Each question carries 2 marks :

101. The value of cos 480° is

a) 0

b) $\frac{1}{2}$

c) $-\frac{1}{2}$

d) 1

102. Let R = {(a, b) : a, b ∈ IN and a = b²}, then R is

a) Reflexive
b) Symmetric
c) Transitive
d) None of these

103. A can solve 90% of the problems given in a book and B can solve 70%. The probability that atleast one of them will solve a problem selected at random from the book is

a) $\frac{63}{100}$

b) $\frac{97}{100}$

c) 0

d) $\frac{7}{10}$

104. A couple has 2 children. The probability that both are boys if it is known that one of the children is a boy is

a) $\frac{1}{2}$

b) $\frac{1}{3}$

c) $\frac{1}{4}$

d) $\frac{2}{3}$

105. The value of $\int\limits_{0}^{\frac{\pi}{2}} \log (\tan x)\, dx$ is

a) 0

b) 1

c) -1

d) None of these

106. The system of inequations x + 2y ≤ 3, 3x + 4y ≥ 12   x ≥ 0, y ≥   has
a) No solution
b) One solution
c) Infinitely many solution
d) None of these

107. A quadrilateral with vertices (3, 2), (0, 5), (-3, 2), (0, -1) is a
a) Parallelogram
b) Rectangle
c) Square
d) Rhumbus

108. The circumference of the semi circle is 180 cm. If the side of a square is 60% more than the diameter of the circle. The perimeter of the square is
a) 368 cm
b) 464 cm
c) 486 cm
d) 448 cm

109. The area of parallelogram, whose diagonal are $\vec{a}$ and $\vec{b}$ is

a) $\left|\vec{a} \times \vec{b}\right|$

b) $\vec{a} \times \vec{b}$

c) $\frac{1}{2}\left|\vec{a} \times \vec{b}\right|$

d) $\left|\vec{a} \times \vec{b}\right|^2$

110. y = ce⁻ˣ is a solution of the differential equation

a) $\frac{dy}{dx} = y$

b) $\frac{dy}{dx} = -y$

c) $\frac{dy}{dx} = c$

d) $\frac{dy}{dx} = xy$

111. If y = cos²x², then $\frac{dy}{dx}$ is

a) 2x Sin(2x²)
b) -2x Sin(2x²)
c) -2x Cos(2x²)
d) -2x Sinx²

112. The distance of the point P(2, 1,-1) from the plane x - 2y + 4z = 9 is

a) $\frac{12}{\sqrt{21}}$

b) $\frac{13}{\sqrt{21}}$

c) $\frac{14}{\sqrt{21}}$

d) $\frac{15}{\sqrt{21}}$

113. The function f : IR → IR defined by f(x) = Sin(2x+1), ∀x ∈ IR is
a) One-one
b) Onto
c) Neither one-one nor onto

d) one-one but not onto

114. From the matrix equation AB = AC, it can be concluded that B = C provided
a) A is singular matrix
b) A is non-singular matrix
c) A is symmetric matrix
d) A is skew symmetric matrix

115. If $\Delta = \begin{vmatrix} a & b & c \\ x & y & z \\ p & q & r \end{vmatrix}$, then $\begin{vmatrix} ka & kb & kc \\ kx & ky & kz \\ kp & kq & kr \end{vmatrix}$ is

a) Δ
b) $k\Delta$
c) $3k\Delta$
d) $k^3\Delta$

116. If $y = t^2$ and t = x+3, then $\dfrac{dy}{dx}$ is equal to
a) $(x+3)^2$
b) $2(x+3)$
c) $2t^3$
d) $2(x+3)^2$

117. The value of the $\lim\limits_{x \to 0} \dfrac{\sin 3x}{x}$ is
a) 3
b) 0
c) 1
d) 2

118. The second derivative of $y = x^3 - 5x^2 + x$ is
a) 10x-5
b) 6x-10
c) $3x^2-10x$
d) $3x^2-10x+1$

119. Consider the mapping f : A $\to$ B is defined $f(x) = \dfrac{x-1}{x-2}$, such that f(x) is one-one onto, the domain of f(x) is
a) IR-{2}
b) IR
c) R-{1,2}
d) IR-{0}

120. A survey shows that 73% of the Indian like apples, whereas 65% like oranges. What percentage of Indian like both apples and oranges ?
a) 25%
b) 27%
c) 35%
d) 38%

121. If log(x+1) + log(x-1) = log3, then x is equal to
a) -2
b) 2
c) 1
d) -1

122. How many numbers are there between 100 and 1000 such that every digit is either 2 or 9 ?
a) 2
b) 9
c) 8
d) 29

123. In an examination, a candidate has to pass in each of the 5 subjects. In how many ways can he fail ?
a) 5
b) 10
c) 20
d) 31

124. The value of x, when 1 + 6 + 11 +....+ x = 148 is
a) 48
b) 40
c) 36
d) 30

125. A man repays a loan of Rs.3250 by paying Rs.20 in the first month and then increasing it by Rs.15 every month. How long will it take him to clear the loan ?
a) 20
b) 25
c) 30
d) 15

126. The value of $\cos(-\pi)$ is
a) 1
b) -1
c) 0
d) $\dfrac{1}{2}$

127. The slope of a line whose inclination is 135° is
a) 0
b) 1
c) -1
d) not defined

128. The angle between the line whose slope are $\dfrac{1}{2}$ and 3 is
a) 0
b) 30
c) 45
d) 60

129. A tap can fill an empty tank in 12 hours and a leakage can empty the whole tank in 20 hours. If the tap and the leakage are working simultaneously, how long will it take to fill the whole tank ?
a) 30
b) 35
c) 40
d) 45

130. A person travels from P to Q at a speed of 40 kmph and return to Q by increasing his speed by 50%. What is the average speed for both the

trip?
a) 36 kmph   b) 40 kmph
c) 45 kmph   d) 48 kmph

131. The equation of the line parallel to the x-axis at a distance of 8 units above it is
a) y - 8 = 0   b) y + 8 = 0
c) -y + 8 = 0   d) y - 8 = 2

132. The radius of a circle represented by the equation $x^2 + y^2 - 2x + 2y - 23 = 0$ is
a) 4   b) 5
c) 6   d) 7

133. The length of the major axes of the ellipse
$\dfrac{x^2}{25} + \dfrac{y^2}{9} = 1$ is
a) 3   b) 9
c) 10   d) 25

134. The distance between the points A(5,1,2) and B(4,6,-1) is
a) $\sqrt{35}$ units   b) 35 units

c) 30 units   d) $\sqrt{41}$ units

135. The probability that a leap year has 53 Sundays is

a) $\dfrac{53}{365}$ b) $\dfrac{53}{366}$

c) $\dfrac{2}{366}$ d) $\dfrac{2}{7}$

136. From a well shuffled deck of 52 cards, a card is drawn at random. The probability that a card drawn is either red or a king is

a) $\dfrac{6}{13}$ b) $\dfrac{7}{13}$

c) $\dfrac{1}{2}$ d) 1

137. In an entrance examination Seema score 56 percent marks, Nitya score 92 percent marks and Meena score 634 marks. The maximum marks of the examination is 875. The average marks scored by all the three girls together is
a) 1939   b) 817
c) 680   d) 643

138. The greatest number of four digits which is divisible by 15,25,40 and 75 is
a) 600   b) 399
c) 9600   d) 9999

139. Every composite number can be express as a product of
a) Coprimes   b) Primes
c) Twin primes   d) None of these

140. If α and β are zeroes of polynomial $2y^2 - 4y + 3$. Then the value of $\alpha^2\beta + \alpha\beta^2$ is
a) 2   b) 4

c) 3   d) $\dfrac{3}{4}$

141. The system of equations $\dfrac{2}{3}x + y = 4$ and

$x + \dfrac{3}{2}y = 12$ has

a) No solution
b) Infinitely many solution
c) Unique solution
d) None of these

142. If x = 3 is a solution of the equation $3x^2 + (k-1)x + 9 = 0$, then k is equal to
a) 11   b) -11
c) -13   d) 13

143. If the equation $x^2 - bx + 1 = 0$ does not possess real roots, then
a) b < -2   b) b > 2
c) -2 < b < 2   d) -3 < b < 3

144. Two poles of heights 13m and 7m respectively stand vertically on a plane ground at a distance of 8m from each other. Distance between their top is
a) 8   b) 9
c) 10   d) 11

145. If three sides of a triangle are a, $\sqrt{3}\,a$ and $\sqrt{2}\,a$. The measure of the angle opposite to the largest side is
a) 30°   b) 45°
c) 60°   d) 90°

146. If the point P(x,y) is equidistance from

R(5,1) and S(-1,5), then
a) x = 5y   b) 5x = y
c) 2x = 3y   d) 3x = 2y

147. Perimeter of the triangle formed by the points O(0,0), A(a,0) and B(0,b) is

a) $a+b+\sqrt{a^2+b^2}$ b) $a+b+2\sqrt{ab}$

c) $a+b+\sqrt{ab}$ d) $a+b$

148. The value of $\sqrt{6+\sqrt{6+\sqrt{+....}}}$ to $\propto$ is
a) 6   b) 3
c) 2   d) 1

149. The fourth vertex D of a parallelogram ABCD whose three vertices are A(-2, 3), B(6, 7) and C(8, 3) is
a) (0, 1)   b) (1, 0)
c) (-1, 0)   d) (0, -1)

150. If the centroid of the triangle formed by the points (a, b), (b, c) and (c, a) is at the origin, then $a^3 + b^3 + c^3 =$
a) 0   b) abc
c) 3abc   d) a + b + c

151. The height of a tower is 10m. The length of its shadow, when the sun's altitude is 45^0 is
a) 10m   b) 12m
c) 15m   d) 20m

152. The angle of elevation of the top of the tower from two points distance a and b from its base and in the same straight line will be complementary. Then the height of the tower is

a) ab b) $\dfrac{a}{b}$

c) $\sqrt{ab}$ d) $\sqrt{\dfrac{a}{b}}$

153. On increasing the diameter of a circle by 40%, its area will be increase by
a) 40%   b) 80%
c) 96%   d) 82%

154. If the circumference of a circle increase from 2π to 4π, then its area is
a) Halved   b) Doubled

c) Tripled   d) Four times

155. Which of the following remain same when one solid is converted to the other ?
a) Surface area   b) Volume
c) Height   d) Radius

156. The algebraic sum of the deviation of frequency distribution from its mean is
a) 0   b) Always negative
c) Always positive   d) Non-zero number

157. Seven points lie on a circle. The number of chords that can be drawn using these point are
a) 7   b) 14
c) 21   d) 49

158. If the 21th and 22nd terms in the expansion of $(1+x)^{44}$ are equal, then the value of x is
a) 21   b) 22

c) $\dfrac{8}{7}$ d) $\dfrac{7}{8}$

159. The co-efficient of x^5 in $(x+3)^9$ is
a) 10206   b) 10200
c) 10000   d) 0

160. The length x of a rectangle is decreasing at the rate of 5cm/minute and the width y is increasing at the rate of 4cm/minute. When x = 8 and y = 6, the rate of change of area of the rectangle is -
a) 2 cm²/minute   b) 20 cm²/minute
c) 48 cm²/minute   d) None of these
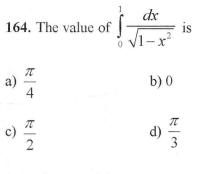
161. Two numbers, whose sum is 16 and the sum of whose cubes is minimum is
a) 15 and 1   b) 14 and 2
c) 12 and 4   d) 8 and 8

162. The intervals on which the function f(x) = x³+3x²-105x+25 is decreasing is
a) [5, 7]   b) [-7, 5]
c) [-5, 7]   d) [-7, -5]

163. The equation of the tangent to the curve y = x⁴-6x³+13x²-10x+5 at the point (1, 3) is
a) x - y + 1 = 0   b) x - 2y + 1 = 0
c) 2x - y + 1 = 0   d) 2x - y - 1 = 0

164. The value of $\int\limits_0^1 \dfrac{dx}{\sqrt{1-x^2}}$ is

a) $\dfrac{\pi}{4}$

b) 0

c) $\dfrac{\pi}{2}$

d) $\dfrac{\pi}{3}$

165. The area of the region bounded by the curve $y = x^2$, x-axis and the line $x = 1$ and $x = 3$ is

a) 26

b) $\dfrac{26}{3}$

c) $\dfrac{26}{5}$

d) 0

166. The unit vector perpendicular to the vectors $\hat{i} + \hat{j}$ and $\hat{j} + \hat{k}$ is

a) $\hat{i} + \hat{j} + \hat{k}$

b) $\dfrac{1}{3}\left(\hat{i} + \hat{j} + \hat{k}\right)$

c) $\hat{i} + \hat{j} - \hat{k}$

d) $\dfrac{1}{\sqrt{3}}\left(\hat{i} - \hat{j} + \hat{k}\right)$

167. If $\left|\vec{a}+\vec{b}\right| = \left|\vec{a}-\vec{b}\right|$, then the vectors $\vec{a}$ and $\vec{b}$ are

a) Parallel

b) Perpendicular

c) Incline at an angle $\dfrac{\pi}{4}$

d) Incline at an angle $\dfrac{\pi}{6}$

168. Let the vector $\vec{u}$, $\vec{v}$ and $\vec{w}$ be co-planar. Then $\vec{u}\cdot(\vec{v} \times \vec{w})$ is

a) 0

b) $\vec{0}$

c) A unit vector

d) None of these

169. The direction cosine of y-axis are

a) (1, 0, 0)

b) (0, 0, 0)

c) (0, 1, 0)

d) (0, 0, 1)

170. The angle between two diagonal of a cube is

a) 30^0

b) 45^0

c) $\text{Cos}^{-1}\dfrac{1}{3}$

d) 90^0

171. If α, β and γ be the angle which the line makes with the positive direction of axes, then $\text{Sin}^2\alpha + \text{Sin}^2\beta + \text{Sin}^2\gamma$ is

a) 1

b) 2

c) -2

d) 3

172. The distance of the point (1, 1, 2) from the plane 2x+y+3z-9=0 is

a) 9

b) $\dfrac{9}{\sqrt{14}}$

c) 0

d) $\dfrac{18}{\sqrt{14}}$

173. To a man running at a speed of 20 km/h, the raindrop appear to be falling at an angle of 30^0 from the vertical. If the raindrop are actually falling vertically downwards, their velocity in km/hr is

a) $10\sqrt{3}$

b) 10

c) $20\sqrt{3}$

d) 40

174. A train of length 200m travelling at 30 m/s overtakes another of length 300m travelling at 20 m/s. The time taken by the first train to pass the second is

a) 30 secs

b) 50 secs

c) 10 secs

d) 40 secs

175. If you want to kick a football to a maximum distance, the angle at which it should be kick is

a) 45^0

b) 90^0

c) 30^0

d) 60^0

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