

**A**

90. The difference between compound interest and simple interest on a sum for 2 years at the same 6% interest per annum is ₹ 36. Then that sum (in rupees) is

ఒక మొత్తంపై 2 సంవత్సరాల్లో, సంవత్సరానికి ఒకే రేటు 6% తో బారువడ్డీ, చక్రవడ్డీల భేదం ₹36 అవుతుంది. ఆ మొత్తం (రూపాయల్లో)

- (1) 10,000      (2) 20,000      (3) 15,000      (4) 18,000

91. The length and breadth of a rectangle are changed by +20% and -10% respectively. Then the percentage change in the area of the rectangle is.

ఒక దీర్ఘ చతురస్రపు పొడవు, వెడల్పులలో వరుసగా +20% మరియు - 10% మార్పు చేయబడ్డాయి. అప్పుడు ఆ దీర్ఘ చతురస్రపు వైశాల్యములో వచ్చే మార్పు శాతము.

- (1) 15      (2) 10      (3) 8      (4) 5

92. If  $\frac{3}{4}$  of 15% of an amount is ₹ 72, then that amount (in rupees) is

ఒక మొత్తములో 15 శాతము యొక్క  $\frac{3}{4}$  వంతు ₹ 72 అయితే అప్పుడు ఆ మొత్తము (రూపాయలలో).

- (1) 1400      (2) 540      (3) 360      (4) 640

93. A started a business with a capital of ₹ 6400. Later B joined the business with a capital of ₹ 8000. At the end of the year they shared the profit in the ratio 6:5. After how many months B has joined the business?

₹6,400 పెట్టుబడితో A వ్యాపారం ప్రారంభించాడు. తర్వాత ₹8,000 పెట్టుబడితో ఆ వ్యాపారంలో B చేరాడు. ఆ సంవత్సరాంతంలో వారి లాభాల నిష్పత్తి 6 : 5 అయితే, ఎన్ని నెలల తర్వాత B వ్యాపారంలో చేరాడు?

- (1) 8      (2) 6      (3) 4      (4) 3

94. A person buys an article with 15% discount on its marked price. He makes a profit of 15% by selling it at ₹ 3910. Then the marked price of the article (in rupees) is

ఒక వ్యక్తి ఒక వస్తువును దాని ప్రకటిత వెలపై 15% తక్కువకు కొన్నాడు. దానిని ₹3,910లకు అమ్మి 15% లాభాన్ని చేసుకొన్నాడు. అప్పుడు ఆ వస్తువు ప్రకటిత విలువ (రూపాయలలో)

- (1) 3,500      (2) 4,500      (3) 4,000      (4) 4,200

95. If the cost price of 20 books is equal to the selling price of 16 books, then the percentage of profit is

20 పుస్తకముల కొన్న వెల, 16 పుస్తకముల అమ్మిన వెలకు సమానమయితే అప్పుడు లాభశాతము :

- (1) 16      (2) 20      (3) 25      (4) 32

96. A, B and C started a business investing a sum of money in the ratio of 8:9:10. After three months B contributed another  $\frac{1}{3}$ rd of his capital towards business while C withdrew  $\frac{1}{5}$ th of his capital after 6 months. If they get an annual profit of ₹ 2,37,300 then C's share of profit in rupees is.

A, B, C లు ప్రారంభించిన వ్యాపారంలో పెట్టుబడుల నిష్పత్తి 8 : 9 : 10. మూడు నెలల తర్వాత B తన మొదటి పెట్టుబడిలో  $\frac{1}{3}$  వ వంతును అదనంగా చేర్చగా, ఆరు నెలల తర్వాత C తన పెట్టుబడిలో  $\frac{1}{5}$  వ వంతును తీసుకొన్నాడు. వారికి సంవత్సరాంత లాభం ₹ 2,37,300 అయితే అందులో C వాటా (రూపాయల్లో)

(1) 94,200                      (2) 83,700                      (3) 75,600                      (4) 67,200

97. A, B and C started a business with some investments. At the end of the year, in the profit, the share of B is ₹ 5000 more than that of A and C's share is ₹ 2000 more than B. If the total profit is ₹ 1,11,000, then the share of C, in the profit in rupees is

A, B, C లు కొంత పెట్టుబడులతో వ్యాపారం ప్రారంభించారు. సంవత్సరాంతలాభంలో B వాటా A వాటాకంటే ₹3,000 అధికం; C వాటా B వాటాకంటే ₹2,000 అధికమూ అవుతూ మొత్తం లాభం ₹1,11,000 అయితే, లాభంలో C వాటా (రూపాయల్లో)

(1) 39,000                      (2) 37,000                      (3) 38,000                      (4) 40,000

98. A and B started business together. B's capital is ₹ 700 more than that of A. But B invested his capital for 9 months and A invested for 10 months. If A and B share the profit in the ratio 8:9, then the capital of B (in rupees) is.

A, B లు కలిసి వ్యాపారం ప్రారంభించారు. B పెట్టుబడి A పెట్టుబడికంటే ₹ 700 అధికం. కాని B తన పెట్టుబడిని 9 నెలలు ఉంచగా, A తన పెట్టుబడిని 10 నెలలుంచాడు. వ్యాపారాంత లాభంలో వారి వాటాల నిష్పత్తి 8 : 9 అయితే B పెట్టుబడి (రూపాయల్లో)

(1) 3,500                      (2) 4,200                      (3) 4,000                      (4) 2,100

99. Two pipes A and B can fill an empty tank in 6 hours and 8 hours respectively. After opening both of them for t hours the pipe B is closed and the pipe A filled the rest of the tank in 4 hours. Then t =

రెండు పంపులు A, B లు ఒక ఖాళీ తొట్టిని వరుసగా 6 గంటలు, 8 గంటలలో నింపగలవు. ఆ రెండు పంపులనూ ఒకేసారి తెరిచిన t గంటల తర్వాత B ని మూసి వేస్తే, పంపు A ఆ తొట్టిని తర్వాత 4 గంటల్లో నింపింది. అప్పుడు t =

- (1)  $\frac{8}{7}$                       (2)  $\frac{8}{3}$                       (3)  $\frac{4}{3}$                       (4)  $\frac{2}{3}$

**A**

100. Two pipes can fill an empty tank in 36 minutes and 45 minutes respectively. If both the pipes are opened simultaneously, then how much time is needed in minutes to fill the tank?

రెండు పంపులు ఒక తొట్టని వరుసగా 36 నిమిషాలు, 45 నిమిషాల్లో నింపుతాయి. ఆ రెండింటినీ ఏక కాలంలో తెరిస్తే ఆ తొట్ట నిండటానికి ఎన్ని నిమిషాలు పట్టుతుంది?

- (1) 10                      (2) 15                      (3) 20                      (4) 25

101. Three persons can complete a work individually in 6 days, 8 days and 12 days respectively. If all the three persons work together the number of days required to complete the same work is

ముగ్గురు వ్యక్తులు విడివిడిగా ఒక పనిని వరుసగా 6 రోజులు, 8 రోజులు, మరియు 12 రోజులలో పూర్తి చేయగలరు. అయితే ఆ ముగ్గురు వ్యక్తులు కలిసి అదే పనిని పూర్తి చేయుటకు కావలసిన రోజుల సంఖ్య

- (1) 3                      (2)  $\frac{10}{3}$                       (3)  $\frac{8}{3}$                       (4)  $4\frac{1}{3}$

102. A, B and C can do a work individually in 20 days, 15 days and 25 days respectively. To complete the work fast, which of the two are to be assigned the work?

A, B మరియు C లు విడివిడిగా ఒక పనిని వరుసగా 20 రోజులు, 15 రోజులు మరియు 25 రోజులలో చేయగలరు. త్వరిత గతినీ పూర్తి చేయడానికి ఏ ఇద్దరికీ ఆ పనిని అప్పగించాలి?

- (1) A, B                      (2) B, C                      (3) C, B                      (4) B alone  
B ఒక్కడే

103. A cube has a volume of  $128 \text{ cm}^3$ . It is divided into 8 equal cubes. Then the ratio of an edge of a smaller cube to an edge of the original cube is.

ఒక ఘనపు ఘనపరిమాణం  $128 \text{ సెం.మీ.}$  అది 8 సమాన ఘనాలుగా విభజించబడింది. అప్పుడు చిన్న ఘనపు అంచుకు, మొదటి ఘనపు అంచుకు గల నిష్పత్తి

- (1) 1 : 8                      (2) 1 : 16                      (3) 1 : 2                      (4) 2 : 1

104. The volume of a cube (in cubic centimeters), whose total surface area is 384 square centimeters, is

384 చ. సెం.మీ. ఉపరితల వైశాల్యం కలిగిన ఒక ఘనపు ఘనపరిమాణం (ఘన సెంటీమీటర్లలో)

- (1) 64                      (2) 512                      (3) 128                      (4) 256

105. The volume (in proper units) of the cone with  $r$  as the radius of the circular base and having height  $h$  is

ఎత్తు  $h$ , వృత్తాకార భూవ్యాసార్థం  $r$  కలిగిన శంకువు ఘనపరిమాణం (తగిన యూనిట్లలో)

- (1)  $\frac{1}{3} \pi r^2 h$                       (2)  $\frac{2}{3} \pi r^2 h$                       (3)  $\pi r^2 h$                       (4)  $\frac{4}{3} \pi r^2 h$

106. If  $n$  is the maximum number of solid cubes with an edge of length 0.2 cm that can be put in a box whose dimensions are 1 cm  $\times$  1 cm  $\times$  4 cm then  $n =$

1 సెం.మీ.  $\times$  1 సెం.మీ.  $\times$  4 సెం.మీ. వరిమాణం కలిగిన ఒక పెట్టెలో 0.2 సెం.మీ. అంచుపొడవు కలిగిన ఘనఘనాల గరిష్టసంఖ్య  $n$  అయితే, అప్పుడు  $n =$

- (1) 250                      (2) 150                      (3) 500                      (4) 350

107. The lengths of the sides of a right angled triangle are in the ratio 3:4. The area of the triangle is 726 square units. Then the length of the hypotenuse (in proper units) is

ఒక లంబకోణ త్రిభుజపు భుజాల నిష్పత్తి 3 : 4. ఆ త్రిభుజ వైశాల్యం 726 చ. యూనిట్లు. అప్పుడు దాని కర్ణపు పొడవు (తగిన యూనిట్లలో)

- (1) 33                      (2) 44                      (3) 55                      (4) 66

108. The ratio of the radii of two circular cylinders A and B is 2:3 and that of their heights is 5:3. If the volume of the cylinder B is  $27 \text{ m}^3$ , then the volume of the cylinder A in cubic meters is.

రెండు వృత్తాకార స్థూపాలు, A, B ల వ్యాసార్థాల నిష్పత్తి 2 : 3, వాటి ఎత్తుల నిష్పత్తి 5 : 3. స్థూపం B ఘనపరిమాణం  $27 \text{ ఘ.మీ.}$  అయితే స్థూపం A ఘనపరిమాణం (ఘ. మీ.లలో)

- (1) 22                      (2) 30                      (3) 40                      (4) 20

109. The number of elements in the set  $E = \{n : n \text{ integer, } 500 \leq n \leq 700 \text{ and } n \text{ is divisible by } 11\}$  is

సమితి  $E = \{n : n \text{ పూర్ణాంకం, } 500 \leq n \leq 700, 11 \text{ చే } n \text{ నిశ్చేషంగా భాగించబడుతుంది}\}$  లోని మూలకాల సంఖ్య

- (1) 63                      (2) 45                      (3) 108                      (4) 18

110. If  $3^{58} \equiv r \pmod{5}$  and  $0 \leq r \leq 4$ , then  $r =$

$3^{58} \equiv r \pmod{5}$  మరియు  $0 \leq r \leq 4$  అయితే, అప్పుడు  $r =$

- (1) 1                      (2) 2                      (3) 4                      (4) 3

(ii) Algebraic and Geometrical Ability

(Marks: 30)

దీజగణిత, జ్యామితీయ సామర్థ్యం

111. The statement  $(p \rightarrow q) \rightarrow p$  is equivalent to

$(p \rightarrow q) \rightarrow p$  అనే ప్రవచనానికి తుల్యమైనది

- (1)  $p$                       (2)  $q$                       (3)  $q \rightarrow p$                       (4)  $p \rightarrow q$

112. The contrapositive of the statement  $p \rightarrow q$

$p \rightarrow q$  అనే ప్రవచనానికి ప్రతివర్తితము

- (1)  $(\sim p) \rightarrow q$                       (2)  $(\sim p) \rightarrow (\sim q)$                       (3)  $q \rightarrow p$                       (4)  $(\sim q) \rightarrow (\sim p)$

[P.T.O.]

**A**

113. If the statement " $\frac{1}{2}$  is rational and  $\sqrt{3}$  is irrational" is denoted by  $p$ , then which of the following statements represents  $\sim p$ ?

" $\frac{1}{2}$  అనేది అకరణీయ సంఖ్య మరియు  $\sqrt{3}$  అనేది కరణీయ సంఖ్య" అనే ప్రవచనాన్ని  $p$  తో సూచిస్తే, కింది వానిలో ఏది  $\sim p$  ని సూచిస్తుంది?

- (1)  $\frac{1}{2}$  is rational or  $\sqrt{3}$  is irrational.  
 $\frac{1}{2}$  ఒక అకరణీయ సంఖ్య లేదా  $\sqrt{3}$  ఒక కరణీయ సంఖ్య.
- (2)  $\frac{1}{2}$  is irrational or  $\sqrt{3}$  is rational  
 $\frac{1}{2}$  ఒక కరణీయ సంఖ్య లేదా  $\sqrt{3}$  ఒక అకరణీయ సంఖ్య.
- (3)  $\frac{1}{2}$  is irrational or  $\sqrt{3}$  is irrational  
 $\frac{1}{2}$  ఒక కరణీయ సంఖ్య లేదా  $\sqrt{3}$  ఒక కరణీయ సంఖ్య.
- (4)  $\frac{1}{2}$  is rational or  $\sqrt{3}$  is rational  
 $\frac{1}{2}$  ఒక అకరణీయ సంఖ్య లేదా  $\sqrt{3}$  ఒక అకరణీయ సంఖ్య.

114. If the number of elements in the sets A, B are respectively 5, 7, then the number of relations that can be defined from A to B is.

A, B సమితులలోని మూలకాల సంఖ్యలు వరుసగా 5, 7 అయితే, A నుండి B కి నిర్వచించ గల సంబంధాల సంఖ్య

- (1)  $2^7$  (2)  $2^{12}$  (3)  $2^{35}$  (4)  $2^5$

115. If  $f: \mathbf{R} \rightarrow \mathbf{R}$  is a function satisfying the condition  $2f(x) - 3f\left(\frac{1}{x}\right) = x^2$  for any  $x \neq 0$ , then  $f(3) =$

$\mathbf{R}$  నుంచి  $\mathbf{R}$  కి నిర్వచించబడిన ఒక ప్రమేయం  $f$ , ప్రతి  $x \neq 0$  కి,  $2f(x) - 3f\left(\frac{1}{x}\right) = x^2$  అనే నిబంధనను సంతృప్తి పరిస్తే, అప్పుడు  $f(3) =$

- (1)  $-\frac{11}{3}$  (2) 3 (3) -3 (4)  $-\frac{10}{3}$

116. If a set A has 8 elements, then the number of subsets of A having atmost 4 elements is

ఒక సమితి A లో 8 మూలకాలుంటే, A యొక్క ఉపసమితుల్లో గరిష్టంగా 4 మూలకాలుండే ఉపసమితుల సంఖ్య

- (1) 256 (2) 126 (3) 93 (4) 163

117. If a straight line is passing through the points (3, 3) and (7, 6), then the length of the portion of the line intercepted between the coordinate axes is

ఒక సరళ రేఖ (3, 3), (7, 6) బిందువుల గుండా పోతుంటే, ఆ సరళ రేఖ నిరూపకాక్షాల మధ్య చేసే అంతర ఖండం పొడవు

- (1)  $4/5$  (2)  $4/7$  (3)  $5/4$  (4)  $7/4$

118. The equation of a straightline whose slope is 1 and X-intercept is 4, is

వాలు 1 గా 500, X-అంతరఖండం 4 గా గల సరళ రేఖ సమీకరణం

- (1)  $x + y + 4 = 0$  (2)  $x + y - 4 = 0$  (3)  $x - y - 4 = 0$  (4)  $x - y + 4 = 0$

119. The foot of the perpendicular of the point (1, 2) on the line  $3x + 4y = 1$  is

(1, 2) బిందువునుండి  $3x + 4y = 1$  సరళ రేఖకు గీసిన లంబపాదం

- (1)  $\left(\frac{-1}{5}, \frac{2}{5}\right)$  (2)  $\left(\frac{1}{5}, \frac{-2}{5}\right)$  (3)  $\left(\frac{11}{25}, \frac{2}{25}\right)$  (4)  $\left(\frac{1}{25}, \frac{-2}{25}\right)$

120.  $\cos 208^\circ \sin 238^\circ + \sin 152^\circ \cos 122^\circ =$

- (1)  $\frac{1}{2}$  (2)  $\frac{1}{\sqrt{2}}$  (3)  $\frac{\sqrt{3}}{2}$  (4) 1

121. If  $0 < \alpha, \beta < \frac{\pi}{4}$ ,  $\cos(\alpha + \beta) = \frac{4}{5}$  and  $\sin(\alpha - \beta) = \frac{5}{13}$  then  $\tan 2\alpha =$

$0 < \alpha, \beta < \frac{\pi}{4}$  కి  $\cos(\alpha + \beta) = \frac{4}{5}$ , మరియు  $\sin(\alpha - \beta) = \frac{5}{13}$  అయితే,  $\tan 2\alpha =$

- (1)  $\frac{56}{33}$  (2)  $\frac{33}{56}$  (3)  $\frac{16}{63}$  (4)  $\frac{63}{16}$

122. If  $x = a \cos \theta + b \sin \theta$  and  $y = a \sin \theta - b \cos \theta$ , then  $x^2 + y^2 =$

$x = a \cos \theta + b \cos \theta$ ,  $y = a \sin \theta - b \cos \theta$  అయితే,  $x^2 + y^2 =$

- (1) 1 (2)  $a^2$  (3)  $b^2$  (4)  $a^2 + b^2$

123.  $\frac{\tan 10^\circ + \tan 50^\circ}{1 - \tan 10^\circ \tan 50^\circ} =$

- (1)  $\frac{\sqrt{3} + 1}{2\sqrt{2}}$  (2)  $\frac{\sqrt{3} - 1}{2\sqrt{2}}$  (3)  $\sqrt{3}$  (4)  $\frac{1}{\sqrt{3}}$

124. A man in a boat rowing away from the cliff 150 meters high, observed that it takes 2 minutes to change the angle of elevation of the top of the cliff from  $60^\circ$  to  $45^\circ$ , then the speed of the boat in km/hour is

150 మీటర్లు ఎత్తుగల ఒక శిఖరం నుండి దూరంగా ఒక పడవలో వెళ్తున్న వ్యక్తి శిఖరాగ్రం యొక్క ఉచ్చకోణం  $60^\circ$  నుంచి  $45^\circ$  కి మారడానికి 2 నిమిషాలు సమయం తీసుకొన్నట్లుగా గమనిస్తే, ఆ పడవ వేగం, గంటకు కిలోమీటర్లలో,

- (1)  $\frac{9 - 3\sqrt{3}}{2}$  (2)  $\frac{9 + 3\sqrt{3}}{2}$  (3)  $9 - \sqrt{3}$  (4)  $9 + \sqrt{3}$

**A**

125. If the polynomial  $-a^2 x^3 - 2ax^2 + b^2x + 1$  is divisible by  $x + 1$ , then  $a - 1 =$

$-a^2 x^3 - 2ax^2 + b^2x + 1$  అనే బహుపది  $x + 1$  చే భాగింపబడితే  $a - 1 =$

- (1)  $\pm b$                       (2)  $\pm 2b$                       (3)  $\pm (b + 1)$                       (4)  $\pm (b - 1)$

126. A polynomial in  $x$  leaves remainders  $-1$  and  $7$  when it is divided by  $x + 1$  and  $x - 3$  respectively. If that polynomial is divided by  $x^2 - 2x - 3$ , then the remainder is

$x$  లో ఒక బహుపదిని  $x + 1$  మరియు  $x - 3$  లతో భాగిస్తే వచ్చే శేషములు వరుసగా  $-1, 7$ . ఆ బహుపదిని  $x^2 - 2x - 3$  తో భాగిస్తే వచ్చే శేషం

- (1)  $-7$                       (2)  $7x - 1$                       (3)  $6$                       (4)  $2x + 1$

127. If  $73 \times 74 \times 75 \times 76$  is divided by  $14$ , then the remainder is

$73 \times 74 \times 75 \times 76$  ని  $14$  చే భాగిస్తే వచ్చే శేషం

- (1)  $0$                       (2)  $5$                       (3)  $10$                       (4)  $12$

128. The 8th term of the progression  $162, 54, 18, \dots$  is

$162, 54, 18, \dots$  శ్రేణిలోని 8 వ పదం

- (1)  $\frac{2}{9}$                       (2)  $\frac{2}{81}$                       (3)  $\frac{2}{27}$                       (4)  $\frac{2}{243}$

129. The sum of the first 10 terms of the series  $1, 3, 5, 7, \dots$  is

$1, 3, 5, 7, \dots$  శ్రేణిలో మొదటి 10 పదాల మొత్తం

- (1)  $75$                       (2)  $50$                       (3)  $100$                       (4)  $121$

130. The coefficient of  $x$  in the expansion of  $\left(3x^2 - \frac{1}{2x}\right)^5$  is

$\left(3x^2 - \frac{1}{2x}\right)^5$  విస్తరణలో  $x$  గుణకం

- (1)  $\frac{45}{4}$                       (2)  $\frac{-45}{4}$                       (3)  $\frac{45}{8}$                       (4)  $\frac{-45}{8}$

131. If  $(2 + 3x)^5 = \sum_{n=0}^5 a_n x^n$ , then  $\sum_{n=0}^5 a_n =$

$(2 + 3x)^5 = \sum_{n=0}^5 a_n x^n$ , అయితే,  $\sum_{n=0}^5 a_n =$

- (1)  $32$                       (2)  $243$                       (3)  $1024$                       (4)  $3125$

132. If  $A = \begin{pmatrix} 0 & -2 \\ 2 & 0 \end{pmatrix}$  and  $B = \begin{pmatrix} 1 & 0 \\ 0 & -1 \end{pmatrix}$ , then  $AB + BA =$

$A = \begin{pmatrix} 0 & -2 \\ 2 & 0 \end{pmatrix}$ ,  $B = \begin{pmatrix} 1 & 0 \\ 0 & -1 \end{pmatrix}$  అయితే,  $AB + BA =$

- (1)  $\begin{pmatrix} 0 & -2 \\ 2 & 0 \end{pmatrix}$       (2)  $\begin{pmatrix} 1 & 0 \\ 0 & -1 \end{pmatrix}$       (3)  $\begin{pmatrix} 0 & 0 \\ 0 & 0 \end{pmatrix}$       (4)  $\begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$

133. If A, B are square matrices of same order such that  $B = -A^{-1}BA$ , then  $(A + B)^2 =$

A, B లు ఒకే పరిమాణం గల రెండు మాత్రికలు. అవి  $B = -A^{-1}BA$  అయ్యేట్లుంటే అప్పుడు  $(A + B)^2 =$

- (1) 0      (2) A + B      (3)  $A^2 + B^2$       (4)  $A^2 + 2AB + B^2$

134.  $\lim_{x \rightarrow 1} \frac{x^2 - \sqrt{x}}{\sqrt{x} - 1} =$

- (1) 1      (2) 3      (3) 4      (4)  $\infty$

135.  $\lim_{n \rightarrow \infty} \frac{1^2 + 2^2 + \dots + n^2}{n^3} =$

- (1) 0      (2)  $\frac{1}{2}$       (3)  $\frac{1}{3}$       (4) 1

136. If  $3x^2 + 2xy + y^2 = 6$ , then  $\left(\frac{dy}{dx}\right)_{(-1,2)} =$

$3x^2 + 2xy + y^2 = 6$  అయితే,  $\left(\frac{dy}{dx}\right)_{(-1,2)} =$

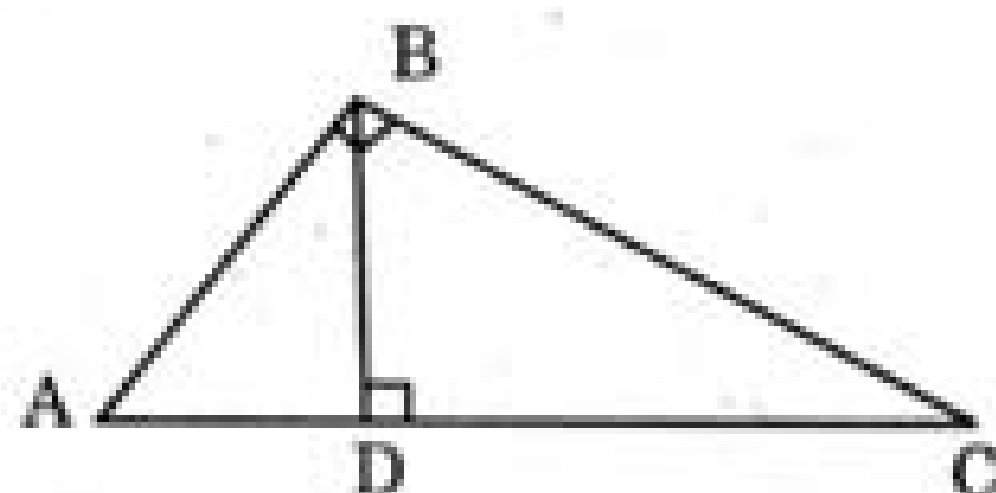
- (1) -1      (2) 1      (3) -2      (4) 2

137. The derivative of  $\tan^{-1}(x^2 + 1)$  with respect to x at  $x = 2$  is

$x = 2$  వద్ద  $x$  దృష్ట్యా  $\tan^{-1}(x^2 + 1)$  యొక్క అవకలసం

- (1)  $\frac{2}{13}$       (2)  $\frac{3}{26}$       (3)  $\frac{1}{13}$       (4)  $\frac{1}{26}$

138.



In the above figure if  $\angle ABC = \angle BDC = 90^\circ$ ,  $BD = AD$ , then  $\angle BCD =$

పై పటంలో  $\angle ABC = \angle BDC = 90^\circ$ ,  $BD = AD$  అయితే,  $\angle BCD =$

- (1)  $30^\circ$       (2)  $45^\circ$       (3)  $60^\circ$       (4)  $75^\circ$



**A**

139. If two circles of radii 5 cm and 12 cm touch each other externally, then the distance between their centres (in centimetres) is

5 సెం.మీ., 12 సెం.మీ. వ్యాసార్థాలుగా గల రెండు వృత్తాలు బాహ్యంగా స్పృశించుకొంటే, వాటి కేంద్రాల మధ్య దూరం (సెంటీ మీటర్లలో)

- (1) 13                      (2) 17                      (3) 7                      (4) 12

140. The area (in square units) of the polygon whose vertices taken in order are (0, 0), (6,0), (6, 6), (4, 4) and (0, 6) is

(0, 0), (6, 0), (6, 6), (4, 4), (0, 6) బిందువులు ఒక బహుభుజికి వరుస శీర్షాలయితే, ఆ బహుభుజి వైశాల్యం (చదరపు యూనిట్లలో)

- (1) 24                      (2) 26                      (3) 30                      (4) 36

(iii) Statistical Ability

(Marks: 10)

సాంఖ్యిక సామర్థ్యత

141. The mode of the frequency distribution given below is

కింద ఇచ్చిన పౌనఃపున్య విభజనపు బాహుళకం

$x$	1	2	3	4	5	6	7	8
$f$	4	9	16	25	22	15	7	3

- (1) 4.5                      (2) 4                      (3) 5                      (4) 5.5

142. The geometric mean of the observations 2, 4, 16, 32 is

పరిశీలనలు 2, 4, 16, 32 ల గుణమధ్యమం

- (1) 4                      (2) 6                      (3) 8                      (4) 10

143. The median of the observations 7, 8, 7, 9, 7, 14, 15, 6, 8, 14, 9, 17, 15, 16 is

పరిశీలనలు 7, 8, 7, 9, 7, 14, 15, 6, 8, 14, 9, 17, 15, 16 ల మధ్యగతం

- (1) 7                      (2) 8                      (3) 8.5                      (4) 9.5

144. If the mean and mode of a data are 45 and 51 respectively then the median of the data is

ఒక దత్తాంశం యొక్క అంకమధ్యమం మరియు బాహుళకములు వరసగా 45, 51 అయితే, అప్పుడు ఆ దత్తాంశం మధ్యగతం

- (1) 46                      (2) 47                      (3) 48                      (4) 49

145. The quartile deviation of the observations 80, 48, 60, 92, 50, 35, 70 is  
పరిశీలనలు 80, 48, 60, 92, 50, 35, 70 ల చతుర్థాంశక విచలనం

- (1) 10                      (2) 12                      (3) 14                      (4) 16

146. If  $\sigma$  is the standard deviation of the observations  $x_1, x_2, \dots, x_n$  then the standard deviation of  $5x_1 + 7, 5x_2 + 7, \dots, 5x_n + 7$  is

పరిశీలనలు  $x_1, x_2, \dots, x_n$  ల క్రమవిచలనం  $\sigma$  అయితే  $5x_1 + 7, 5x_2 + 7, \dots, 5x_n + 7$  ల క్రమ విచలనం

- (1)  $5\sigma + 7$               (2)  $\sqrt{25\sigma^2 + 7}$               (3)  $5\sigma$                       (4)  $5\sigma + \sqrt{7}$

147. The variance of the numbers 87, 88, 89, ..., 98 is  
సంఖ్యలు 87, 88, 89, ..., 98 ల విస్తృతి

- (1)  $\sqrt{\frac{143}{12}}$                       (2)  $\sqrt{\frac{843}{12}}$                       (3)  $\frac{143}{12}$                       (4)  $\frac{843}{12}$

148. If two unbiased six-faced dice are thrown simultaneously then the probability that the sum is 8 with at least one die showing a prime number is

రెండు నిష్పక్షిక ఆరుముఖాల పాచికలను ఏకకాలంగా దొర్లిస్తే వాటిపై మొత్తం 8 అవుతూ అందులో కనీసం ఒకటి ప్రధాన సంఖ్య అయ్యే సంభావ్యత

- (1)  $\frac{1}{9}$                       (2)  $\frac{1}{8}$                       (3)  $\frac{1}{7}$                       (4)  $\frac{1}{6}$

149. If A and B are events of a random experiment with  $P(A) = \frac{3}{8}$ ,  $P(B) = \frac{1}{3}$  and

$P(A \cap B) = \frac{1}{4}$  then  $P(\bar{A} \cap \bar{B}) =$

ఒక యాదృచ్ఛిక ప్రయోగంలోని ఘటనలు A, B లు  $P(A) = \frac{3}{8}$ ,  $P(B) = \frac{1}{3}$ ,  $P(A \cap B) = \frac{1}{4}$  అయ్యేట్లుంటే అప్పుడు  $P(\bar{A} \cap \bar{B}) =$

- (1)  $\frac{5}{12}$                       (2)  $\frac{11}{24}$                       (3)  $\frac{13}{24}$                       (4)  $\frac{17}{24}$

150. A group has 12 men and 4 women. If three were selected at random from the group then the probability that they are all men is

12 మంది పురుషులు, 4 గురు స్త్రీలు గల ఒక సమూహముంది. ఈ సమూహంనుంచి యాదృచ్ఛికంగా ముగ్గురుని ఎంచుకుంటే, వారందరూ పురుషులయ్యే సంభావ్యత

- (1)  $\frac{1}{4}$                       (2)  $\frac{11}{28}$                       (3)  $\frac{5}{24}$                       (4)  $\frac{9}{48}$

**A**

**SECTION - C**  
**Communication Ability**

Questions: 50

Marks : 50

**PART - I**

**Choose the Correct Answer:**

151. Short term advance provided by a bank to a current account holder is called  
(1) Demand Draft (2) Hand loan (3) Over draft (4) Margin money
152. The organization which enables multilateral trade among countries is called  
(1) World Bank (2) World Trade Organization  
(3) United Nations Organization (4) International Court
153. The advent of mass production is ascribed to the period of  
(1) Second World War (2) Internet era  
(3) Copper age (4) Industrial Revolution
154. 10 year Redeemable Bonds means that at the end of the stipulated years the Bond  
(1) is written off (2) amount is paid and settled  
(3) gets converted into shares (4) can be pledged in a bank
155. Market value of Mutual Fund is expressed as  
(1) Rupees per share (2) Rupees per script  
(3) Gross value in rupees (4) NAV in rupees
156. A coaxial cable to which a number of computers are connected is known as  
(1) Multistrand wire (2) Jelly filled cable  
(3) Ethernet (4) LAN
157. The system of transforming data into codes that are meaningless to anyone who does not possess the system for recovering initial data is  
(1) Cryogenic (2) Modulation (3) Quantization (4) Cryptography
158. An electronic device that allows a single communication channel to carry simultaneous data from many terminals is called  
(1) multiplexer (2) microprocessor (3) modulator (4) expert system
159. Compared with a manual system, in a computer system  
(1) basic internal control objectives change.  
(2) the methodologies for implementing control change.  
(3) control objectives are more difficult to achieve.  
(4) internal control principles change.
160. The logical organization of data in a database is called  
(1) structure (2) schema (3) algorithm (4) legacy

## PART – II

**Choose the Correct Answer:**

161. A: "Why do you always behave like a dog in the manger?"

B: "I don't know. It's just my nature, I guess."

'A' implies that 'B' is

- (1) a spoilsport (2) rude (3) aggressive (4) uncouth

162. A: "Would you like a cup of coffee?"

B: "If you say so."

'B' is

- (1) indifferent (2) eager (3) casual (4) pleased

163. A: "I saw red when he put the blame on me."

B: "I understand you weren't driving the car when the accident happened."

'A' is

- (1) angry (2) annoyed (3) furious (4) resentful

164. "The man was a square peg in a round hole."

The speaker implies that the man was

- (1) a loner (2) a recluse (3) a misfit (4) a bore

165. The passive form of the sentence "She saw you and him," is

- (1) You and he were seen by her. (2) You and him were seen by her.  
(3) You and him had been seen by her. (4) You and him were being seen by her.

166. Kamala: "Look, would you mind very much if I went out for a few minutes to make a phone call? It is rather important."

Krishna: "No, you go ahead."

Krishna's answer implies that he is

- (1) angry (2) understanding (3) frustrated (4) apologetic

167. "Brooding over past failures, he decided to commit suicide."

The sentence implies that

- (1) suicide was dear to him.  
(2) his failures were broad.  
(3) one should erase all memories, good or bad.  
(4) the thought of his past failures led to his decision.

**Fill in the blank with the appropriate phrase / verb / preposition :**

168. \_\_\_\_\_ our advertised programme, we will be showing a film.

- (1) In regard to (2) In spite of (3) On behalf of (4) In place of

**A**

169. He has five children \_\_\_\_\_ on his meagre salary.  
(1) to look after (2) to look at (3) to look to (4) to look for
170. Live \_\_\_\_\_ your means.  
(1) without (2) within (3) from (4) on
171. \_\_\_\_\_ you change your mind, let us know.  
(1) Could (2) Might (3) Would (4) Should
172. I \_\_\_\_\_ five languages.  
(1) know (2) am knowing (3) known (4) knowing
173. He was desperate \_\_\_\_\_ a job.  
(1) for (2) on (3) at (4) about
174. He \_\_\_\_\_ me at chess yesterday.  
(1) bet (2) beat (3) bait (4) beat-up
175. Their house is hidden \_\_\_\_\_ the trees.  
(1) among (2) by (3) with (4) between

### PART - III

**Read the following passage and answer questions 176 - 180:**

Philosophy in the East is an art of life and way of living. The proper aim of philosophising, according to the Indian mind, is not to obtain knowledge for its own sake but for the sake of making life better. Philosophy in the soil of India is a personal attitude towards life and the universe. To philosophise is not merely to read and know philosophy; it is also to think philosophically. Philosophy begins in wonder, doubt and curiosity. It grows out of our developing awareness of the problems of human existence. Philosophy does not shrink from facing the difficult and unsolved problems of our life. There are certain perennial problems which interest mankind and for which philosophers have sought answers. Philosophy is primarily concerned with the soul, God, immortality, world, knowledge and similar other problems, which again owe their solutions to the proper estimate of life. Many questions, however, have been answered only tentatively, and many problems remain unsolved.

176. What is the aim of philosophy in the East?  
(1) learning (2) self-realisation  
(3) material gain (4) professional advancement
177. How does one become philosophical?  
(1) through reading (2) through discussion  
(3) through writing (4) through knowledge of the complexities of life

178. What is the meaning of 'perennial' ?  
 (1) momentary (2) everlasting (3) temporary (4) short-lived
179. How can problems be solved?  
 (1) by proper evaluation (2) by meditating  
 (3) by acknowledging them (4) by transcending them
180. Why is the study of philosophy valuable?  
 (1) It adds wisdom to one's life. (2) It deals with spirituality.  
 (3) It deals with the problems of life. (4) It provides answers to all problems.

**Read the following passage and answer questions 181-185:**

Although languages have come into existence and died away throughout human history, it was only in the 1990s, following the publication of a series of worldwide surveys, that people began to notice that the rate of disappearance was significantly increasing. The thrust of these facts is easy to summarise: of the 6,000 or so languages in the world, it seems probable that about half of these will disappear in the course of the present century. It is a rate of loss unprecedented in recorded history.

The impact of dominant languages on minority languages is a matter of universal concern, and the role of English is specially implicated. The growth of English as a global language is not the sole factor in explaining language endangerment. Although it is English that has been the critical factor in the disappearance of languages in such parts of the world as Australia and North America, this language is of little relevance when we consider the corresponding losses that have taken place in South America or in many parts of Asia, where such languages as Spanish, Portuguese, Russian, Arabic and Chinese have replaced local languages.

Languages die. A language lives on, after the last native speaker dies, only if it has been written down or recorded in some way. At the turn of the millennium, some 2000 languages had still not been documented. When one of these languages disappears, the consequences are truly catastrophic. When people die, they leave signs of their presence in this world, in the form of their dwelling places, burial mounds and artifacts - in a word, their archaeology. But, spoken language leaves no archaeology. When a language dies which has never been documented, it is as if it has never been.

181. What is the author's view about the languages of the world?  
 (1) People are unaware of the dying languages.  
 (2) People were unaware of the dying languages.  
 (3) People have been aware of the dying languages.  
 (4) People thought that languages did not die.
182. What will happen by the end of the present century?  
 (1) The number of languages will be 3000.  
 (2) The number of languages will be less than 3000.  
 (3) The number of languages will be more than 3000.  
 (4) The number of languages may be about 3000.

**A**

183. Which of the following statements is true?

- (1) A language is not documented by the native speakers.
- (2) A language continues to live if it has been documented.
- (3) Native speakers do not allow other languages to dominate their language.
- (4) English has dominated all languages in the world.

184. What is the disadvantage of spoken language?

- (1) It will certainly die.
- (2) It cannot survive the onslaught of other languages.
- (3) It leaves no trace when it dies.
- (4) Native speakers find it difficult to remember it.

185. What does 'catastrophic' mean?

- (1) Causing a lot of damage
- (2) Causing a lot of anger
- (3) Causing a lot of annoyance
- (4) Causing a lot of disturbance

**Read the following passage and answer questions 186 - 190 :**

So now let's talk about how discipline relates to self-esteem. In studies of children, Coopersmith found that power and withholding affection were associated with children who demonstrated low self-esteem, but management techniques were associated with children who exhibited high self-esteem. So it seems that parents should use physical punishment and withholding of affection with caution, right? Well, most psychologists oppose physical punishment for children under the age of 2, and some psychologists believe that discipline should be achieved without any physical punishment for children of all ages, referencing the fact that discipline means 'to teach' whereas punishment means 'to harm'. Anyway it's generally agreed that reinforcement of good behaviour is more effective than waiting for bad behaviour that requires punishment. But when discipline is necessary, setting limits with negative consequences that are consistently enforced seems to promote healthy development of self-esteem in children, especially when these management techniques are supplemented with approval, attention, and affection. I mean, when parents try to catch their children in the act of doing something right and use that as a basis for positive reinforcement of their behaviour.

186. The study of Coopersmith found that low self-esteem associated with children is due to

- (1) enforcement of discipline
- (2) power and withholding of affection
- (3) teaching process
- (4) management techniques

187. Physical punishment for children below the age of two is opposed by

- (1) all psychologists
- (2) some psychologists
- (3) most psychologists
- (4) all parents

188. To 'discipline' one, one has to

- (1) punish
- (2) harm
- (3) teach
- (4) catch the children doing wrong

189. As against waiting for bad behaviour that requires punishment, one is advised to  
 (1) teach good behaviour (2) reinforce good behaviour  
 (3) set limits for negative consequences (4) shower affection
190. To help healthy development of self-esteem in children,  
 (1) discipline is not necessary.  
 (2) punishment is to be avoided totally.  
 (3) teaching is enough.  
 (4) use positive reinforcement when they do something right.

#### PART - IV

Choose the correct meaning for the word given :

191. haggard  
 (1) exhausted (2) worried (3) sad (4) gloomy
192. expedient  
 (1) appropriate (2) advisable (3) quicken (4) dismiss
193. stalemate  
 (1) movement (2) standstill (3) attitude (4) accustomed
194. gingerly  
 (1) carefully (2) made of spice (3) lightly (4) quickly
195. trill  
 (1) fall (2) run (3) cut (4) sing
196. pecuniary  
 (1) relating to money (2) relating to odd behaviour  
 (3) relating to diseases (4) relating to attitude

Fill in the blank choosing the correct word :

197. During the Emergency, the Prime Minister \_\_\_\_\_ any opposition by implementing martial law.  
 (1) postponed (2) pre-empted (3) defied (4) greeted
198. The \_\_\_\_\_ marathon walk lasted for ten weary hours.  
 (1) gory (2) grand (3) gruesome (4) gruelling
199. The van and the car \_\_\_\_\_ head-on in the dark.  
 (1) collided (2) colluded (3) collated (4) collocated
200. We face the \_\_\_\_\_ prospect of still higher unemployment.  
 (1) grimy (2) grim (3) grilling (4) garish