INSTRUCTIONS TO THE CANDIDATES
(Read the Instructions carefully before answering)

1. Separate Optical Mark Reader (OMR) Answer Sheet will be supplied to you along with Question Paper Booklet for recording your responses. Please read and follow the instructions on the OMR Sheet, fill up the required data and mark your responses.

2. Candidate should write the Hall Ticket Number only in the space provided on this page and the OMR Answer Sheet. DO NOT WRITE HALL TICKET NUMBER ANYWHERE ELSE.

3. Immediately on opening this Question Paper Booklet, please check for (i) the same booklet code (A/B/C/D) on each page (ii) serial number of the questions (1 – 200) (iii) the number of pages and (iv) correctness of printing.

   IN CASE OF ANY DEFECT, PLEASE REPORT TO THE INVIGILATOR AND ASK FOR REPLACEMENT WITHIN FIVE MINUTES FROM THE COMMENCEMENT OF THE TEST.

4. Adoption of any kind of unfair means at the time of the test or any act of impersonation will result in the invalidation of the claim of the candidate for taking the test and he/she will be subjected to prosecution under the AP Public Examination (Prevention of Malpractice and Unfair means) Rules, 1997.

5. Use of Calculators, Mathematical Log Tables, Smart phones, any other Electronic gadgets and loose sheets of paper are strictly prohibited.

6. Darken the appropriate circles of 1, 2, 3 or 4 in OMR Answer Sheet only with the “Blue or Black Ball-Point Pen” corresponding to correct answer to the relevant question number in the sheet. Hence, enough care has to be taken while answering the questions in OMR Answer Sheet by darkening the circles. DARKENING OF MORE THAN ONE CIRCLE AGAINST ANY QUESTION AUTOMATICALLY MAKES THE ANSWER INVALID.

7. Rough work should be done only in the space provided for this purpose in Question Paper Booklet.

8. Once the candidate enters the Examination Hall, he/she shall not be permitted to leave the Hall till the END of the Examination.

9. Ensure that the Invigilator puts his/her signature in the space provided on the OMR Answer Sheet. The Candidate should sign in the space provided on the OMR Answer Sheet.

10. The candidate should write the Question Paper Booklet number and sign in the space provided in the Nominal Rolls.

11. Return the OMR Answer Sheet to the Invigilator before leaving the Examination Hall without fail.

This booklet consists of 32 printed pages (for 200 Questions) including page for Rough Work. Candidate should check this before beginning to answer and bring any discrepancy in this regard to the notice of the Invigilator.
SECTION – A
Analytical Ability

Questions : 75
Marks : 75

(i) Data Sufficiency

Note: In questions numbered I to 20, a question is followed by data in the form of two statements labelled as I and II. You must decide whether the data given in the statements are sufficient to answer the questions. Using the data make an appropriate choice from (1) to (4) as per the following guidelines:

(a) Mark choice (1) if the statement I alone is sufficient to answer the question.
(b) Mark choice (2) if the statement II alone is sufficient to answer the question.
(c) Mark choice (3) if both the statements I and II are sufficient to answer the question but neither statement alone is sufficient.
(d) Mark choice (4) if both the statements I and II together are not sufficient to answer the question and additional data is required.

Marks : 20

1. Mark the answer (1), (2), (3) or (4) for each question separately as per the guidelines given above.

(a) 
(b) 
(c) 
(d)
1. Is \( m \) a divisor of \( n \)?
   \( n \equiv m \mod{a} \)?
   i. \( m \) is the smallest prime such that \( 9 + m > 8 \).
      \( m \) లేదా \( 9 + m > 8 \) ఐదు పండు యొక్క సమానము.
   ii. \( n \) is an odd integer.
      \( n \) అంటే మినుగా విశేషాలు.

2. Do \( P, Q \) and \( R \) lie on a circle?
   \( P, Q, R \) లేదా ప్రచుర ఎంపు చేయాలి?
   i. \( P, Q \) lie on the circle and \( PQ \) passes through its centre.
      \( P, Q \) లేదా ప్రచుర ఎంపు చేయాలి, \( PQ \) చేస్తే ఎంపు వేటు చేయాలి.
   ii. \( \Delta PQR \) is right-angled.
      \( \Delta PQR \) ప్రచుర ఎంపు చేయాలి.

3. If \( p(x) \) is a polynomial, is \( x + 3 \) a factor of \( p(x^2 + 2) \)?
   \( p(x) \) అంటే పోయినోయు యొక్క \( x + 3 \) ఎంపు చేయాలి?
   i. \( p(-3) = 0 \)
      \( p(-3) = 0 \)
   ii. \( p(11) = 0 \)
      \( p(11) = 0 \)

4. If \( x \) is an integer, is \( 9^x + 9^{-x} = b \)?
   \( x \) అంటే ప్రచుర ఎంపు యొక్క \( 9^x + 9^{-x} = b \) ఎంపు చేయాలి?
   i. \( 3^x + 3^{-x} = \sqrt{b + 2} \)
      \( 3^x + 3^{-x} = \sqrt{b + 2} \)
   ii. \( x > 0 \)
      \( x > 0 \)

5. In \( \triangle ABC \), if \( D \) is the foot of the perpendicular drawn from \( B \) onto \( AC \), then what is the area of \( \triangle ABC \)?
   \( \triangle ABC \) యొక్క \( B \) ప్రచుర ఎంపు యొక్క \( AC \) వల్ల ఎంపు చేయాలి, తోండా ఎంపు చేయాలి?
   i. \( BD \cdot AC = 20 \)
      \( BD \cdot AC = 20 \)
   ii. \( \angle BAD = 45^\circ \)
      \( \angle BAD = 45^\circ \)

6. What is the value of \( k \) with \( 56 < k < 66 \)?
   \( 56 < k < 66 \) ఐదు పండు యొక్క ఎంపు చేయాలి?
   i. \( k \) leaves remainder 1 when divided by 2.
      \( k \) అంటే చేస్తే మినుగా ఎంపు చేయాలి.
      \( k + 2 \) అంటే మినుగా చేస్తే ఎంపు చేయాలి.
   ii. \( k + 1 \) is divisible by 8.
      \( k + 1 \) అంటే 8 విభజించాలి?
      \( k + 1 \) అంటే 8 విభజించాలి.

P.T.O.
7. Is \( n \) a prime?
\( n \) ఎంటి ప్రముఖం?

I. \( n \) leaves remainder 1 when divided by 6.
\( n \) ఇంటి బాగా రింగదం భాగం 1.

II. \( n \) leaves remainder 7 when divided by 91.
\( n \) ఇంటి 91 ఇంటి బాగా రింగదం భాగం 7.

8. Can we construct the \( \Delta ABC \) with sides \( a, b \) and \( c \)?
నాకి నాకు మిగిలిన \( \Delta ABC \) ను నిర్మించవచ్చు?

I. \( a = 3, b = 4 \)

II. The perimeter of \( \Delta ABC \) is 18.
\( \Delta ABC \) యొక్క పరిమాణం 18.

9. What is the average of the numbers \( a_1, a_2, \ldots, a_{10} \)?
\( a_1, a_2, \ldots, a_{10} \) యొక్క మధ్యభాగం?

I. \( a_1 + a_2 + \ldots + a_{10} = 810 \)

II. \( a_2 + a_3 + \ldots + a_{10} = 900 \)

10. If \( a \neq b \) and \( c \neq d \), what is the value of \( \frac{a^2 + d^2}{b^2 + c^2} \)?
\( a \neq b, c \neq d \) లా మిగిలిన \( \frac{a^2 + d^2}{b^2 + c^2} \) విలువు?

I. \( \frac{a + b}{c - d} = \frac{c + d}{a - b} \)

II. \( ad \neq bc \)

11. Can we find the orthocentre of \( \Delta ABC \)?
\( \Delta ABC \) యొక్క ఓర్థోసెంట్రె తీస్వంతం?

I. \( AB^2 = AC^2 - BC^2 \)

II. \( AB + BC + CA = 100 \text{ cm (కెమీటర్)} \)

12. If \( p(x) \) is a polynomial, is 2 a root of \( p(x) = 0 \)?
\( p(x) \) ఇది పొలినోమిల్ మిగిలిన \( p(x) = 0 \) రెండింటి బాగా భాగం?

I. \( p(1) = 2 \)

II. \( p(p(1)) \neq 0 \)

13. What is the value of \( \frac{x^2 + y^2 - z^2}{xy} \)?
\( \frac{x^2 + y^2 - z^2}{xy} \) మధ్యభాగం?

I. \( x : y = 1 : 2 \)

II. \( y : z = 2 : 3 \)
14. What is the volume of the cylinder?
   \[ \text{radius of the cylinder} = 2\ \text{units} \]
   \[ \text{height of the cylinder} = 3\ \text{units} \]
   \[ \text{radius of the cylinder} = 6\ \text{units} \]
   \[ \text{height of the cylinder} = 9\ \text{units} \]
   \[ \text{Volume of the cylinder} = \pi \times (6)^2 \times 9 \]

15. For real numbers \( a \) and \( b \), what is the value of \( 7a + 4b \)?
   \[ \text{If } a, b \neq 0 \]
   \[ \text{Then } a^2 + b^2 = 0 \]

16. What is the value of \( \sin 2\theta \)?
   \[ \sin 2\theta = 2 \sin \theta \cos \theta = 4 \]
   \[ \text{If } \theta + \cos \theta = 4 \]
   \[ \text{Then } \tan \theta + \cot \theta = 4 \]

17. For non-zero integers \( a, b, c, d \) and \( p \), is the product \( (ap)(bp)(cp)(dp) \) a positive integer?
   \[ \text{If } a, b, c, d, p \neq 0 \]
   \[ \text{Then } (ap)(bp)(cp)(dp) = 4 \]
   \[ \text{If } a < c < p < 0 \]
   \[ \text{Then } b < d < p < 0 \]

18. For positive integers \( x \) and \( y \) with \( xy = 30 \), what is the value of \( x + y \)?
   \[ \text{If } x < y \]
   \[ \text{Then } x + y = 30 \]
   \[ \text{If } x > y \]
   \[ \text{Then } x + y = 30 \]

19. Is the matrix \( A \) singular?
   \[ \text{If } A \text{ is a } 2 \times 2 \text{ matrix, } \]
   \[ \text{Then } A \text{ is not singular.} \]
   \[ \text{If } \text{The sum of the elements of the matrix } A \text{ is zero.} \]
   \[ \text{Then } A \text{ is not singular.} \]

20. What is the number of zeros at the end of the number \( n \)?
   \[ \text{If } n \text{ divides } 2^8 \]
   \[ \text{Then } n \divides 2^8 \]
   \[ \text{If } 5^3 \text{ divides } n \]
   \[ \text{But } 5^4 \text{ does not divide } n. \]
   \[ \text{Then } n \divides 5^3 \]

P.T.O.
(ii) Problem Solving

(Marks : 55)

(a) Sequence and Series

(Marks : 25)

Note: In each of the questions numbered 21 to 30, a sequence of numbers or letters that follow a definite pattern is given. Each question has a blank space. This has to be filled by the correct answer from the four given options to complete the sequence without breaking the pattern.

   (1) B      (2) D      (3) F      (4) H

22. TSR : IHG : : WVU :
     (1) FED     (2) FDE     (3) DEF     (4) EFD

     (1) January 31    (2) February 29    (3) April 30    (4) December 31

24. $\sqrt{9+2\sqrt{14}}$, $\sqrt{7+\sqrt{58}}$, $\sqrt{5+2\sqrt{15}}$, $\sqrt{3+\sqrt{62}}$,
     (1) 3        (2) $\sqrt{10}$      (3) $\sqrt{1+\sqrt{61}}$      (4) 5

25. 16GH61TS, 25EF52VU, 36CD63XW,
     (1) 49AB94ZY    (2) 49BA94YZ    (3) 49AB94YZ    (4) 49BA94ZY

26. 336, 210, 120, 60, ____
     (1) 54      (2) 44      (3) 34      (4) 24

27. B, A, D, E, F, I, H, ____ , J, U
     (1) O      (2) E      (3) A      (4) 1

28. 14, 22, 32, 44, 58, ____  , 92
     (1) 72      (2) 74      (3) 76      (4) 78

29. 1C5, 7I11, ____ , 19U23
     (1) 13L15    (2) 15Q17    (3) 13O17    (4) 13S15

30. $\frac{2}{5}$, $\frac{3}{10}$, $\frac{5}{26}$, ____ , $\frac{11}{122}$
     (1) $\frac{8}{65}$   (2) $\frac{7}{43}$   (3) $\frac{9}{82}$   (4) $\frac{7}{50}$
Note: In questions numbered 31 to 35 pick the odd thing out:

31. (1) 53    (2) 71    (3) 89    (4) 111
32. (1) Chennai (2) Chandigarh (3) Pune (4) Patna
33. (1) (3, 7, 30) (2) (4, 8, 24) (3) (5, 9, 28) (4) (12, 6, 36)
34. (1) $4x^2 + 4x + 8$ (2) $4x^2 + 4x + 1$ (3) $x^2 + 2x + 1$ (4) $x^2 + 4x + 4$
35. (1) 1 N 4    (2) 1 S 9    (3) 2 U 1    (4) 2 X 5

Note: Each of the questions from 36 to 45 follow a definite pattern. Observe the same and fill in the blanks with suitable answers.

36. 1, 3, 6, 10, 15, ____ , 28
    (1) 16    (2) 19    (3) 21    (4) 27
37. 2, 10, 26, 82, ____ , 730
    (1) 102    (2) 132    (3) 182    (4) 242
38. BFJ, EIM, HLP, KPS, ____
    (1) NVR    (2) NRV    (3) VRN    (4) RVN
39. $111\frac{1}{2}$, $125$, $142\frac{6}{7}$, ____ , 200
    (1) $156\frac{6}{7}$    (2) $167\frac{6}{7}$    (3) $146\frac{2}{3}$    (4) $166\frac{2}{3}$
40. 27, 48, ____ , 108, 147, 192
    (1) 63    (2) 72    (3) 75    (4) 78
41. (3, 4, 5), (6, 6, 6), (10, 9, 8), (15, 13, 11), (21, 18, 15), ____
    (1) (27, 23, 19)    (2) (27, 24, 20)    (3) (28, 23, 19)    (4) (28, 24, 20)
42. 00011, 00110, 01001, 01100, 01111, ____
    (1) 10110    (2) 10010    (3) 01111    (4) 11111
43. 3, 6, 11, 20, ____ , 70
    (1) 28    (2) 32    (3) 37    (4) 57
44. $\frac{9}{3}$, $\frac{126}{6}$, $\frac{344}{8}$, ____
    (1) $\frac{730}{10}$    (2) $\frac{513}{9}$    (3) $\frac{1001}{11}$    (4) $\frac{1332}{12}$
45. 5, 15, 30, 50, ____ , 105
    (1) 75    (2) 80    (3) 85    (4) 90
(b) Data Analysis

Note: The following table gives the profits (in lakhs of rupees) on four items A, B, C and D manufactured by a company during the financial years 2010-11 to 2014-15. Using the table answer the question with numbers 46 to 50.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Items</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>375</td>
<td>400</td>
<td>450</td>
<td>425</td>
<td>450</td>
</tr>
<tr>
<td>B</td>
<td>525</td>
<td>500</td>
<td>550</td>
<td>575</td>
<td>550</td>
</tr>
<tr>
<td>C</td>
<td>225</td>
<td>275</td>
<td>325</td>
<td>350</td>
<td>375</td>
</tr>
<tr>
<td>D</td>
<td>475</td>
<td>525</td>
<td>475</td>
<td>550</td>
<td>625</td>
</tr>
</tbody>
</table>

46. On which item the profits are increasing year by year?
   (1) A (2) B (3) C (4) D

47. Taking the total profit during the financial year 2012-13 of the company what percentage of profit is earned on the item A?
   (1) 20% (2) 25% (3) 30% (4) 35%

48. What is the percentage increase of profit on item B during 2012-13 over the previous year?
   (1) 30% (2) 25% (3) 15% (4) 10%

49. Which item has given maximum profit in all the years put together?
   (1) A (2) B (3) C (4) D

50. Which item has the reduced profit compared to previous year twice during the five years?
   (1) A (2) B (3) C (4) D
Note: The families in a colony are categorized into six groups A, B, C, D, E and F based on the income of the family. Their distribution is as given in the Pie chart below. Use this to answer Q. Nos. 51 to 55.

51. What is the percentage of E category families in the colony?
   (1) 36%  (2) 25%  (3) 20%  (4) 15%

52. If there are 108 families in category B, then what is the number of families in category F?
   (1) 18  (2) 36  (3) 54  (4) 72

53. If the total number of families in the colony is 720, what is the number of families in category A?
   (1) 120  (2) 108  (3) 96  (4) 72

54. If d and e respectively denote the number of families in the categories D and E; and if d = ke, then k =
   (1) $\frac{10}{9}$  (2) $\frac{8}{7}$  (3) $\frac{7}{8}$  (4) $\frac{9}{10}$

55. If the category F has 10 families, then the total number of families in the colony is
   (1) 360  (2) 240  (3) 200  (4) 80

P.T.O.
(c) Coding and Decoding Problems

Note: In a code the n\textsuperscript{th} letter in the English alphabet is coded as the r\textsuperscript{th} letter of it, where r is the remainder when 3n + 2 is divided by 26. For example, the 7\textsuperscript{th} letter G is coded as W since 3.7 + 2 = 23 and W is the 23\textsuperscript{rd} letter; the 8\textsuperscript{th} letter H is coded as Z since 3.8 + 2 = 26 and Z is the 26\textsuperscript{th} letter in the alphabet. The reverse process is used for decoding. Based on this coding and decoding answer Q. Nos. 56 to 60.

56. The code word for TELANGANA is TELANGANA 8 రోజు హోస్
   (1) JQLEWERERE       (2) JQLEWERERE
   (3) JQLEWEREER        (4) JQLERWERE

57. The code word for NAVYSHIP is NAVYSHIP 8 రోజు హోస్
   (1) REPYZGCX          (2) REPYZGCX
   (3) REPYZGCXC         (4) RPEYZGCX

58. The number of letters in the alphabet that are coded to themselves is అనుసంధానం లేదు అనుసంధానం లేదు అనుసంధానం లేదు?
   (1) 0                (2) 1
   (3) 2                (4) 3

59. The word coded as XQRKCL is XQRKCL 8 రోజు హోస్
    (1) SANTRO          (2) HOCKEY
    (3) LAYOUT          (4) PENCIL

60. The word coded as OUMGQ is OUMGQ 8 రోజు హోస్
    (1) USAGE            (2) UNCLE
    (3) MONEY            (4) MOUSE
52RD61

61. If GATE is coded as 10042308, then the LURE is coded as

GATE 10042308 10042308 10042308 10042308 LURE 10042308

(1) 15212108  (2) 15241805
(3) 15242108  (4) 12182105

62. If GALAXY is coded as PXIXUV, then code word for STAR is

GALAXY PXIXUV 10042308 10042308 10042308 STAR 10042308

(1) PQXN  (2) PQXM
(3) PQXO  (4) PQOX

63. If TABLE is coded as SZA KD, then the code for HOUSEHOLD is

TABLE SZA KD 10042308 10042308 10042308 HOUSEHOLD 10042308

(1) GNTRDGNKNC  (2) GOUSEGOLC
(3) GOUSDGKNC  (4) GNTSEGNKNC

64. If COMPUTER is coded as OCPMTURE, then the code for POPULATION is

COMPUTER OCPMTURE 10042308 10042308 10042308 POPULATION 10042308

(1) OPPUAILTON  (2) OPUPALITNO
(3) OPPUATION  (4) OPPALUTION

65. If PLACEMENT is coded as MIXZBGBKQ, then the word coded as JLRPB is

PLACEMENT MIXZBGBKQ 10042308 10042308 10042308 JLRPB 10042308

(1) MONEY  (2) MOUSE
(3) METER  (4) MOULD

P.T.O.
66. If today is Sunday, what day of the week was it 124 days before?
(1) Monday (2) Tuesday (3) Wednesday (4) Thursday

67. A clock strikes once, twice, thrice, ..., twelve times at 1, 2, 3, ..., 12 O’clock and once at every half-an-hour. The number of times it strikes between 3.05 am to 11.55 am is
(1) 81 (2) 69 (3) 67 (4) 63

68. Four cars A, B, C and D start respectively at 9.30 am, 10.30 am, 2.30 pm and 2.45 pm and reach their respective destinations at 12.15 pm, 11.45 pm, 9.15 pm and 8.30 pm same day. The car which travelled for short time is
(1) A (2) B (3) C (4) D

69. A is the daughter of B; C is the brother of B, and D is the mother of C. How A is related to D?
B is A’s grandmother, B is C’s grandmother, C is D’s son, D is the grandmother of A. How is A related to D?
(1) Maternal Uncle (2) Paternal Uncle (3) Granddaughter (4) Grandmother

70. Reaching the venue of the meeting at 8.15, a person R found that he is half-an-hour earlier than the person Q who came 40 minutes late. The scheduled time of the meeting is
(1) 8.05 (2) 8.10 (3) 8.15 (4) 8.45
71. Three doctors A, B and C have consultation schedule as follows:
   (i) A – Tuesday and Thursday – 12.00 noon to 4.00 pm.
   (ii) B – Monday, Thursday, Friday – 10.00 am to 2.00 pm.
   (iii) C – Monday, Wednesday, Thursday – 9.00 am to 2.00 pm.
   The day and the time slot at which all of A, B, C are available is
   A, B, C ఏం భ్రమ చర్యలు ప్రశాంతి విధానం, కాగితాల మొదటి, రాత్రి విధానం.
   (i) A – సంవత్త, రవాణా ప్రామాణిక 12.00 నామం రాత్రి విధానం 4.00 రాత్రి
   (ii) B – మామి, సంవత్త, రవాణా – 10.00 నామం రాత్రి విధానం 2.00 రాత్రి
   (iii) C – సంవత్త, రవాణా, కాగితాలు – 9.00 నామం రాత్రి విధానం 2.00 రాత్రి
   (1) Monday, 12.00 noon to 2.00 pm/మందిరమని, కాగితాలు 12.00 నామం రాత్రి విధానం
   2.00 రాత్రి
   (2) Monday, 10.00 am to 12.00 noon/మందిరమని, కాగితాలు 10.00 నామం రాత్రి విధానం
   12.00 రాత్రి
   (3) Thursday, 2.00 pm to 4.00 pm/మందిరమని, కాగితాలు 2.00 నామం రాత్రి విధానం
   4.00 రాత్రి
   (4) Thursday, 12.00 noon to 2.00 pm/మందిరమని, కాగితాలు 12.00 నామం రాత్రి విధానం
   2.00 రాత్రి

72. Five persons A, B, C, D and E sit in a row on a bench such that D sits between B and E. If
   C and D are not together, the persons sitting on either end of the bench are
   అవారు బుండవ తీసుకు బుండవ తీసుకు బుండవ తీసుకు బుండవ తీసుకు బుండవ తీసుకు బుండవ తీసుకు బుండవ తీసుకు
   (1) A, B  (2) B, C  (3) C, A  (4) D, E

73. For real numbers x and y, if \( x + y - xy = 1 \) holds is
   ఉండే రేఖాంశాలు x, y ఉన్న రేఖాంశాలు x + y - xy = 1
   (1) 0   (2) 1   (3) 2   (4) 3

74. If \( E \downarrow F = (E + F) + (E - F)^2 \) and
   \( E \uparrow F = (E + F)^3 - (E - F)^3 \), then
   \( (3 \downarrow 5) \uparrow (2 \downarrow 3) = \)
   ఉండే రేఖాంశాలు x, y ఉన్న రేఖాంశాలు x + y - xy = 1
   (1) 5616   (2) 5876   (3) 5926   (4) 5986

75. If \( p = 1 + \frac{1}{2} + \frac{1}{2^2} + \ldots \infty \) and \( q = 1 + \frac{1}{3} + \frac{1}{3^2} + \ldots \infty \), then \( \frac{p+q}{pq} = \)
   ఉండే రేఖాంశాలు x, y ఉన్న రేఖాంశాలు x + y - xy = 1
   (1) \( \frac{7}{2} \)   (2) \( \frac{7}{6} \)   (3) \( \frac{21}{2} \)   (4) \( \frac{25}{6} \)

P.T.O.
SECTION – B
Mathematical Ability

Questions : 75
Marks : 75

(i) Arithmetical Ability

76. If \(2^x = 4^y = 8^z\) and \(xyz = 288\), then \(x + y + z =\)

\(2^x = 4^y = 8^z\) లేదు యొక్క \(xyz = 288\) లేదు \(x + y + z =\)

(1) 72 \hspace{1cm} (2) 48 \hspace{1cm} (3) 36 \hspace{1cm} (4) 22

77. \(x^3 + y^3 + z^3 = 0 \Rightarrow \frac{x+y+z}{xyz} =\)

\(\frac{1}{3} + \frac{1}{3} + \frac{1}{3} = 0 \Rightarrow \frac{x+y+z}{xyz} =\)

(1) 1 \hspace{1cm} (2) 2 \hspace{1cm} (3) 3 \hspace{1cm} (4) 0

78. \(a : b = 2 : 5 \Rightarrow a^2 - ab + b^2 : a^2 + ab + b^2 =\)

(1) 17 : 39 \hspace{1cm} (2) 19 : 39 \hspace{1cm} (3) 31 : 39 \hspace{1cm} (4) 18 : 39

79. There are 450 coins, in a bag, of denominations \(1\), \(50\) p and \(25\) p. The ratio of their values is \(2 : 3 : 4\), then the number of \(50\) p coins is

చట్టంలో ఇక్కడకు ఇన్నొక్కి 450 రూపాణీలు ఉన్నాణం కంటే రాశి పరిమాణాలు యొక్క ద్వయం పరిమాణాలు యొక్క \(2 : 3 : 4\) పరిమాణాలు పరిమాణాలు యొక్క ద్వయం పరిమాణాలు

(1) 100 \hspace{1cm} (2) 200 \hspace{1cm} (3) 150 \hspace{1cm} (4) 250

80. \(\sqrt{10} + 2\sqrt{6} + 2\sqrt{10} + 2\sqrt{15} =\)

(1) \(\sqrt{2} + 3 + \sqrt{5}\) \hspace{1cm} (2) \(\sqrt{2} + \sqrt{3} + \sqrt{5}\) \hspace{1cm} (3) \(\sqrt{3} + \sqrt{5} + \sqrt{6}\) \hspace{1cm} (4) \(2 + \sqrt{3} + \sqrt{5}\)

81. \(\frac{1}{\sqrt{12} - 2\sqrt{35}} - \frac{1}{\sqrt{8} - 2\sqrt{15}} - \frac{2}{\sqrt{10} + 2\sqrt{21}} =\)

(1) \(2\sqrt{3}\) \hspace{1cm} (2) \(2\sqrt{5}\) \hspace{1cm} (3) \(2\sqrt{7}\) \hspace{1cm} (4) 0

82. The greatest integer having five digits and is divisible by 137 is

137 ముఖ్యమైన పదిపినుల నియమితమయం

(1) 99873 \hspace{1cm} (2) 99862 \hspace{1cm} (3) 99877 \hspace{1cm} (4) 99973

83. The largest three digit number, which when divided by 3 and 8 leave remainders 1 and 3 respectively, is

3, 8 ముఖ్యమైన పదిపినుల నియమితమయం యొక్క ప్రతిభా పాశ్చాత్యం 1, 3 కంటే పాశ్చాత్యం పాశ్చాత్యం

(1) 993 \hspace{1cm} (2) 931 \hspace{1cm} (3) 979 \hspace{1cm} (4) 955
52RD61

84. Traffic lights at 3 junctions A, B and C change every 15, 25 and 30 seconds respectively. If all the lights change simultaneously at 10 a.m., when will they change together again?

(a) 11:00 a.m.
(b) 11:10 a.m.
(c) 11:15 a.m.
(d) 11:20 a.m.

85. The gcd of two numbers is 23 and their sum is 184. Then the two such numbers among the following are:

(a) 69, 112
(b) 46, 138
(c) 69, 115
(d) 46, 124

86. In the decimal representation of \( \frac{3}{22} \), the digit in the 25th decimal place is

(a) 3
(b) 6
(c) 7
(d) 4

87. \[ 1 - \left[ 1 - \left( 1 + \frac{3}{7} \right)^{-1} \right]^{-1} \]

(a) \( \frac{3}{10} \)
(b) \( \frac{3}{7} \)
(c) \( \frac{3}{7} \)
(d) \( -\frac{3}{10} \)

88. If \( x = \sqrt{3 + \sqrt{3 + \sqrt{3 + \ldots}}}, \) then a true inequality among the following is:

(a) \( 1 < x < 2 \)
(b) \( 2 < x < 2.5 \)
(c) \( 2.5 < x < 3 \)
(d) \( 3 < x < 4 \)

89. The cost price of an article is ₹ 800. Its marked price is ₹ 1,060. If the shopkeeper suffers a loss of 12% on its sale, then the discount allowed on the article (approximately) is

(a) ₹ 305.2
(b) ₹ 321.3
(c) ₹ 335.2
(d) ₹ 355

90. The present population of a city is 9075 thousands. If the annual increase of population is 10%, then what was the population of the city (in thousands) 2 years ago?

(a) 7800
(b) 7500
(c) 8500
(d) 8200

91. If 16% of a property is worth ₹ 3.52 lac, then 50% of the property is worth (in lacs of rupees) is

(a) 22
(b) 18
(c) 16
(d) 11

15 P.T.O.
92. The cost price of 10 articles is equal to the sale price of 12 of the same articles. Then the outcome of the transaction is

10 कस्ट प्रिस 12 सेल प्रिस तरह 12 कस्ट प्रिस 20% लॉस होगी. (1) 16\(\frac{2}{3}\) % gain/विद्युत (2) 16\(\frac{2}{3}\) % loss/विद्युत

(3) 8\(\frac{2}{3}\) % gain/विद्युत (4) 8\(\frac{2}{3}\) % loss/विद्युत

93. By selling two articles each at ₹ 480, a merchant gets a profit of 20% on one and loss of 20% on the other. In the total transaction the merchant gets a

लाभ 20% धारण के 100 प्रतिशत लाभ के साथ ₹ 480 में बिकता है, तरह ₹ 480 पर 20% ग्रेटलॉस है। (1) 4% loss/विद्युत (2) no loss no gain/विद्युत (3) 5% loss/विद्युत (4) 5% gain/विद्युत

94. Two persons A and B started a business investing ₹ 3.5 lacs and ₹ 6.5 lacs each respectively. After 6 months A has withdrawn from the business while C joined by investing ₹ 7.5 lacs. The share of A in the year-end profit of ₹ 2.4 lacs is

A और B दोनों ने ₹ 3.5 लाख और ₹ 6.5 लाख के कपड़े के लाखों द्वारा एक साझेदारी की। उन्होंने 6 माह के निश्चित भाग के रूप में ₹ 7.5 लाख दिया। (1) ₹ 25,000 (2) ₹ 45,000 (3) ₹ 55,000 (4) ₹ 75,000

95. A person A starts a business with some capital. After four months B joins with a capital 60% more than that of A. The share of A (in ₹) in the year-end profit of ₹ 6,20,000 is

एक व्यक्ति ने कुछ कपड़े के लाखों के लाखों की साझेदारी शुरू की। उन्होंने 4 माह बाद B ने ₹ 62,000 के लाखों के लाखों के लाखों के कपड़े से ₹ 62,000 के लाखों के कपड़े दिया। (1) ₹ 3,10,000 (2) ₹ 2,70,000 (3) ₹ 3,00,000 (4) ₹ 3,20,000

96. Two pipes X and Y can fill an empty tank in 18 min and 24 min respectively. Both the pipes are opened. After some time X is closed while Y is continued till the tank is filled. If the tank is filled in 12 minutes, then X is stopped after

दो पाइप X और Y ने एक खाली स्तंभ भरने में 18 मिनट और 24 मिनट के लाखों के लाखों के लाखों के कपड़े दिया। (1) 6 min/पाइप (2) 9 min/पाइप (3) 8 min/पाइप (4) 10 min/पाइप

97. Taps A and B can fill a tank in 3 hrs. and 4 hrs. respectively. Tap C can empty the full tank in 6 hrs. If A, B and C are opened simultaneously, then the tank will be filled in

1) 120 min/घंटा (2) 140 min/घंटा (3) 144 min/घंटा (4) 160 min/घंटा
98. The speed of the train (in kmph) of 180 m long which crosses a bridge of length 120 m in 15 seconds is
180 m. రైలు 120 m పిండితో పల్లె 15 సెకండాల్లో గయించిపోయిన విదూరి హిడిందు యేస్తా పిల్లడో?
(కంటే 2 కి.మీ. పాగల్)
(1) 36 (2) 72 (3) 45 (4) 63

99. A starts from P at 6 a.m. and reaches Q in 4 hours. B starts from Q at 8 a.m. and reaches P at 10 a.m. At what time A and B meet?
P నాటికీ 6 గంటల్లో ప్రారంభంగా పిందితో కే ప్రేమి కే ప్రేమి సాధించింది. Q నాటికీ 8 గంటల్లో ప్రారంభంగా పిందితో పిందితో బంధించింది?
(1) 8.40 a.m. (2) 8.30 a.m. (3) 9.00 a.m. (4) 9.30 a.m.

100. A can do a piece of work in 12 days and B in 16 days. After working for 4 days with A, B leaves the work. The number of days required to finish the remaining work by A alone is
అ పరిశీలన కాలం 12 గంటల్లో బ 16 గంటల్లో. అ 4 గంటల్లో పరిశీలించి అ పరిశీలన లో అ పరిశీలన కాలం?
(1) 2 (2) 3 (3) 4 (4) 5

101. A, B and C together can complete a piece of work in 30 days. A takes twice as long as B and C together take to complete the work while B takes twice as long as A and C together to complete the same work. The number of days C alone needs to complete the work is
అ, బ, సాధించింది 30 గంటల్లో. అ తినిపోయిన 2 గంటల్లో బ సాధించింది 30 గంటల్లో. బ తినిపోయిన 2 గంటల్లో అ, బ, సాధించింది 30 గంటల్లో?
(1) 90 (2) 85 (3) 82 (4) 78

102. If the area of a sector in a circle is \( \frac{77}{3} \) cm² and if the radius of the circle is 7 cm, then the sectorial angle is
సెక్టర్ పరిమిట్ సూక్ష్మానం \( \frac{77}{3} \) సెమీయం మరియు క్షేత్రఫలము 7 సెమీ. నిష్పత్తి సూక్ష్మానం ఉండాలను?
(1) 45° (2) 30° (3) 60° (4) 90°

103. The perimeter of a rhombus is 40 cm and one of its diagonals is 16 cm. Then the area (in cm²) of the rhombus is
రహమ్ముకు పరిమిట్ 40 సెమీ. అ పద్ధతి కెక్కలు 16 సెమీ. అరధ సెంటిమీటర్స్ పరిమిట్ (సెమీయం సెమీయం)
(1) 48 (2) 192 (3) 96 (4) 64

P.T.O.
104. A hollow road-roller 63 cm wide with circumference of 440 cm is made up of iron. If its thickness is 4 cm, then the volume (in cm$^3$) of the metal used is

$$V = \pi r^2 h$$

where $r$ is the radius of the hollow and $h$ is the height. Given $r = 63/2 = 31.5$ cm and $h = 440/2\pi = 70$ cm, the volume is

$$V = \pi (31.5)^2 (70)$$

(1) 97712  (2) 107712  (3) 107714  (4) 106612

105. The dimensions of a rectangular solid $S$ are $4 \times 9 \times k$. If the volume of $S$ is the same as the volume of a cube of side 6, then the value of $k$ is

$$V_S = l \times w \times h = 4 \times 9 \times k = 216$$

(1) 6  (2) 12  (3) 18  (4) 36

106. A door is in the shape of a rectangle surmounted by a semicircle on its breadth. If the rectangular dimensions are 10 ft $\times$ 7 ft., then the area of the cross-section of the door (in sq. ft.) is

$$A = l \times w + \frac{1}{2} \pi \left(\frac{d}{2}\right)^2$$

where $d$ is the diameter of the semicircle and $l$ and $w$ are the length and width of the rectangle.

(1) 89  (2) $87\frac{1}{4}$  (3) $89\frac{1}{4}$  (4) 87

107. A solid cylinder of height 6 cm and base radius 2 cm is melted and cast into a cone of the same base radius as that of the cylinder. Then the height of the cone (in cm) is

$$V_c = \frac{1}{3} \pi r^2 h$$

where $V_c$ is the volume of the cone and $V_c = V_t$, the volume of the cylinder.

(1) 9  (2) 18  (3) 21  (4) 24

108. A cylinder is of height $h$ and base radius $r$. If $t$ denotes the total surface area and $v$ its volume, then

$$\frac{t}{2v} = \frac{1}{r} + \frac{1}{h} + \frac{2}{r}$$

(1) $\frac{2}{r} + \frac{2}{h}$  (2) $\frac{3}{r} + \frac{3}{h}$  (3) $\frac{1}{2r} + \frac{1}{2h}$  (4) $\frac{1}{r} + \frac{1}{h}$

109. The binary equivalent of the decimal number 245 is

$$245 = 11110101$$

(1) 1110101  (2) 11110101  (3) 11101011  (4) 11110110

110. The remainder when $17^{271}$ is divided by 29 is

$$17^{271} \equiv 3 \pmod{29}$$

(1) 11  (2) 10  (3) 12  (4) 13
52RD61

(ii) Algebraic and Geometrical Ability

(Marks : 30)

111. If p, q are statements, then \( (\sim p) \lor (\sim q) \) is equivalent to
\[ p \rightarrow \sim q \]
\[ \sim p \Rightarrow q \]
\[ \sim p \Rightarrow \sim q \]
\[ p \Rightarrow q \]

112. If p, q are any two statements, then \( (\sim (p \lor (\sim p \land q))) \) is equivalent to
\[ \sim p \land q \]
\[ \sim p \lor q \]
\[ (\sim p) \land (\sim q) \]
\[ p \Rightarrow q \]

113. If A is the set of all primes not exceeding 20 and B is the set of odd positive integers not exceeding 20, then \((A - B) \cup (B - A) = \{1, 9, 15, 19\}\) \(\{2, 9, 15\}\) \(\{1, 2, 9, 15\}\) \(\{9, 15\}\)

114. If \( f(x) = \log \frac{1+x}{1-x} \) and \( g(x) = \frac{3x+x^3}{1+3x^2} \) then \( f(g(x)) = \)
\[ f(x) = \log \frac{1+x}{1-x}, x \]
\[ g(x) = \frac{3x+x^3}{1+3x^2}, x \]
\[ f(g(x)) = \]
\[ f(x) \]
\[ g(x) \]
\[ 3g(x) \]
\[ 3f(x) \]

115. If a set A has 4 elements, another set B has 7 elements, then the number of injective mappings from A into B is
\[ (1) 920 \]
\[ (2) 840 \]
\[ (3) 120 \]
\[ (4) 720 \]

116. The equation of the line passing through \((-4, 3)\) and is perpendicular to the line segment joining the points \((1, -3)\) and \((-5, 1)\) is
\[ 3x - 2y + 18 = 0 \]
\[ 3x + 2y + 18 = 0 \]
\[ 2x - 3y + 14 = 0 \]
\[ 2x + 3y + 8 = 0 \]

117. The equation of a line passing through the point \((-2, 3)\) and making intercepts in the ratio of 2 : 3 on the x and y axes is
\[ 3x - 2y + 12 = 0 \]
\[ 3x + 2y - 12 = 0 \]
\[ 2x + 3y + 12 = 0 \]
\[ 2x - 3y - 12 = 0 \]

P.T.O.
118. \[ \sin^2 \frac{\pi}{4} + \sin^2 \frac{3\pi}{4} + \sin^2 \frac{5\pi}{4} + \sin^2 \frac{7\pi}{4} = \]
\[
(1) \quad 0 \quad (2) \quad 1 \quad (3) \quad 2 \quad (4) \quad 4
\]

119. \[ \frac{\tan 40^\circ + \tan 20^\circ}{\cot 45^\circ - \cot 50^\circ \cot 70^\circ} = \]
\[
(1) \quad 3 \quad (2) \quad \sqrt{3} \quad (3) \quad \frac{1}{\sqrt{3}} \quad (4) \quad \frac{1}{3}
\]

120. \[ \tan A + \sin A = p; \tan A - \sin A = q \Rightarrow p^2 - q^2 = \]
\[
(1) \quad 2(\tan^2 A + \sin^2 A) \quad (2) \quad 2(\tan^2 A - \sin^2 A) \quad (3) \quad 4 \tan^2 A \sin^2 A \quad (4) \quad 4 \tan A \sin A
\]

121. Observed from the top and foot of a tower 10 metres high the angles of elevation of the top of a second tower are 30° and 60° respectively. The height of the second tower (in metres) is
\[
(1) \quad 15 \quad (2) \quad 17.5 \quad (3) \quad 20 \quad (4) \quad 22.5
\]

122. \[ x + y = z \Rightarrow x^3 + y^3 + 3xyz = \]
\[
(1) \quad 0 \quad (2) \quad -3xyz \quad (3) \quad 3x^2y^2z^2 \quad (4) \quad z^3
\]

123. How much is to be added to \((x + 2)(x + 4)(x + 6)(x + 8)\) to make it a perfect square? \((x + 2)(x + 4)(x + 6)(x + 8)\) को कितना केंद्रित किया जाना चाहिए ताकि यह पूर्ण वर्ग बने?
\[
(1) \quad 4 \quad (2) \quad 8 \quad (3) \quad 16 \quad (4) \quad 20
\]

124. \(f(x)\) is a polynomial that leaves remainder 6 and 4 respectively when divided by \((x - 2)\) and \((x - 3)\). The remainder of \(f(x)\) when divided by \(x^2 - 5x + 6\) will be
\[ f(x) \text{ का } (x - 2), (x - 3) \text{ में बाकी योग्यता } 6, 4 \text{ है, } f(x) \text{ का } (x^2 - 5x + 6) \text{ में बाकी योग्यता क्या होगी?} \]
\[
(1) \quad 2(x + 3) \quad (2) \quad 2(-x - 5) \quad (3) \quad 2(-x + 5) \quad (4) \quad 2(x + 5)
\]

125. If \(x^5 - 7x^4 + 9x^3 + 7x^2 - 10x = (x^2 - 1)g(x), \) then one of the values of a such that \(g(a) = 0\) is \(x^5 - 7x^4 + 9x^3 + 7x^2 - 10x = (x^2 - 1)g(x)\) के लिए \(g(a) = 0\) का मान कौन सा है?
\[
(1) \quad -5 \quad (2) \quad 5 \quad (3) \quad 4 \quad (4) \quad -4
\]

126. \[ \frac{10}{x + y} - \frac{9}{x - y} = \frac{6}{x + y} + \frac{15}{x - y} = 8 \Rightarrow 2x + 3y = \]
\[
(1) \quad -\frac{5}{2} \quad (2) \quad \frac{5}{2} \quad (3) \quad \frac{7}{2} \quad (4) \quad -\frac{7}{2}
\]

127. \[ \frac{xy}{x + y} = \frac{6}{5} \quad \frac{xy}{x - y} = 6 \Rightarrow (x, y) = \]
\[
(1) \quad (-2, -3) \quad (2) \quad \left(\frac{1}{2}, -\frac{1}{3}\right) \quad (3) \quad \left(\frac{1}{2}, \frac{1}{3}\right) \quad (4) \quad (2, 3)
\]
128. The sum of the integers between 1 and 200 which are divisible by both 3 and 7 is
1, 200 = 3, 7 = 210 + 7 = 430
(1) 945 (2) 999 (3) 1327 (4) 1594

129. The third and the fifth terms of a geometric progression are respectively the second and the eighth terms of an arithmetic progression whose first term and the common difference are both equal to 16. The first term of the geometric progression is
(1) 8 (2) 6 (3) 4 (4) 2

130. If $^{14}C_{r-1}, ^{14}C_r, ^{14}C_{r+1}$ are in Arithmetic Progression, the possible values of $r$ are
$^{14}C_{r-1}, ^{14}C_r, ^{14}C_{r+1}$ are equal to $3, 4, 5, 6, 7, 8$ respectively. The common difference $= 16 - 3 = 13$ or $= 7 - 4 = 3$ or $= 8 - 5 = 3$
(1) 4, 8 (2) 5, 9 (3) 6, 10 (4) 7, 11

131. If the coefficients of $x^7$ and $x^8$ are equal in the binomial expansion of $\left(3 + \frac{x}{2}\right)^n$, then $n =$
$\left(3 + \frac{x}{2}\right)^n$ gives $\binom{n}{7}, x^7$ and $\binom{n}{8}, x^8$ coefficients, respectively
(1) 42 (2) 48 (3) 55 (4) 58

132. Let $A = \begin{bmatrix} 0 & \alpha \\ \beta & 0 \end{bmatrix}$, $\alpha \neq 0, \beta \neq 0$. If $A^3 + A = 0$, then $\alpha \beta =$
$A = \begin{bmatrix} 0 & \alpha \\ \beta & 0 \end{bmatrix}$, $\alpha \neq 0, \beta \neq 0$ are skew-symmetric. $A^3 + A = 0$ is possible, $\alpha \beta =$
(1) 1 (2) $\frac{1}{2}$ (3) $-\frac{1}{2}$ (4) -1

133. $f(\theta) = \begin{bmatrix} \sin \theta & -\cos \theta \\ \cos \theta & \sin \theta \end{bmatrix} \Rightarrow f^{-1}(\theta) =$
(1) $-f(-\theta)$ (2) $f\left(\frac{\pi}{2} + \theta\right)$ (3) $f\left(\frac{\pi}{2} - \theta\right)$ (4) $f(\theta)$

134. $\lim_{x \to \infty} \frac{(1 + x)^{10} + (2 + x)^{10} + \ldots + (5 + x)^{10}}{100 + x^{10}} =$
(1) 0 (2) 1 (3) 3 (4) 5

135. $y = \tan^{-1}\left(\frac{\cos x + \sin x}{\cos x - \sin x}\right) \Rightarrow \frac{dy}{dx} =$
(1) $\tan \frac{x}{2}$ (2) $\tan x$ (3) $x$ (4) 1

21 P.T.O.
136. If \( l_1 \) and \( l_2 \) are parallel lines, then \( x = \) (1) 30 \( \quad \) (2) 45 \( \quad \) (3) 60 \( \quad \) (4) 75

137. In the adjacent diagram ABCD is a quadrilateral; E and F are the foot of the perpendiculars drawn from B and D on AC. If AC = 8, EC = 3, BC = 5 and area of ABCD = 20, then DF = (1) 1 \( \quad \) (2) 2 \( \quad \) (3) 3 \( \quad \) (4) 4

138. P, A, B are three points on a circle and PT is a tangent to the circle. If \( \angle APB = 45^\circ \) and \( \angle TPB = 60^\circ \), then \( \angle ABP = \) (1) 45\(^\circ\) \( \quad \) (2) 60\(^\circ\) \( \quad \) (3) 75\(^\circ\) \( \quad \) (4) 90\(^\circ\)

139. The radius of the circumcircle of the triangle with vertices (0, 0); (4, 4) and (0, 8) is (1) \( \sqrt{2} \) \( \quad \) (2) 2\( \sqrt{2} \) \( \quad \) (3) 3 \( \quad \) (4) 4

140. The coordinates of the point on the y-axis which is equidistant from the points (7, 6) and (-3, 4) is \( y = 7^2 + 6^2 = (7, 6), (-3, 4) \) \( \quad \) (1) (0, 0) \( \quad \) (2) (0, -25) \( \quad \) (3) (0, -15) \( \quad \) (4) (0, 15)
52RD61

(iii) Statistical Ability

141. The Arithmetic Mean of the following data is

<table>
<thead>
<tr>
<th>x</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>......</th>
<th>25</th>
</tr>
</thead>
<tbody>
<tr>
<td>f</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>......</td>
<td>25</td>
</tr>
</tbody>
</table>

(1) 17  (2) 21  (3) 23  (4) 27

142. The median of the following frequency distribution is

<table>
<thead>
<tr>
<th>x</th>
<th>15</th>
<th>17</th>
<th>20</th>
<th>22</th>
<th>25</th>
<th>30</th>
</tr>
</thead>
<tbody>
<tr>
<td>f</td>
<td>1</td>
<td>5</td>
<td>10</td>
<td>12</td>
<td>8</td>
<td>4</td>
</tr>
</tbody>
</table>

(1) 17  (2) 20  (3) 22  (4) 25

143. In a frequency distribution the Arithmetic mean is 50 and the median is 52. Its mode is

(1) 51  (2) 53  (3) 54  (4) 56

144. If the Standard Deviation of n observations $x_1, x_2, ..., x_n$ is 17, then the Standard Deviation of $2x_1 - 15, 2x_2 - 15, ..., 2x_n - 15$ is

$x_1, x_2, ..., x_n$ సంఖ్యల సూచించిన సంఖ్యల స్టాండార్డ్ డివియషన్ 17 ఉంటే $2x_1 - 15, 2x_2 - 15, ..., 2x_n - 15$ స్టాండార్డ్ డివియషన్ ఉంటుంది

(1) 34  (2) 49  (3) 54  (4) 59

145. The sum of 5 observations is 25 and the sum of their squares is 145. The standard deviation of these observations is

5 సంఖ్యల రాణి సంఖ్య 25, సంఖ్యల రాణి సంఖ్య స్థాయి స్టాండార్డ్ డివియషన్

(1) $2\sqrt{2}$  (2) 2  (3) $\frac{29}{5}$  (4) $\sqrt{\frac{29}{5}}$

P.T.O.
146. The rank correlation coefficient of the following data:

<table>
<thead>
<tr>
<th>x</th>
<th>3</th>
<th>2</th>
<th>4</th>
<th>7</th>
<th>6</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>y</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>6</td>
<td>3</td>
<td>5</td>
</tr>
</tbody>
</table>

(1) \[ \frac{5}{23} \]  
(2) \[ \frac{6}{41} \]  
(3) \[ \frac{6}{35} \]  
(4) \[ \frac{5}{49} \]

147. Out of 100 consecutive positive integers two are chosen at random. The probability that their sum is odd, is

(1) \[ \frac{1}{50} \]  
(2) \[ \frac{49}{50} \]  
(3) \[ \frac{51}{99} \]  
(4) \[ \frac{50}{99} \]

148. Three vertices out of six vertices of a regular hexagon are chosen at random. The probability that these vertices form an equilateral triangle is

(1) \[ \frac{1}{6} \]  
(2) \[ \frac{1}{10} \]  
(3) \[ \frac{1}{15} \]  
(4) \[ \frac{1}{20} \]

149. The probability of getting a total of 17 on a throw of 3 dices is

(1) \[ \frac{17}{216} \]  
(2) \[ \frac{17}{108} \]  
(3) \[ \frac{1}{73} \]  
(4) \[ \frac{17}{73} \]

150. A bag contains 4 Green, 6 Black and 7 White balls. If one ball is drawn from the bag at random, the probability that it is either a black or a white ball is

(1) \[ \frac{42}{289} \]  
(2) \[ \frac{1}{17} \]  
(3) \[ \frac{11}{17} \]  
(4) \[ \frac{13}{17} \]
Questions : 50

PART – 1

Choose the correct meaning of the word given :

151. Humongous
   (1) funny
   (2) enormous
   (3) marvellous
   (4) full of variety

152. Queasy
   (1) nauseous
   (2) funny
   (3) trembling
   (4) disorderly

153. Cogent
   (1) agent
   (2) convincing
   (3) active
   (4) co-worker

154. Paramount
   (1) a huge para
   (2) permanent
   (3) supreme
   (4) mountains described in a para

155. Thwart
   (1) convert
   (2) prevent
   (3) pervert
   (4) thrust

156. Arduous
   (1) untidy
   (2) excess
   (3) skilled
   (4) difficult

Fill in the blank choosing the correct word :

157. The workers were delighted as their pay scales were revised _______.
   (1) respectively
   (2) retrospectively
   (3) retrogressively
   (4) redundantly

158. Due to his corrupt practices, the officer was _______.
   (1) promoted
   (2) demoted
   (3) rewarded
   (4) praised

159. One who is determined to exact full vengeance for wrongs done to him is _______.
   (1) virulent
   (2) usurer
   (3) vindictive
   (4) imposter

160. One who does not care for literature or art is _______.
   (1) illiterate
   (2) primitive
   (3) a philistine
   (4) a barbarian
PART – 2

Choose the correct answer:

161. Which was the first commercially available computer?
(1) ENIAC  (2) EDSAC
(3) UNIVAC  (4) Mark I

162. In FDM, every user uses
(1) same frequency band  (2) different frequency bands
(3) a frequency band which is assigned at random  (4) multiple frequency bands

163. Group of instructions that directs the computer is called
(1) storage  (2) memory  (3) logic  (4) program

164. An ISP is an
(1) Internet Service Provider  (2) Internet Service Producer
(3) Internet Selection Provider  (4) Internet Service Product

165. The most powerful type of computer is called
(1) a micro computer  (2) a mini computer
(3) a mainframe computer  (4) a super computer

166. The expansion for the abbreviation GDP, an important measure of economy, is
(1) Growth Development Project  (2) Growth in Domestic Production
(3) Gross Domestic Product  (4) Goods Demand Projection

167. The market for noble metals like Gold and Silver is called
(1) Bullion Market  (2) Bullish Market
(3) Stock Market  (4) Capital Market

168. As a result of disciplinary action, when an employee is asked not to come to work pending enquiry, it is called
(1) termination  (2) suspension
(3) leave  (4) shut off

169. An organization’s involvement within the community is called
(1) outreach  (2) outrider
(3) interact  (4) intervene

170. The availability of liquid assets to a market or company is called
(1) liquidate  (2) liquidity
(3) liquidize  (4) liquid
Choose the correct answer:

171. A: "He never does a stroke of work in the house."
   B: "Well, may be no one asked him."
   'B' implies that 'A' is
   (1) harsh  (2) unfair
   (3) angry  (4) irritated

172. Change the following into active voice:
   You and he were seen by her.
   (1) She saw you and him.
   (2) She saw both of you.
   (3) She had seen you and him.
   (4) She saw both of them.

173. If I agree to your proposal, I will be backing the wrong horse.
   The underlined phrase means
   (1) gambling  (2) unfortunate
   (3) fortunate  (4) prosperous

174. "Was this the sort of thing you wanted?"
   The tone of the speaker in the above sentence is
   (1) accusing  (2) rude
   (3) polite     (4) cheerful

175. The subject is held over till the next meeting.
   The underlined phrase means
   (1) postponed  (2) dismissed
   (3) taken care of  (4) saved

176. A: "Can you explain this theory to me?"
   B: "Why? Are you afraid of failing in the exam again?"
   In this conversation 'B's' attitude is
   (1) helpful  (2) scornful
   (3) courteous  (4) concerned

177. A: "Did the resolution get the approval?"
   B: "It was called in question by many."
   'B' implies that many
   (1) approved the contents
   (2) doubted the contents
   (3) thought it a model question paper
   (4) framed the resolution along with a questionnaire
Fill in the blanks with the appropriate phrase/verb/preposition:

178. They decided to rest _____ the shade of the tree before resuming their walk.
   (1) on                        (2) below
   (3) underneath                (4) in

179. They watched the impressive tableau pass _____.
   (1) away                      (2) by
   (3) on                        (4) up

180. Something should be done _____ unemployment.
   (1) for                       (2) in
   (3) with                     (4) about

181. Whom are you _____ for?
   (1) waiting                  (2) awaiting
   (3) waiting on               (4) receiving

182. His body has _____ there under suspicion.
   (1) lain                     (2) laid
   (3) lied                     (4) lost

183. After heavy rains in the catchment areas, a river might _____ several feet.
   (1) elevate                  (2) raise
   (3) rise                     (4) grow

184. The vice chairman had to conduct the meeting as the chairman did not _____.
   (1) turn in                  (2) turn up
   (3) turn out                 (4) turn off

185. It's time you _____ to some work.
   (1) got in                   (2) got off
   (3) got down                 (4) get up
PART – 4

Read the following passage and answer questions 186-190.

There was silence. The rush of water so constant that the sound receded into the deep recesses of the mind and so faded from the conscious. Birds chirped in different octaves. The rain came in a downpour adding to the music of nature. The orchestral composition was completed as the wind ruffled through trees.

What is remarkable in this sequence is that the sounds were not man-made. The comforting murmurs of nature lulled the mind into deep meditation. Then I opened my eyes. The mountain of Machchu Picchu was behind me. Wyna Picchu was to my side, and Putucursi right in front shaped like Mt. Kailash. Of course there was no snow. A long fold of mountain was like Ganesh’s trunk. The sacred river Urubamba sped along in its long journey – embracing the mountain at the foot, following its contour, then on around Wyna Picchu, racing to join the Amazon river – tumbling down 8000 feet, saddling South America and then merging with the Atlantic Ocean on the East coast.

Cusco was the heart of the Inca empire. It retains its pristine charm inspite of a stream of tourists. The tiled roof tops, narrow streets and little balconies dotting the buildings add to the charm. We stayed at the Monestaria Hotel, which is an original old Spanish Monastery. The feeling of belonging to a bygone era continued even as we left the hotel and stepped into the small square where colourfully dressed Inca woman awaited us with a child and a llama to be photographed.

186. Which mountain specifically referred to by the author did not have snow?
   (1) Mt. Kailash  (2) Putucursi  (3) Machchu Picchu (4) Wyna Picchu

187. Which river is described as sacred in the passage?
   (1) Amazon  (2) Ganga  (3) Missisipi  (4) Urubamba

188. Which four sounds constituted Nature’s orchestra according to the passage?
   (1) Roar of Atlantic, snow fall at mountain, sound of waterfall and chanting at monastery.
   (2) Wind through mountain, flight of birds, water stream and falling of leaves.
   (3) River crashing at mountain foot, confluence of river into ocean, rustling of dress and clicking of camera.
   (4) The sound of water, chirping of birds, rains and the wind ruffling through trees.

189. What does the expression, ‘it retains its pristine charm’ mean?
   (1) It retains its entertainment value.
   (2) It retains its beautiful charm.
   (3) It retains its unspoiled old charm.
   (4) It retains its modern charm.

190. What does the expression, ‘Birds chirped in different octave’ mean?
   (1) Birds voices pierced the silence of the valley.
   (2) Birds voices could be heard at various frequencies.
   (3) Birds voices sounded like cacophony.
   (4) Birds tweeted to each other aimlessly.
Read the following passage and answer questions 191-195:

My childhood was, on the whole, happy and straight forward, and I felt affection for most of the grown-ups with whom I was brought in contact. I remember a very definite change when I reached what in modern child psychology is called the ‘latency period’. At this stage, I began to enjoy using slang, pretending to have no feelings, and being generally ‘manly’. I began to despise my people, chiefly because of their extreme horror of slang and their absurd notion that it was dangerous to climb trees. So many things were forbidden to me that I acquired the habit of deceit in which I persisted upto the age of twenty one. It became second nature to me to think that whatever I was doing had better be kept to myself and I have never quite overcome the impulse to concealment which was thus generated. I still have an impulse to hide what I am reading when anybody came into the room, and to hold my tongue generally as to where I have been, and what I have done. It is only by a certain effort of will that I have overcome the impulse, which was generated by the years during which I had to find my way among a set of foolish prohibitions.

The years of adolescence were to me very lonely and very unhappy. Both in the life of the emotions and in the life of the intellect, I was obliged to preserve an impenetrable secrecy towards my people. My interests were divided between sex, religion and mathematics.

191. What did the author acquire in his adolescence?
   (1) Good habits
   (2) The bad habit of drinking
   (3) The habit of deceiving people
   (4) The bad habit of smoking

192. From where is the expression ‘Latency period’ borrowed?
   (1) Adult psychology
   (2) Child psychology
   (3) Educational psychology
   (4) Abnormal psychology

193. How did the author acquire the ‘habit of deceit’?
   (1) People hated him.
   (2) Because he was not permitted to do many things which he wanted to do.
   (3) He was lonely.
   (4) No one sympathized with him.

194. How was the author during the period of adolescence?
   (1) Lonely but not unhappy.
   (2) Lonely and unhappy.
   (3) Unhappy but by no means lonely.
   (4) Very friendly and very open.

195. Where did the author maintain secrecy?
   (1) In emotional but not intellectual life.
   (2) In intellectual but not emotional life.
   (3) In emotional and intellectual life.
   (4) Neither in intellectual nor in emotional life.
Read the following passage and answer questions 196-200.

When you first arrive in a new culture, there is a period of confusion that comes from the new situation and from lack of information. It leaves you quite dependent and in need of help in the form of information and advice. The second stage begins as you start to interact with the new culture. It is called the stage of small victories. Each new encounter with the culture is fraught with peril. It is preceded by anxiety and information collection and rehearsal. Then the event occurs and you return home either triumphant or defeated. When successful, the feelings are very much as though a major victory has been won. A heightened roller coaster effect is particularly characteristic of this stage. Once some of the fundamentals of life are mastered, there is time to explore the new culture. This is the honeymoon stage of wonder and infatuation. In it there is heightened appreciation for the new, the different, the aesthetic. Depending on the degree of cultural immersion and exploration, it may continue for a considerable period of time.

After a while, a self correction takes place. No honeymoon can last forever. Why in the world would anyone do it that way? Can't these people get their act together? Now the deficits seem glaringly apparent. Finally, if you are lucky enough to chart a course through these stages and not get stuck, there is a rebalance of reality. There is the capacity to understand and enjoy the new culture without ignoring these features that are less desirable.

196. When does one acquire the capacity to understand and enjoy new culture?
(1) When one is willing to accept the new culture uncritically.
(2) When one goes through various stages of assimilation.
(3) When one is infatuated with the new culture.
(4) When one gives up old culture.

197. How many stages of adaptation are described before moving on to the new culture finally?
(1) Four  (2) Three  (3) Two  (4) Five

198. When does one go through a critical questioning phase before moving on to the new culture?
(1) At the honeymoon stage  (2) At the initial stage
(3) At the final stage  (4) At the second stage

199. Which stage of cultural adoption is comparable to a roller coaster ride?
(1) When you interact with the new culture.
(2) While experiencing the honeymoon stage of the new culture.
(3) While being critical of the new culture.
(4) When you first arrive in a new culture.

200. At which stage of one's entry into the new culture, is one likely to feel quite dependent?
(1) At the stage of interaction with the new culture.
(2) At the initial stage.
(3) At no stage.
(4) At all stages.