Railway
Combined Pre. Exam
Non-Technical Stage I

1. In which of the following organ carbohydrate is stored as glycogen
   (a) Intestine   (b) Stomach
   (c) Liver   (d) Pancreas

2. Ascorbic acid is
   (a) a vitamin   (b) an enzyme
   (c) a protein   (d) an amino acid

3. Ohm's law does not apply to which of the following?
   (a) AC Circuits   (b) Conductors
   (c) Semi conductors (d) None of these

4. Which of the following is used in oven?
   (a) X-rays   (b) UV-rays
   (c) Microwaves   (d) Radiowaves

5. One of the states through which the Tropic of Cancer passes is
   (a) Jammu and Kashmir
   (b) Himachal Pradesh
   (c) Bihar
   (d) Jharkhand

6. On which one of the following rivers, the Indo-Pak Bagalihar project is located?
   (a) Chenab   (b) Jhelum
   (c) Beas   (d) Sutlej

7. Who propounded the 'market law'?
   (a) Adam Smith   (b) JB Say
   (c) TR Malthus   (d) David Ricardo

8. The term 'Paper Gold' means
   (a) Special Drawing Rights (SDR) of the IMF
   (b) Special accomodation facility of the World Bank
   (c) Currencies Still on Gold Standard
   (d) Deficit Financing

9. Where is the headquarter of International Bank for Reconstruction and Development (IBRD) located?
   (a) Geneva   (b) Washington DC
   (c) London   (d) Paris

10. In India, as per census 2011, the India's population growth rate has declined from 21.54% (2001) to
    (a) 17.64% (2011) (b) 17.65% (2011)
    (c) 17.63% (2011) (d) 17.66% (2011)

11. Comptroller and Auditor General of India is appointed by
    (a) President
    (b) Speaker of the Lok Sabha
    (c) Chairman of the Planning Commission
    (d) Finance Minister

12. Japan's Parliament is known as
    (a) Diet   (b) Dail
    (c) Yuan   (d) Shora

13. The Indian Parliament consists of
    (a) Lok Sabha only
    (b) Lok Sabha and the President
    (c) Rajya Sabha and Lok Sabha
    (d) The President, Rajya Sabha and Lok Sabha

14. Which one of the following four vedas contains an account of magical charms and spells?
    (a) Rigveda   (b) Samaveda
    (c) Yajurveda   (d) Atharvaveda

15. Upanishad are books on
    (a) Religion   (b) Yoga
    (c) Law   (d) Philosophy

16. Which religious reformer of Western India was known as 'Lokhitwadi'?
    (a) Gopal Hari Deshmukh
    (b) RG Bhandarkar
    (c) Mahadev Govind Ranade
    (d) BG Tilak

17. The First Governor General and Viceroy of British India was
    (a) Lord Dalhousie
    (b) John Lawrence
    (c) Warren Hastings
    (d) Lord Canning

18. Who is the author of the book 'A Foreign Policy of India'?
    (a) IK Gujral
    (b) BG Deshmukh
    (c) LK Advani
    (d) AJ Toynbee

19. Organization responsible for maintaining Red Data Book/Red List is
    (a) WWF   (b) IUCN
    (c) IBWL   (d) CITES

20. Bhopal gas tragedy struck in the year 1984 due to the leakage of the following gas
    (a) Nitrous oxide
    (b) Methane
    (c) Methyl iso cyanate
    (d) Carbon monoxide

21. SPM stands for
    (a) Standards Particles Material
    (b) Suspended Particulate Matter
    (c) Suspended Particles Material
    (d) None of the above

22. Which sector is the largest emitter of greenhouse gases in India?
    (a) Transport
    (b) Domestic
    (c) Agricultural
    (d) Electric power generation

23. Potential is measured in
    (a) Watt
    (b) Joule
    (c) Joule/Coulomb
    (d) Newton-second

24. An instrument used to measure humidity is
    (a) anemometer   (b) hygrometer
    (c) thermometer   (d) pyrheliometer

25. SONAR is based on the principle of
    (a) echo   (b) resonance
    (c) reverberation   (d) None of these

26. Electron microscope was invented by
(a) Knoll and Ruska
(b) Robert Koch
(c) Leeuwenhock
(d) CPS Wanson

27. Optical fibres are based on the phenomena of
(a) Dispersion
(b) Interference
(c) Total Internal Reflection
(d) Diffraction

28. For measuring very high temperature, we use
(a) mercury thermometer
(b) thermoelectric pyrometer
(c) platinum resistance thermometer
(d) None of the above

29. RAM is .... and ....
(a) nonvolatile, permanent
(b) volatile, temporary
(c) nonvolatile, temporary
(d) volatile, permanent

30. Viruses are made up of
(a) Protein and Lipids
(b) Nucleic acid and Protein
(c) Lipids and Carbohydrate
(d) Carbohydrate and Nucleic acid

31. Bat can fly in dark because they
(a) have strong waves
(b) have sharp eyes
(c) produce ultrasonic waves
(d) are natural

32. The stone formed in human kidney consist mostly of
(a) Calcium oxalate
(b) Sodium Oxalate
(c) Sodium acetate
(d) Calcium

33. Which of the following started the newspaper 'Bande Mataram'?
(a) Barindra Kumar Ghosh
(b) Bipin Chandra Pal
(c) Devendra Nath Tagore
(d) Surendra Nath Bannerjee

34. Who is the author of the book 'Glimpses of World History'?
(a) Abul Kalam Azad
(b) Jawaharlal Nehru
(c) S Gopalan
(d) S Radhakrishnan

35. Which incident led Gandhiji to withdraw Non-Cooperation Movement?
(a) Kakori episode
(b) Chauri-Chaura episode
(c) Jallianwala Bagh episode
(d) Muzaffarpur episode

36. During the Mughal period, which one of the following teaders first come to India?
(a) Portuguese
(b) English
(c) Dutch
(d) Danish

37. 'India Wins Freedom' is the autobiography of
(a) Abul Kalam Azad
(b) Muhammad Ali
(c) Zakir Hussain
(d) Syed Ahmed Khan

38. Depreciation is equal to
(a) Gross National Product—Net National Product
(b) Net National Product—Gross National Product
(c) Gross National Product—Personal Income
(d) Personal Income—Personal Taxes

39. Which one of the following is not a method of measurement of National Income?
(a) Value Added Method
(b) Income Method
(c) Expenditure Method
(d) Investment Method

40. National Income estimates in India are prepared by
(a) Planning Commission
(b) Reserve Bank of India
(c) Central Statistical Organization
(d) Indian Statistical Institute

41. The world's most active volcano
(a) Fujiyama
(b) Cotopaxi
(c) Kilaueu
(d) Vesuvius

42. What is the difference between IST and GMT?
(a) 5 h 10 min
(b) 5 h 20 min
(c) 5 h 30 min
(d) 5 h 40 min

43. Which is the highest peak in Andaman and Nicobar Islands?
(a) Saddle peak
(b) Mount Thuiller
(c) Mount Diavolo
(d) Mount Koyale

44. The river also known as Tsangpo in Tibet is
(a) Ganga
(b) Brahmaputra
(c) Indu
(d) Testa

45. Kaziranga National Park is famous for
(a) Rhinoceros
(b) Tiger
(c) Lion
(d) Crocodile

46. What will be the difference between SI and CI on a sum of ₹ 15000 for two years at the same rate of interest of $12\frac{1}{2}$% per annum?
(a) ₹ 234.375
(b) ₹ 230.550
(c) ₹ 250.129
(d) ₹ 324.357

47. The SP of a TV set is marked at ₹ 17600 including sales tax at the rate of 10%. Find the sales tax
(a) ₹ 1600
(b) ₹ 1250
(c) ₹ 1550
(d) ₹ 1660

48. 8 men can finish a certain amount of work in 40 days. If 2 more men join with them, the days needed to do the same amount of work is
(a) 30
(b) 32
(c) 36
(d) 25

49. If the length of the diagonal of a square is $a + b$, then the area of the square is
(a) $(a + b)^2$
(b) $1/2(a + b)^2$
(c) $a^2 + b^2$
(d) $1/2(a^2 + b^2)$

50. AB and CD are lines, P is point on AB. A line HQ meets CD at R. If angle $BPR = 30$ degrees and angle $CRQ = 150$ degrees, then
(a) AB and CD are perpendicular
(b) AB and CD are parallel
(c) CD and PQ are perpendicular
(d) None of the above

51. How many metres of carpet 63 cm wide will be required to cover the floor of a room 14 m by 9 m?
(a) 200 m
(b) 210 m
(c) 220 m
(d) 185 m

52. The radius of a circular pond is 14 m. A circular stage is made at the centre of the pond whose diameter is 14 m, what is the area where water is present?
(a) 462 sq m
(b) 564 sq m
(c) 454 sq m
(d) 532 sq m

53. A number of two digits is 6 times the sum of its digits. When the sum of its digits is added to the number, the result is 63. What is the number?
(a) 32
(b) 42
(c) 53
(d) 54

54. The result of division $a^3 + b^3$ by $a + b$ is
(a) $a^3 - ab + b^2$
(b) $a^2 + ab + b^3$
(c) $a^2 - ab + b^2$
(d) $a - ab - b^2$

55. A rectangle measures 8 cm on length. Its diagonal measures 10 cm. What is the perimeter of the rectangle?
(a) 36 cm
(b) 38 cm
(c) 28 cm
(d) 18 cm

56. What is the volume in cubic cm of a pyramid whose area of the base is 25 sq cm and height 9 cm?
(a) 105
(b) 90
(c) 60
(d) 75

57. Ram has ₹ 6 more than Mohan and ₹ 9 more than Sohan. All the three have ₹ 33 in all. Ram has a share of
(a) ₹ 10   (b) ₹ 16
(c) ₹ 7   (d) ₹ 13

58. Anil sells two houses at the same prices. On one he makes a profit of 10% and on the other he suffers a loss of 10%. Select the correct statement.
(a) He suffers a loss of 1%
(b) He makes a profit of 10%
(c) He mades a profit of 2%
(d) He makes no profit no loss

59. Ravi invested ₹ 913 partly in 4% stock at ₹ 97 and partly in 5% stock at ₹ 107. If his income from both is equal, amount invested on first stock was
(a) ₹ 750   (b) ₹ 525
(c) ₹ 610   (d) ₹ 485

60. A room is $12\frac{1}{4}$ m long and 7 m wide. The maximum length of a square tile to fill the floor of room with whole number of tiles, should be
(a) 200 cm   (b) 175 cm
(c) 125 cm   (d) 150 cm

61. If $9\sqrt{x} = \sqrt{12} + \sqrt{147}$, then $x = ?$
(a) 2   (b) 3   (c) 4   (d) 5

62. $\sqrt[3]{1 - \frac{127}{343}}$ is equal to
(a) $\frac{5}{9}$ (b) $1 - \frac{1}{7}$ (c) $\frac{4}{7}$ (d) $1 - \frac{2}{7}$

63. $\sqrt{6 + \sqrt{6 + \sqrt{6 + \ldots}}} = ?$
(a) 2.3   (b) 3   (c) 6   (d) 6.3

64. The value of $\dfrac{2\frac{1}{3} - 1\frac{2}{11}}{3 + \cfrac{1}{3 + \cfrac{1}{3 + \cfrac{1}{3}}}}$ is
(a) $\frac{38}{109}$ (b) $\frac{109}{38}$
(c) 1   (d) $\frac{116}{109}$

65. A river 3 m deep and 40 m wide is flowing at the rate of 2 km/h. How much water (in litres) will fall into the sea in a minute?
(a) 400000   (b) 4000000
(c) 40000   (d) 4000

66. In an examination, a student scores 4 marks for every correct answer and loses 1 mark for every wrong answer. If he attempts all 75 questions and secures 125 marks, the number of questions he attempts correctly is
(a) 35   (b) 40
(c) 42   (d) 46

67. The traffic lights at three different road crossings change after 24 s, 36 s and 54 s respectively. If they all change simultaneously at 10 : 15 : 00 am, then at what time will they again change simultaneously?
(a) 10 : 16 : 54 am
(b) 10 : 18 : 36 am
(c) 10 : 17 : 02 am
(d) 10 : 22 : 12 am

68. A copper wire is bent in the shape of a square of area 81 cm². If the same wire is bent in the form of a semicircle, the radius (in cm) of the semicircle is $\left(\text{take } \pi = \frac{22}{7}\right)$
(a) 16   (b) 14
(c) 10   (d) 7

69. A bicycle wheel makes 5000 revolutions in moving 11 km. Then, the radius of the wheel (in cm) is $\left(\text{take } \pi = \frac{22}{7}\right)$
(a) 70   (b) 35   (c) 17.5   (d) 140

70. When the price of sugar decreases by 10%, a man could buy 1 kg more for ₹ 270. Then, the original price of sugar per kg is
(a) ₹ 25   (b) ₹ 30   (c) ₹ 27   (d) ₹ 32

71. A man can row 6 km/h in still water. If the speed of the current is 2 km/h, it takes 3 h more in upstream than in the downstream for the same distance. The distance is
(a) 30 km   (b) 24 km
(c) 20 km   (d) 32 km

72. The simple interest on a sum for 5 yr is one-fourth of the sum. The rate of interest per annum is
(a) 5%   (b) 6%   (c) 4%   (d) 8%

Directions (Q. Nos. 73-75) *The following graph shows the demand and production of cotton by 5 companies A, B, C, D and E. Study the graph and answer the questions given below.*
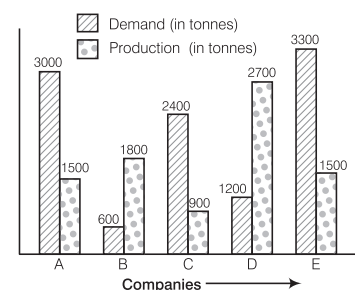
73. The demand for company B is what per cent of the demand for company C?
(a) 1.5   (b) 2.5   (c) 25   (d) 30

74. What is the ratio of companies having more demand than production to those having more production than demand?
(a) 2 : 3   (b) 4 : 1   (c) 3 : 2   (d) 1 : 4

75. What is the difference (in tonnes) between average demand and average production of the five companies taken together?
(a) 320   (b) 420   (c) 2100   (d) 1050

Direcations (Q.Nos. 76-78) *Select the related lettters/ words/ numbers from the given alternatives.*

76. Good conductor : Copper : : Bad conductor : ?
(a) Iron   (b) Aluminium
(c) Wood   (d) Coal

77. DAM : MAD : : WARD : ?
(a) DWAR   (c) DWOR
(c) DRAW   (d) DROW

78. 7 : 32 : : 35 : ?
(a) 144   (b) 156   (c) 160   (d) 172

Directions (Q. Nos. 79-81) *In these questions, select the one which is different from the other three responses.*

79. (a) Game   —   Coach
(b) Drama   —   Director
(c) Counselling   —   Counsellor
(d) Student   —   Teacher

80. (a) ACB   (b) GIH
(c) MON   (d) PQR

81. (a) 515-103   (b) 635-127
(c) 745-149   (d) 856-214

Directions (Q.No. 82) *In this question, which one of the given responses would be a meaningful order of the following.*

82. 1. Lung   2. Nostrils
3. Windpipe   4. Blood
(a) 1, 2, 3, 4   (b) 2, 3, 1, 4
(c) 1, 3, 4, 2   (d) 4, 3, 2, 1

83. Which one set of letters when sequentially placed at the gaps in the given letter series shall complete it?

_OPQ, N_PQ, NO_Q, NOP_
(a) ONQP
(b) NOQP
(c) NOPQ
(d) PQNO

Directions (Q. Nos. 84 and 85) *In these questions, a series is given, with one term missing. Choose the correct alternative from the given ones that will complete the series.*

84. KiD, NkH, QmL, ToP, ?
(a) WqT   (b) UqS
(c) WvS   (d) VrT

85. 24, 6, 18, 9, 36, 9, 24, ?
(a) 24   (b) 12
(c) 8   (d) 6

86. In a row of trees one tree is the 7th from either end of the row. How many trees are there in the row?
(a) 11   (b) 13
(c) 15   (d) 14

87. Introducing a man, a woman said, "His wife is the only daughter of my mother." How is the woman related with the man?
(a) Sister-in-law   (b) Wife
(c) Aunt   (d) Mother-in-law

88. From the given alternative words, select the word which cannot be formed using the letters of the given word
HONESTY
(a) Nest
(b) Honed
(c) Host
(d) Honey

89. If PREMA is coded as 96731, how can RAMA be written in that code?
(a) 6737
(b) 6131
(c) 9631
(d) 6936

90. Which sequence of mathematical symbols can replace in the given equation
8 * 5 * 9 * 31
(a) $- \times =$
(b) $- = \times$
(c) $= \times -$
(d) $\times - =$

91. If T means '$\times$', U means '$-$', V means '$\div$' and W means '$+$', then what will be the value of the following expression
(50 V 2) W (28 T 4)
(a) 142   (b) 158
(c) 137   (d) 163

92. Some equations are solved on the basis of a certain system. On the same basis find out the correct answer from the given alternatives for the unsolved problem.
$4 \times 7 \times 5 \times 3 = 3574$,
$8 \times 6 \times 5 \times 6 = 6568$,
$7 \times 5 \times 8 \times 5 = ?$
(a) 3846   (b) 6567
(c) 5857   (d) 6857

Directions (Q.No. 93) *In these questions, select the missing number from the given responses.*

93.

36	64	100
6	8	10
12	16	?

(a) 10   (b) 20   (c) 22   (d) 110

94. A travelled Westward 8 km, turned left and travelled 3 km, turned right and travelled 9 km. He then travelled North 3 km. How far is he from the starting point?
(a) 15 km   (b) 17 km
(c) 19 km   (d) 11 km

95. Two statements are given followed by two inferences I and II. You have to consider the statements to be true even if they seem to be at variance from commonly known facts. You are to decide which of the given inferences can definitely be drawn from the given statements.

Statements
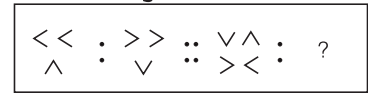All cupboards are watches.
All watches are costly.

Inferences
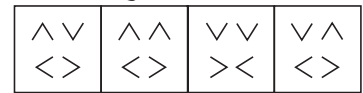I. All cupboards are costly.
II. Some costly things are cupboards.
(a) Only inference I follows
(b) Only inference II follows
(c) Both of them follow
(d) Neither of them follows

Directions (Q.No. 96) *In these question, select the related figure from the given alternatives.*
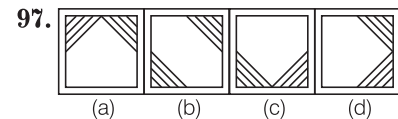
96. **Question Figures**
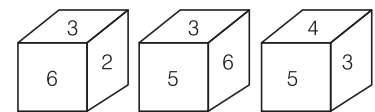

Answer Figures

Directions (Q. No. 97) *Find the odd figure from the given alternatives.*
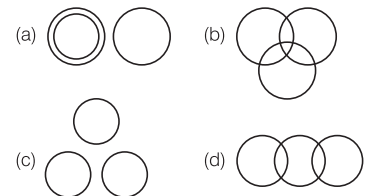
97.

98. Three positions of a dice are given below. Identify the number on the face opposite to 6.
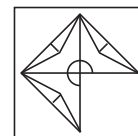

(a) 1   (b) 4   (c) 5   (d) 7

99. Identify the diagram that correctly represents the relationship among illiterates, poor people and unemployed.
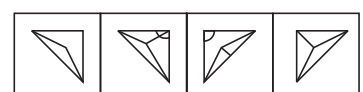

100. Which one of the answer figures will complete the given question figure?

Question Figure

Answer Figures

Answers

1. (c)	**2.** (a)	**3.** (c)	**4.** (c)	**5.** (d)	**6.** (a)	**7.** (b)	**8.** (a)	**9.** (b)	**10.** (a)
11. (a)	**12.** (a)	**13.** (d)	**14.** (d)	**15.** (d)	**16.** (a)	**17.** (d)	**18.** (a)	**19.** (b)	**20.** (c)
21. (b)	**22.** (d)	**23.** (c)	**24.** (b)	**25.** (a)	**26.** (a)	**27.** (c)	**28.** (b)	**29.** (b)	**30.** (b)
31. (c)	**32.** (a)	**33.** (b)	**34.** (b)	**35.** (b)	**36.** (b)	**37.** (a)	**38.** (a)	**39.** (d)	**40.** (c)
41. (b)	**42.** (c)	**43.** (a)	**44.** (b)	**45.** (a)	**46.** (a)	**47.** (a)	**48.** (b)	**49.** (b)	**50.** (b)
51. (a)	**52.** (a)	**53.** (d)	**54.** (c)	**55.** (c)	**56.** (d)	**57.** (b)	**58.** (a)	**59.** (d)	**60.** (b)
61. (b)	**62.** (b)	**63.** (b)	**64.** (a)	**65.** (b)	**66.** (b)	**67.** (b)	**68.** (d)	**69.** (b)	**70.** (b)
71. (b)	**72.** (a)	**73.** (c)	**74.** (c)	**75.** (b)	**76.** (c)	**77.** (c)	**78.** (c)	**79.** (d)	**80.** (d)
81. (d)	**82.** (b)	**83.** (c)	**84.** (a)	**85.** (b)	**86.** (b)	**87.** (b)	**88.** (b)	**89.** (b)	**90.** (d)
91. (c)	**92.** (c)	**93.** (b)	**94.** (b)	**95.** (c)	**96.** (a)	**97.** (b)	**98.** (b)	**99.** (b)	**100.** (c)

Hints *and* Solutions

46. $\therefore$ Required difference

$$= 15000 \left(\frac{25}{2 \times 100} \right)^2 = \frac{15000}{64}$$

$$= ₹\, 234.375$$

47. Price of TV set $= ₹\, x$, then

Given, $\dfrac{x \times 110}{100} = 17600$

$\therefore \quad x = \dfrac{17600 \times 100}{110} = ₹\, 16000$

$\therefore$ Required sales tax

$$= 17600 - 16000 = ₹\, 1600$$

48. Given, $8 \times 40 = 10 \times ?$

or $\quad ? = \dfrac{8 \times 40}{10} = 32$

$\therefore \quad$ Required days $= 32$ days

49. Diagonal of square $=$ side of square $\times \sqrt{2}$
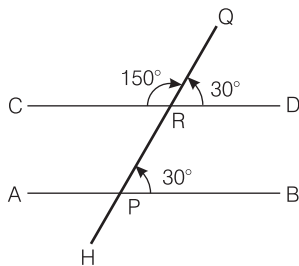
$\therefore$ Side of square

$$= \frac{\text{Diagonal of square}}{\sqrt{2}} = \frac{a+b}{\sqrt{2}}$$

$\therefore$ Area of square

$$= \frac{a+b}{\sqrt{2}} \times \frac{a+b}{\sqrt{2}} = \frac{1}{2}(a+b)^2$$

50.

$BPR = DRQ = 30°$

$CRQ = APR = 150°$

$\angle CRD = \angle APB = 180°$ (line)
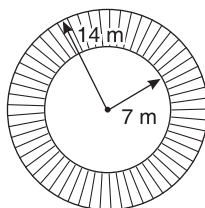
Hence, AB and CD are parallel.

51. Required carpet to cover the floor

$$= \frac{14 \times 9 \times 100 \times 100}{63} \text{ cm}$$

$$= 20000 \text{ cm}$$

$$= 200 \text{ m}$$

52.

$\therefore$ Required area $= \pi (14)^2 - \pi (7)^2$

$$= \frac{22}{7} [(14)^2 - (7)^2]$$

$$= \frac{22}{7} \times 147 = 462 \text{ sq m}$$

53. Two digits number $= 10x + y$

Given, $\quad 10x + y = 6(x+y)$ …(i)

and $\quad (10x+y) + (x+y) = 63$ …(ii)

After solving Eqs. (i) and (ii),

$$x = 5 \quad \text{and} \quad y = 4$$

$\therefore$ Required number

$$= 10 \times 5 + 4 = 54$$

54. $\dfrac{a^3 + b^3}{a+b} = \dfrac{(a+b)(a^2 - ab + b^2)}{(a+b)}$

$$= a^2 - ab + b^2$$

55. Width of rectangle

$$= \sqrt{(10)^2 - (8)^2}$$

$$= \sqrt{36} = 6 \text{ cm}$$

$\therefore$ Required perimeter of rectangle

$$= 2(8+6) \text{ cm}$$

$$= 28 \text{ cm}$$

56. Required volume of pyramid

$$= \frac{1}{3} \times 25 \times 9 = 75 \text{ cm}^3$$

57. Ram have $₹\, x$, then

$$x + x - 6 + x - 9 = 33$$

or $\quad 3x = 33 + 15 = 48$

$\therefore \qquad x = \dfrac{48}{3} = 16$

58. In this type of transaction there is always a loss

$\therefore$ Loss percent $= \dfrac{x^2}{100} = \dfrac{10 \times 10}{100}$

$$= 1\%$$

59. In Ist stock, invested amount for the income of $₹\, 1 = ₹\, \dfrac{97}{4}$

In IInd stock, invested amount for the income of $₹\, 1 = ₹\, \dfrac{107}{5}$

$\therefore$ Ratio $= \dfrac{97}{4} : \dfrac{107}{5}$

$$= 485 : 428$$

60. Length of room $= \dfrac{49}{4}$ m

$$= \frac{49 \times 100}{4} \text{ cm}$$

$$= 1225 \text{ cm}$$

Breadth of room $= 7$ m $= 700$ cm

Maximum length of a square tile

$$= \text{HCF of 1225 and 700}$$

$$= 175$$

$\therefore$ Required length $= 175$ cm

61. $9\sqrt{x} = \sqrt{12} + \sqrt{147}$

$\Rightarrow \qquad 9\sqrt{x} = \sqrt{4 \times 3} + \sqrt{49 \times 3}$

$\Rightarrow \qquad 9\sqrt{x} = 2\sqrt{3} + 7\sqrt{3}$

$\Rightarrow \qquad 9\sqrt{x} = 9\sqrt{3}$

$\Rightarrow \qquad \sqrt{x} = \sqrt{3}$

[Squaring both sides]

$\Rightarrow \qquad x = 3$

62. $\sqrt[3]{1 - \dfrac{127}{343}} = \sqrt[3]{\dfrac{343 - 127}{343}}$

$= \sqrt[3]{\dfrac{216}{343}} = \dfrac{6}{7} = 1 - \dfrac{1}{7}$

63. Let $x = \sqrt{6 + \sqrt{6 + \sqrt{6 + \ldots}}}$

$\Rightarrow$ $x = \sqrt{6 + x}$

$\Rightarrow$ $x^2 = 6 + x$

$\Rightarrow$ $x^2 - x - 6 = 0$

$\Rightarrow$ $x^2 - 3x + 2x - 6 = 0$

$\Rightarrow$ $x(x - 3) + 2(x - 3) = 0$

$\Rightarrow$ $(x + 2) = 0$

$\Rightarrow$ $x = -2$ (does not exist)

and $(x - 3) = 0 \Rightarrow x = 3$

Hence, $? = 3$

64. $\dfrac{2\frac{1}{3} - 1\frac{2}{11}}{3 + \dfrac{1}{3 + \dfrac{1}{3 + \frac{1}{3}}}} = \dfrac{\frac{7}{3} - \frac{13}{11}}{3 + \dfrac{1}{3 + \dfrac{1}{10/3}}}$

$= \dfrac{\dfrac{77 - 39}{33}}{3 + \dfrac{1}{3 + \frac{3}{10}}} = \dfrac{38/33}{3 + \dfrac{1}{33/10}}$

$= \dfrac{38/33}{3 + \frac{10}{33}} = \dfrac{38/33}{109/33} = \dfrac{38}{109}$

65. In 60 min, volume of water fall into the sea

$= 3 \times 40 \times 2 \times 1000 \text{ m}^3$

In 1 min, volume of water fall into the sea

$= \dfrac{3 \times 40 \times 2 \times 1000}{60} \text{ m}^3$

$= \dfrac{3 \times 40 \times 2 \times 1000}{60} \times 1000 \text{ L}$

$= 4000000 \text{ L}$

66. Let the number of correct answer be x. Then, the number of wrong answer be $75 - x$.

According to the given condition,

$x \times 4 - (75 - x) \times 1 = 125$

$\Rightarrow$ $4x - 75 + x = 125$

$\Rightarrow$ $5x = 200$

$\Rightarrow$ $x = 40$

67. Again, change the colour = LCM of 24, 36 and 54 s

$= 216 \text{ s} = 3 \text{ min } 36 \text{ s}$

∴ They all change the colour together

$= 10 : 15 : 00 + 0 : 3 : 36$

$= 10 : 18 : 36$

68. Let side of a square $= x$ cm

∴ $a^2 = 81 \text{ cm}^2$

$\Rightarrow$ $a = \sqrt{81} = 9 \text{ cm}$

∴ Perimeter of square $= 9 \times 4$

$= 36 \text{ cm}$

Again, perimeter of semicircle = Perimeter of square

∴ $\pi r + 2r = 36$

$\Rightarrow$ $r\left(\dfrac{22}{7} + 2\right) = 36$

$\Rightarrow$ $r \times \dfrac{36}{7} = 36$

$\Rightarrow$ $r = 7 \text{ cm}$

69. Let radius of wheel $= r$ cm

According to the given condition,

$2\pi rh = 11 \text{ km}$

$\Rightarrow$ $2 \times \dfrac{22}{7} \times r \times 5000$

$= 11 \times 1000 \times 100$

$\Rightarrow$ $r = \dfrac{7 \times 11 \times 1000 \times 100}{2 \times 22 \times 5000}$

$= 35 \text{ cm}$

70. Let original CP of sugar $= ₹ x$ per kg

New CP of sugar $= x \times \dfrac{90}{100}$

$= ₹ \dfrac{9x}{10}$

According to the given condition,

$\dfrac{270}{9x/10} - \dfrac{270}{x} = 1$

$\Rightarrow$ $\dfrac{2700 - 2430}{9x} = 1$

$\Rightarrow$ $\dfrac{270}{9x} = 1$

$\Rightarrow$ $x = \dfrac{270}{9}$

$= ₹ 30 \text{ per kg}$

71. A man speed in downstream

$= (6 + 2) \text{ km/h} = 8 \text{ km/h}$

A man speed in upstream

$= (6 - 2) \text{ km/h} = 4 \text{ km/h}$

Let required distance $= x$ km

According to the given condition,

$\dfrac{x}{4} - \dfrac{x}{8} = 3$

$\Rightarrow$ $\dfrac{6x - 3x}{24} = 3$

$\Rightarrow$ $\dfrac{3x}{24} = 3$

$\Rightarrow$ $x = 24 \text{ km}$

72. Simple interest

$= \dfrac{\text{Principal} \times \text{Rate} \times \text{Time}}{100}$

∴ $\dfrac{x}{4} = \dfrac{x \times r \times 5}{100}$

$\Rightarrow$ $r = \dfrac{100}{4 \times 5}$

$\Rightarrow$ $r = 5\%$

73. The demand of Company

B $= 600$ tonnes

The demand of Company

C $= 2400$ tonnes

∴ Required per cent

$= \dfrac{600}{2400} \times 100 = 25\%$

74. Having more demand companies

$=$ A, C, F

Having more production = B, D

∴ Required per cent $= 3 : 2$

75. Average demand of five companies

$= \dfrac{3000 + 600 + 2400}{5}$

$\qquad\qquad + 1200 + 3300$

$= \dfrac{10500}{5}$

$= 2100$ tonnes

Average production of five companies $= \dfrac{1500 + 1800 + 900}{5}$

$\qquad\qquad + 2700 + 1500$

$= \dfrac{8400}{5} = 1680$ tonnes

∴ Required difference

$= 2100 - 1680 = 420$ tonnes

76. As, copper is a good conductor of heat, similarly wood is a bad conductor of heat.

77. As,

Similarly,
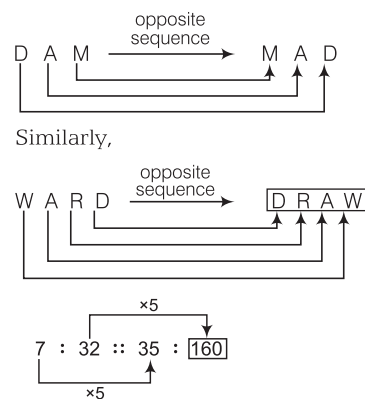
78.

79. First is directed by the second.

80. A C B G I HM O N P Q R

$$+2 \quad -1 \quad +2 \quad -1 \quad +2 \quad -1 \quad +1 \quad +1$$

Hence, PQR is different from other three.

81. Except 856-214, all others' have first number is five times3 the second number.

82. The meaningful order is

Nostrils → Windpipe → Lung → Blood
 (2)   (3)   (1)   (4)
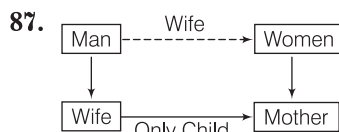
83. N̲ O P Q, N O̲ P Q, N O P̲ Q, N O P Q̲
⇒ NOPQ

84. The pattern of the series is

$$K \xrightarrow{+3} N \xrightarrow{+3} Q \xrightarrow{+3} T \xrightarrow{+3} \boxed{W}$$
$$i \xrightarrow{+2} k \xrightarrow{+2} m \xrightarrow{+2} o \xrightarrow{+2} \boxed{q}$$
$$D \xrightarrow{+4} H \xrightarrow{+4} L \xrightarrow{+4} P \xrightarrow{+4} \boxed{T}$$

85. The pattern of the series is

24   6 18   9 36   9 24 $\boxed{12}$

$$\times 4 \quad \times 2 \quad \times 4 \quad \times 2$$

86. Number of trees $= 7 + 7 - 1 = 13$

87.

Man - - - -Wife- - - -→ Women

Wife   Mother
      Only Child

From the above diagram, it is clear that woman is the wife of that man.

88. 'Honed' word cannot be formed by 'HONESTY' because 'D' letter is not present in the 'HONESTY'.

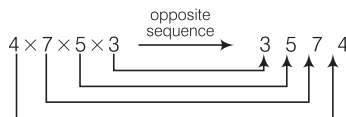**89.** From PREMA, R = 6, A = 1, M = 3, Hence, RAMA = $\boxed{6131}$

90. Given equation $= 8 * 5 * 9 * 31$

From option (d), $8 \times 5 - 9 = 31$
$$\Rightarrow \qquad\qquad 40 - 9 = 31$$
$$\Rightarrow \qquad\qquad\qquad 31 = 31$$

91. Given expression $= (50 \text{ V } 2) \text{ W } (28 \text{ T } 4)$

After interchanging the letters in symbols, $(50 \div 2) + (28 \times 4)$
$$= 25 + 112$$
$$= 137$$

92. As

$$4 \times 7 \times 5 \times 3 \xrightarrow{\text{opposite sequence}} 3 \ 5 \ 7 \ 4$$

and

$$8 \times 6 \times 5 \times 6 \xrightarrow{\text{opposite sequence}} 6 \ 5 \ 6 \ 8$$

Similarly,

$$7 \times 5 \times 8 \times 5 \xrightarrow{\text{opposite sequence}} \boxed{5 \ 8 \ 5 \ 7}$$
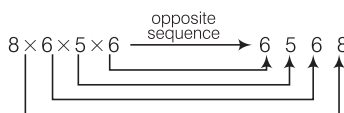
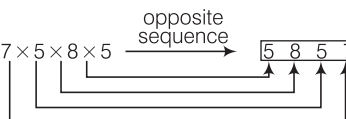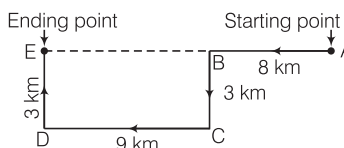**93.** As, $\dfrac{36}{6} \times 2 = 12$ (first column)

and $\dfrac{64}{8} \times 2 = 16$ (second column)

Similarly,

$\dfrac{100}{10} \times 2 = 20$ (third column)
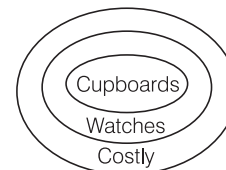
94. A's walking directions are as follows

Ending point   Starting point
E • - - - - - - - - - - • A
          B   8 km
3 km   3 km
D   9 km   C

$$AB = 8 \text{ km},$$
$$BC = ED = 3 \text{ km},$$
$$CD = BE = 9 \text{ km}$$
Hence, required distance
$$(AE) = AB + BE$$
$$= 8 + 9$$
$$= 17 \text{ km}$$

95. According to the statements, Venn-diagram is

Cupboards
Watches
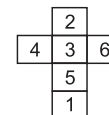Costly

 I. ✔   II. ✔

96. From question figure (a) to (b), all designs are reversed. Similar rule follows from question figure (c) to answer figure (a).

97. Except figure (b), all other figures two inner shaded designs adjacent to each other.

98. From dice II and III, 3 and 5 are two common numbers. Hence, 6 and 4 are opposite to each other.
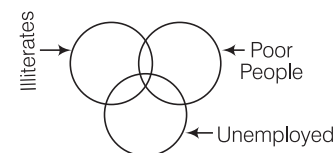From second method (Dice I and II),
 (∵ 3 is common)

```
      2
  4   3   6
      5
      1
```

1 is opposite to 3
2 is opposite to 5
4 is opposite to 6

99. Some poor people can be unemployed, some unemployed people can be illiterates and some illiterates people can be poor people. Hence, the correct diagram will be (c)

Illiterates   ← Poor People
              ← Unemployed

100. Answer figure (c) will complete the quesion figure