



Class – VII

ENTRANCE TEST CUM SCHOLARSHIP (SAMPLE PAPER-1)

[Time: 3 Hours]

[Max Marks: 450]

A. General:

1. *This booklet is a Question Paper containing 150 questions.*
2. *Blank Papers, Clipboards, Log Tables, slide rules, calculators, cellular phones and electronic gadgets in any form are not allowed to be carried inside the examination hall.*
3. *The answer sheet, a machine-readable optical mark recognition sheet (OMR Sheet), is provided separately.*
4. *DO NOT TAMPER WITH THE OMR OR THE BOOKLET.*
5. *Please fill your roll number correctly in the OMR sheet (answer sheet).*
6. *Both Question Paper and OMR Answer Sheet will be submitted after completion of this examination.*

B. Question Paper Format and marking scheme:

1. *The Question Paper consists of five parts (Part I: MAT, Part II: Physics, Part III: Chemistry, Part IV: Biology, Part V: Mathematics).*
2. *Each Question carries +3 marks for correct answer and -1 mark for incorrect answer.*

MAT

Directions : (Questions 1 to 5). In each of the questions below, out of the given four alternatives, one is different from the rest. Find out that different one?

1. (a) Barometer (b) Thermometer (c) Diameter (d) Lactometer
2. (a) Humble (b) Civil (c) Rude (d) Polite
3. (a) Gallon (b) Ton (c) Quintal (d) Kilogram
4. (a) Resume (b) Admit (c) Confess (d) Depend
5. (a) Miniature (b) Despair (c) Touched (d) Disgusted

Directions : (Questions 6 to 7). In each of the questions given below, find the next term to fill the blank space.

6. 3, 5, 10, 12, 24, 26, ____
(a) 52 (b) 30 (c) 28 (d) 48
7. 3, 6, 5, 20, 7, 42, 9, ____
(a) 60 (b) 54 (c) 72 (d) 66

Directions : (Questions 8 to 10). In each of the questions, there are two words to the left of the sign (::) which are connected in some way. The same relationship exists between the third word and one of the four alternatives under it. Find the correct alternative in each case.

8. When : Where :: Time : ?
(a) Reason (b) Process (c) Place (d) Length
9. Play : Director :: Newspaper : ?
(a) Owner (b) Editor (c) Manager (d) Columnist
10. Medicine : Sickness :: Book : ?
(a) Ignorance (b) Knowledge (c) Author (d) Teacher
11. Lalit walks 8 km east, turns south-west and walks another 8 km. He again takes a turn towards north-west and walks another 8 km. In which direction from his starting point is he standing now?
(a) North-East (b) South-East (c) West (d) East
12. Visiting the historical monuments, a tourist asked, "How old is this monument?" The guide replied, "The monument is over fifty-years old. Its exact age was a square number two years ago and will be a cube number two year hence." What is the age of the monument?
(a) 343 (b) 216 (c) 64 (d) 123
13. A three centimeter cube has been painted blue on all its sides. It is cut into one centimeter cubes. How many cubes will be there with two sides painted blue?
(a) 8 (b) 4 (c) 6 (d) 12
14. If 7 carpenters can make 7 chairs in 8 hours, how many hours 70 carpenters will take to make 70 chairs?
(a) 8 hours (b) 560 hours (c) 56 hours (d) 70 hours

15. Which of the following number does not fit in the sequence?
3, 7, 9, 11, 13, 17, 19
(a) 3 (b) 7 (c) 17 (d) 9
16. Arrange the following in the meaningful order
(1) Cut (2) Put on (3) Mark (4) Measure (5) Tailor
(a) 4, 3, 1, 5, 2 (b) 3, 1, 5, 4, 2 (c) 2, 4, 3, 1, 5 (d) 1, 3, 2, 4, 5
17. If x stands for +, y stands for -, z stands for ÷, p stands for ×, then what is the value of $10 p 2 \times 5 y 5 ?$
(a) 10 (b) 15 (c) 20 (d) 25
18. Number of letters skipped between adjacent letters in the series is in the order of 2, 5, 7, 10. Which of the following series observes the rule given above?
(a) SYBE (b) FNKO (c) C EGL (d) QTZHS

Directions : (Questions 19 to 24). In the following questions, find the missing term of the alphabet series.

19. FED, BAZ, PON, ____
(a) SRQ (b) NOP (c) QRS (d) JIN
20. ACE, BDF, CEG, ____
(a) DFH (b) ABG (c) EFK (d) HJL
21. ACG, ZXU, _____, YWT
(a) CBE (b) BDG (c) BEH (d) CAR
22. _____, ZXV, FDB, LJH, RPN
(a) YWV (b) TRP (c) LXU (d) WXU
23. DOQ, GQS, JSU, _____
(a) NUV (b) MSW (c) MUW (d) KUW
24. ACE, GIK, MOQ, _____
(a) ZST (b) SUW (c) PRX (d) AXV
25. A man travels 12 km west, then 3 km towards south and then 8 km towards east. How far he is from the starting point?
(a) 23 km (b) 20 km (c) 15 km (d) 5 km
26. Which runs faster? A train running at 60 km per hour

OR

A car speeding at 100 meters per 6 seconds?

- (a) Train (b) Car
(c) Both will progress at the same speed (d) It is not possible to say
27. Man is related to shout in the same way crow is related to :
(a) Caw (b) Chrip (c) Mutter (d) Mob

Directions : (Questions 28 to 29). Two pairs of related words in each of the following questions are given. Find out from among the four alternative words, the one which will have the same relationship with the given word.

28. Ship-anchor ; Car-Brake ; Light _____?
(a) Plug (b) Switch (c) Bulb (d) Fuse
29. Yellow-White ; Violet-Green ; Indigo _____?
(a) Black (b) Blue (c) Orange (d) Pink

Directions : (Questions 30 to 33). In each question, four numbers/number-pairs are given, select the one which is different from the other three.

30. (a) 1234 (b) 2345 (c) 4567 (d) 7896
31. (a) 3245 (b) 7698 (c) 2431 (d) 8356
32. (a) 2648 (b) 6482 (c) 4826 (d) 2468
33. (a) 46, 32 (b) 62, 23 (c) 84, 24 (d) 24, 21

Directions : (Questions 34 to 36). In the following questions, the first word is changed to the second which is a group of letters applying some rule. To the right of :: is given another word. Find the group of letters from the four alternatives which is obtained by applying the same rule to this given word.

34. Film : ADGH :: Milk : ?
(a) ADGF (b) HDGE (c) HDGF (d) HEGF
35. CAT : DDY :: BIG : ?
(a) CEP (b) CLL (c) CLM (d) CML
36. LAKE : PEOI :: MEAT : ?
(a) PILO (b) REXO (c) QIEX (d) QEIX

Directions : (Questions 37 to 40). Select the correct alternative in each question.

37. If "GANESAN" can be written as "NASENAG", how, "RAJESH" can be written in the code?
(a) SARHJE (b) JESHRA (c) SEHAJR (d) HSEJAR
38. If "BOMBAY" is coded as "ANLAZX", how, "MADRAS" can be coded?
(a) LZCQZR (b) NBESBT (c) RLZCQZ (d) DRASMA
39. If "SACK" is coded as "CKAU", how would you code "COME"?
(a) OCEM (b) MEOC (c) MEOE (d) EMOC
40. If "CENTRE" is written as CNRCNR, how "HAPPY" can be written in that code?
(a) HPYHP (b) YHPYA (c) AHPYA (d) HPYAP

Directions : (Questions 41 to 44). Find missing term in each of the following one.

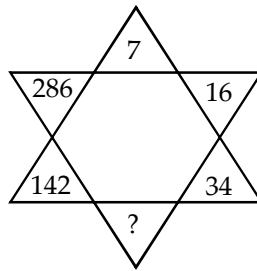
41. 2, 5, 9, _____, 20, 27
(a) 14 (b) 16 (c) 18 (d) 24
42. 18, 10, 6, 4, 3, _____
(a) 8 (b) 4 (c) 3.5 (d) 2.5
43. 3, 8, 22, 63, 185, _____
(a) 285 (b) 295 (c) 310 (d) 550
44. 12, 32, 72, 152, _____, 632
(a) 515 (b) 613 (c) 815 (d) 312

45. Starting from a point, Raju walked 12 metres towards North, he turned right and walked 10 metres, he again turned right and walked 12 metres, then he turned left and walked 5 metres. How far is he now and in which direction from the starting point?
- (a) 27 metres towards East (b) 5 metres towards East
(c) 10 metres towards West (d) 15 metres towards East
46. Which would be the proper order of the following (in the ascending order)?
- (I) TRILLION (II) THOUSAND
(III) BILLION (IV) HUNDRED
(V) MILLION
- (a) (IV), (II), (V), (III), (I) (b) (I), (V), (III), (II), (IV)
(c) (IV), (II), (III), (V), (I) (d) (I), (II), (III), (IV), (V)
47. Which would be the proper order of the following ?
- (I) Rainbow (II) Rain (III) Sun (IV) Happy
(V) Child
- (a) (IV), (II), (III), (V), (I) (b) (IV), (V), (I), (II), (III)
(c) (II), (I), (IV), (III), (V) (d) (II), (III), (I), (V), (IV)
48. Which would be the proper order of the following?
- (I) INCOME (II) STATUS (III) EDUCATION (IV) WELLBEING
(V) JOB
- (a) (III), (I), (V), (II), (IV) (b) (I), (III), (II), (V), (IV)
(c) (III), (V), (I), (II), (IV) (d) (I), (II), (V), (III), (IV)
49. Which one word cannot be made from the letters of the following word?
- OBSTETRICIAN**
- (a) SIREN (b) RETAIN (c) TERMITE (d) SOBER
50. Which one word cannot be made from the letters of the following word?
- MIRACULOUS**
- (a) LOCUS (b) SCAR (c) SOLACE (d) MOLAR
51. Which of the following groups of letters when placed at the blank spaces in each row respectively, will complete the letter matrix?

Z	-	S
R	O	-
-	G	C

- (a) KWT (b) WKJ (c) JKW (d) WJK

52. Which one number can be placed at sign of interrogation?



- (a) 66 (b) 68 (c) 70 (d) 72
53. Which one is different from the rest three?
(a) ZWYV (b) TQSP (c) PMOL (d) MLKJ
54. Which pair of letters when placed at the sign of interrogation shall complete the letter series?
AZ, GT, MN, ?, YB
(a) KF (b) TS (c) RX (d) SH
55. If EXAMINATION would be given the code number 125, what code number can be given to HARDWORK?
(a) 521 (b) 250 (c) 68 (d) 98
56. Some boys are sitting in a row, P is sitting fourteenth from the left and Q is seventeenth from the right. If there are four boys between P and Q, how many boys are there in a row?
(a) 29 (b) 31 (c) 35 (d) 33
57. Supply the missing number
13 (120) 17
18 (____) 12
(a) 90 (b) 100 (c) 180 (d) 110
58. Find the missing number
6 11 25
8 6 16
12 5 ?
(a) 12 (b) 16 (c) 18 (d) 22
59. The Independence Day in 1988 was celebrated on Wednesday. On what day was it celebrated in the year 1989?
(a) Monday (b) Tuesday (c) Friday (d) Thursday
60. The age of the father today is thrice as that of his son. After twelve years, the age of the father will be twice of his son. The age of the son today is
(a) 18 years (b) 16 years (c) 14 years (d) 12 years

PHYSICS

61. S.I unit of temperature is :
(a) Kelvin (b) Celsius (c) Fahrenheit (d) Reaumur

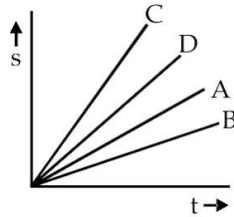
62. An iron ball at 37°C is dropped in a mug containing water at 40°C . The heat will
 (a) Flow from water to iron ball (b) Flow from iron ball to water
 (c) Increases the temperature of both (d) Doesn't flow
63. Temperature is a _____ quantity.
 (a) Vector (b) Scalar (c) Both (a) and (b) (d) Neither of (a) and (b)
64. Slope of a distance–time graph represents which physical quantity?
 (a) speed (b) acceleration (c) distance (d) velocity
65. Circular motion with a constant speed is an example of-
 (a) uniformly accelerated motion (b) uniform motion
 (c) elliptical motion (d) None of the above
66. The rear view mirrors used in vehicles are _____ .
 (a) plane (b) concave (c) convex (d) None of the above
67. A horse runs a distance of 1200 m in 3 min and 20 s. The speed of the horse is _____.
 (a) 60 ms^{-1} (b) 65 ms^{-1} (c) 40 ms^{-1} (d) 6 ms^{-1}
68. Velocity of light in medium 1 is $2.4 \times 10^7\text{ ms}^{-1}$ and velocity of light in medium 2 is $1.8 \times 10^7\text{ ms}^{-1}$, then the refractive index of medium 2 with respect to medium 1 is
 (a) $\frac{3}{4}$ (b) $\frac{4}{3}$ (c) $\frac{1}{3}$ (d) $\frac{1}{4}$
69. An image that cannot be obtained on a screen is:
 (a) Real image (b) Bright image (c) Faint image (d) Virtual image
70. Unit of speed is _____.
 (a) m min^{-1} (b) km h^{-1} (c) km s^{-1} (d) All the above
71. A particle starts from rest and moves with uniform acceleration. Then the ratio of distance covered in n^{th} second to that in n second is
 (a) $\frac{n^2}{2n+1}$ (b) $\frac{2n-1}{n^2}$ (c) $\frac{n^2}{2n-1}$ (d) $\frac{2n+1}{n^2}$
72. A person travelling on a straight line moves with a uniform velocity v_1 from A to B and with uniform velocity v_2 from B to A. The average speed v is given by
 (a) $v = \frac{v_1 + v_2}{2}$ (b) $\sqrt{v_1 v_2}$ (c) $\frac{2}{v} = \frac{1}{v_1} + \frac{1}{v_2}$ (d) $\frac{1}{v} = \frac{1}{v_1} + \frac{1}{v_2}$
73. An insect moves along the sides of a wall of dimensions $12\text{ m} \times 5\text{ m}$ starting from one corner and reaches the diagonally opposite corner. If the insect takes 2 s for its motion then find the ratio of average speed to average velocity of insect.
 (a) 15 : 4 (b) 1 : 1 (c) 12 : 7 (d) 17 : 13
74. If the displacement of an object is proportional to square of time, then the object moves with
 (a) uniform velocity (b) uniform acceleration

- (c) increasing acceleration (d) decreasing acceleration

75. A body covers 200 cm in the first 2 sec and 220 cm in next 4 sec. What is the velocity of the body at the end of 7th second?

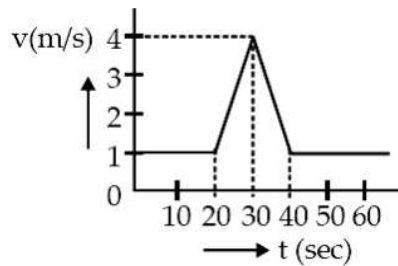
- (a) 40 cm/sec (b) 20 cm/sec (c) 10 cm/sec (d) 5 cm/sec

76. Four cars A, B, C and D are moving on a levelled road. Their distance versus time graphs are shown in figure. Choose the correct statement



- (a) Car A is faster than car D (b) Car B is the slowest
(c) Car D is faster than car C (d) Car C is the slowest

77. Velocity time ($v - t$) graph for a moving object is shown in the figure. Total displacement of the object during the time interval when there is non-zero acceleration and retardation is



- (a) 60 m (b) 50 m (c) 30 m (d) 40 m

78. A convex mirror of focal length f (in air) is immersed in a liquid $\left(\mu = \frac{4}{3}\right)$. The focal length of the mirror in liquid will be :

- (a) $\left(\frac{3}{4}\right)f$ (b) $\left(\frac{4}{3}\right)f$ (c) f (d) $\left(\frac{7}{3}\right)f$

79. Area under curve of a velocity–time graph represents which physical quantity?

- (a) speed (b) displacement (c) acceleration (d) velocity

80. The refractive index of air relative to glass is $\frac{2}{3}$ and that of diamond relative to air is $\frac{12}{5}$. The refractive index of glass relative to diamond is :

- (a) $\frac{5}{18}$ (b) $\frac{8}{9}$ (c) $\frac{5}{8}$ (d) $\frac{18}{5}$

CHEMISTRY

81. Animal fibres are made up of :
 (a) cellulose (b) protein (c) nylon (d) rayon
82. The strong mineral acid among the following is _____.
 (a) Palmitic acid (b) Acetic acid (c) Carbonic acid (d) Hydrochloric acid
83. For the formation of normal salt from one molecule of H_2SO_4 , how many molecules of NaOH are required?
 (a) One (b) Two (c) Four (d) Three
84. The process of seeping of water into the ground is called _____.
 (a) Evaporation (b) Infiltration (c) Transpiration (d) None of these
85. Choose the correct option by matching the entries given in column A with the appropriate ones in column B.

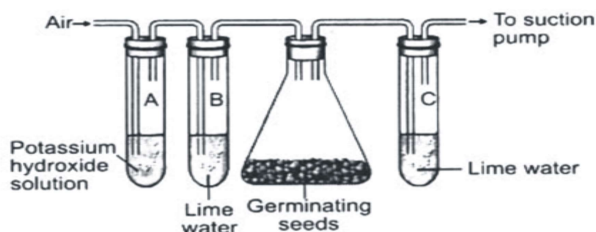
Column A

- (p) Nitric acid
 (q) Phosphoric acid
 (r) Calcium hydroxide
 (s) Carbonic acid
 (a) p-ii, q-i, r-iv, s-iii,i
 (c) p-ii, q-iv, r-i, s-ii,iii

Column B

- (i) Weak acid
 (ii) Strong acid
 (iii) Acid rain
 (iv) Bleaching powder
 (b) p-ii, q-i, r-iv, s-i,iii
 (d) p-ii, q-iv, r-i, s-i,iii

86. Study the given set up of an experiment. You will observe that :



- (a) Lime water in test tube B turns milky.
 (b) Lime water in test tube C turns milky.
 (c) Potassium hydroxide solution in test tube A turns red.
 (d) Temperature in the flask will go down.
87. Odd one among the following with respect to the strength of acids is :
 (a) phosphoric acid (b) carbonic acid (c) sulphuric acid (d) acetic acid
88. Calamine solution contains:
 (a) Zinc chloride (b) Zinc hydroxide (c) Zinc carbonate (d) All of these
89. Three elements form their respective oxides A, B and C. A and C are gases and 'B' is a solid which on dissolution in water turns red litmus to blue. In presence of moisture, 'A' turns blue litmus red and 'C' is neutral to litmus. Then, A, B and C respectively are:
 (a) SO_3 , MgO, NO (b) SO_2 , CaO, CO_2
 (c) CO, Na_2O , SO_3 (d) SO_2 , $Ca(OH)_2$, NO_2

90. Non-metals can react with:
 (a) conc. HNO_3 acid (b) dil. H_2SO_4 acid
 (c) dil. HCl acid (d) All of these
91. Vitamin C is also known as :
 (a) oxalic acid (b) ascorbic acid (c) tartaric acid (d) lactic acid
92. Which of the following sources of water is not used for drinking purpose due to dissolved salts present in them?
 (a) Rain water (b) Sea water (c) Spring water (d) River water
93. The density of water is _____ than oil.
 (a) less (b) more (c) equal (d) None of these
94. What is the latent heat of fusion of 1g of ice?
 (a) 80 cal (b) 540 cal (c) 100 cal (d) 400 cal
95. Ice floats on water because:
 (a) ice is solid (b) ice has cage like structure
 (c) ice is denser than water (d) None of these
96. Chemical treatment of surface water can be carried out by the addition of _____.
 (a) bleaching powder (b) alum
 (c) oxygen (d) Carbon dioxide
97. Match the following :
- | Column A | Column B |
|-------------------------------------|---------------------------------------|
| A. Distilled water | (a) Drinking purpose |
| B. Potable water | (b) Laboratory work |
| C. Spring water | (c) Dissolved salts and rare minerals |
| D. Acidulated water | (d) Medicinal purposes |
| | (e) Electrolysis |
| (a) A → b ; B → a ; C → d, c; D → e | (b) A → c ; B → b ; C → c, e; D → d |
| (c) A → b ; B → c ; C → d ; D → e | (d) A → a ; B → c ; C → d, e; D → b |
98. The amount of heat energy required to increase the temperature of X g of water by 10°C is found to be 15 cal. Calculate X.
 (a) 0.5 g (b) 15 g (c) 1.5 g (d) 7.5 g
99. Wool : Fleece of sheep, Silk : _____.
 (a) Silkworms (b) Silk flies (c) Cocoon (d) None of these
100. Which of the following materials is/are used for clothing in ancient times ?
 (a) Animal skins (b) Leaves (c) Vines (d) All of these

BIOLOGY

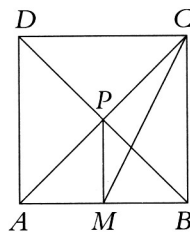
101. Which of the following statements is true about *Croton* plants?
 (a) *Croton* plants do not contain chlorophyll.
 (b) *Croton* plants are dark red in colour. Hence they depend on other plants for food.

- (c) *Croton* plants have chlorophyll but it is hidden by dark red coloured pigments.
 (d) *Croton* plants are parasitic in nature.
102. During exhalation:
 (a) diaphragm contracts (b) diaphragm relaxes
 (c) rib cage moves upward and outward (d) None of these
103. During photosynthesis, photolysis of water occurs:
 (a) in presence of light
 (b) in absence of light
 (c) both in presence and in absence of light
 (d) none of these
104. In which part of human large intestine, vermiform appendix is located?
 (a) Caecum (b) Colon (c) Rectum (d) Anus
105. Which of the following is not an adaptation in elephants?
 (a) They have trunks which they use as nose and for lifting the food.
 (b) They have very long ears.
 (c) They have long tail, strong claws.
 (d) None of these
106. The site of complete digestion of food in human alimentary canal is _____
 (a) Large intestine (b) Small intestine (c) Stomach (d) Mouth
107. Name the organism which breathes through its skin.
 (a) Human (b) Dog (c) Earthworm (d) Elephant
108. The cartilagenous rings supporting the human trachea is _____ and _____.
 (a) Complete and C-shaped (b) Incomplete and C-shaped
 (c) Complete and O-shaped (d) Incomplete and V-shaped
109. The instrument which is used to measure air pressure is :
 (a) Rain gauge (b) Barometer (c) Thermometer (d) None of these
110. Which birds migrate to warmer regions during winter and return during summer?
 (i) Penguins (ii) Siberian cranes (iii) Arctic terns (iv) Toucans
 (a) (i) and (iv) (b) (ii) and (iv) (c) (ii) and (iii) (d) (iii) and (iv)
111. Two different organisms living together and both benefiting from each other, are know
 (a) Saprophytic (b) Symbiotic (c) Parasitic (d) Heterotrophic
112. Which one is an insectivorous plant?
 (a) Lichens (b) Pitcher plant (c) Mushroom (d) Yeast
113. Rhizobium lives in symbiotic association with
 (a) Cereals (b) Leguminous plants (c) Mango (d) Cuscuta
114. Which one of the following is/are the example of Parasites?
 (a) Lice (b) Leeches (c) Bed bugs (d) All of these
115. Insectivorous plants generally grow in the soil deficient in
 (a) oxygen (b) nitrogen (c) carbon (d) hydrogen

116. When air is blown from mouth into a test-tube containing lime water, the lime water turns milky due to the presence of
 (a) oxygen (b) carbon dioxide (c) nitrogen (d) water vapour
117. In earthworm, exchange of gases takes place through
 (a) water (b) gills (c) moist skin (d) spiracles
118. Respiratory structures in the insects are
 (a) gills (b) skin (c) lungs (d) trachea
119. During inhalation, the ribs
 (a) move inwards (b) move upwards (c) move downwards (d) do not move at all
120. During exhalation, the chest cavity
 (a) move outwards (b) move downwards (c) reduces (d) both (2) and (3)

MATHEMATICS

121. If $a = (-1)^{2009}$ and $b = (-1)^{2010}$, then find the value of ab .
 (a) 1 (b) -1 (c) 2009 (d) 2010
122. X is the smallest four-digit number formed by all the digits 0, 1, 2 and 3. Find X.
 (a) 123 (b) 1023 (c) 1000 (d) 102
123. If $x = \sqrt{3}$, $y = \sqrt{27}$ and $z = \sqrt{243}$, then which of the following is/are rational numbers?
 (a) xy (b) xz (c) yz (d) All of these
124. Find the greatest number that can divide 101 and 115 leaving remainder 5 and 7, respectively.
 (a) 6 (b) 9 (c) 12 (d) 18
125. $235.235235235\dots$ is a/an
 (a) integer (b) whole number (c) rational number (d) irrational number
126. If $\sqrt{2^n} = 16$, then the value of n is
 (a) 4 (b) 8 (c) 2 (d) 3
127. The number 111 111 111 111 is divisible by:
 (a) 5 and 11 (b) 9 and 11 (c) 3 and 9 (d) 3 and 11
128. The unit digit in $(127)^{170}$ is:
 (a) 3 (b) 9 (c) 7 (d) 3
129. Which of the following is the set of measures of the sides of a triangle?
 (a) 8 cm, 4 cm, 20 cm (b) 9 cm, 17 cm, 25 cm
 (c) 11 cm, 16 cm, 28 cm (d) 6 cm, 5 cm, 12 cm
- 130.



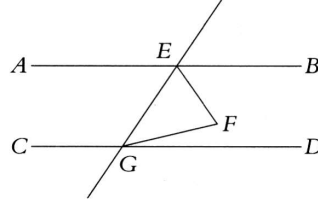
In the figure above, ABCD is a square of side 8 cm and $\overline{PM} \perp \overline{AB}$. Find the length of MC.

- (a) $5\sqrt{5}$ cm (b) $6\sqrt{5}$ cm (c) $4\sqrt{5}$ cm (d) $7\sqrt{5}$ cm

131. In an n-sided regular polygon, each interior angle is 144° . Find the number of the sides of the polygon.

- (a) 7 (b) 8 (c) 9 (d) 10

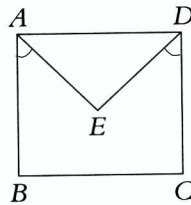
132.



In the figure above, $AB \parallel CD$. EF and FG are the bisectors of $\angle BEG$ and $\angle DGE$, respectively. $\angle FEG = \angle FGE + 10^\circ$. Find $\angle FGE$.

- (a) 20° (b) 25° (c) 40° (d) 35°

133.



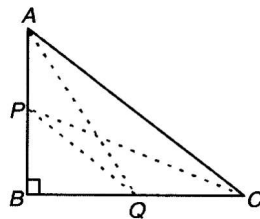
In the figure above, $\overline{AB} \parallel \overline{CD}$, $\angle BAE = 30^\circ$ and $\angle CDE = 35^\circ$. If $\overline{AB} \perp \overline{BC}$, then find $\angle AED$.

- (a) 60° (b) 55° (c) 65° (d) 85°

134. P, Q, R are three non-collinear points. The number of lines that can be drawn passing through any two of these points is:

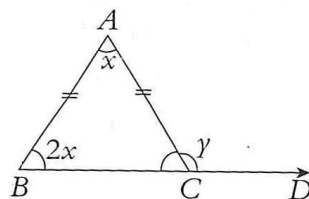
- (a) 3 (b) 4 (c) 5 (d) 8

135. In a right-angled $\triangle ABC$, right angled at B, if P and Q are points on the sides AB and BC respectively, then:



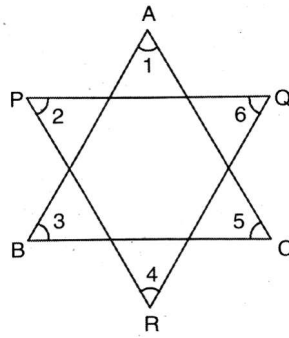
- (a) $AQ^2 + CP^2 = 2(AC^2 + PQ^2)$ (b) $2(AQ^2 + CP^2) = AC^2 + PQ^2$
(c) $AQ^2 + CP^2 = AC^2 + PQ^2$ (d) $AQ + CP = \frac{1}{2}(AC + PQ)$

136. In the following figure, if $AB = AC$ and BC is extended to D, then find the value of $x + y$.



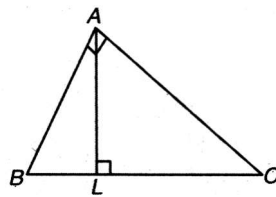
- (a) 120° (b) 160° (c) 40° (d) 144°

137. Sum of angles in the figure will be i.e. $\angle 1 + \angle 2 + \angle 3 + \angle 4 + \angle 5 + \angle 6$.



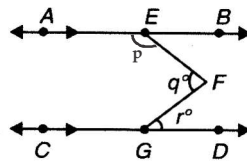
- (a) 180° (b) 360° (c) 270° (d) None of these

138. In $\triangle ABC$, $\angle A = 90^\circ$, AL is drawn perpendicular to BC. Then $\angle BAL$ is equal to:



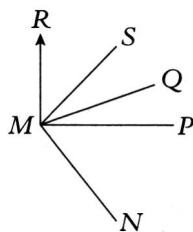
- (a) $\angle ALC$ (b) $\angle ACB$ (c) $\angle BAC$ (d) $\angle B - \angle BAL$

139. In the given figure, $AB \parallel CD$, then which of the following is true :



- (a) $p + q - r = 180^\circ$ (b) $p + q + r = 180^\circ$
 (c) $p - q + r = 180^\circ$ (d) $p + q - 2r = 180^\circ$

140. In the figure below (not to scale), $\overline{MR} \perp \overline{MP}$, $\overline{MQ} \perp \overline{MN}$, and \overline{MS} is bisector of $\angle RMQ$. If $\angle PMN = 50^\circ$, then find the measure of $\angle RMS$.



- (a) 25° (b) 20° (c) 30° (d) 35°

141. Which of the following values are equal?

- (P) 1^4 (Q) 4^0 (R) 0^4 (S) 4^1
 (a) P and Q (b) Q and R (c) P and R (d) P and S

142. If mean of the following data is 6, then which of the following can be the value of a?

x	2	4	6	8	10
f	1	2	a	2	1

- (a) 4 (b) 5 (c) 8 (d) All the above

143. The mean of A, B, C, D,, X, Y, Z (26 terms) is a. Find the value of $(A - a) + (B - a) + (C - a) + (D - a) \dots (X - a) + (Y - a) + (Z - a)$.

- (a) a (b) 0 (c) 2a (d) 2/a

144. The average age of m boys is 'b' years and 'n' girls is 'c' years. Find the average age of all together:

- (a) $\frac{mb - nc}{m - n}$ (b) $\frac{mb - nc}{m + n}$ (c) $\frac{mb + nc}{m + n}$ (d) $\frac{mb + nc}{m - n}$

145. What is the median of the following data 37, 31, 42, 43, 46, 25, 39, 45, 32?

- (a) 35 (b) 39 (c) 5 (d) 8

146. The value of $\left\{ (16)^{\frac{-2}{3}} \right\}^{\frac{(27)^{\frac{1}{3}}}{2}}$ is:

- (a) 1/4 (b) 1/8 (c) 16 (d) 1/16

147. In a two-digit number, the tens digit is twice the units digit. If the sum of its digits is 9. Find the number.

- (a) 63 (b) 82 (c) 72 (d) 36

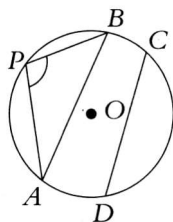
148. What is the multiplicative inverse of $a - \frac{1}{a}$?

- (a) $a + \frac{1}{a}$ (b) $\frac{1}{a} - a$ (c) $\frac{1}{a - 1}$ (d) $\frac{a}{a^2 - 1}$

149. Out of three exams, Ravi had scored 70 and 75 marks in two examinations. A student can be placed in Grade A if the average score of three exams will be at least 73 and at most 80. Ravi is placed in Grade A. What is the maximum marks that he could have scored in the third examination?

- (a) 95 (b) 90 (c) 74 (d) 83

150.



In the above figure, O is the centre of the circle and $AB = CD$. if $\angle APB = 110^\circ$, then find the angle made by the chord CD at the centre.

- (a) 220° (b) 110° (c) 120° (d) 140°