



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.

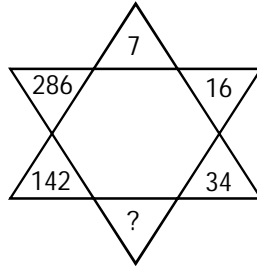
41. 2, 5, 9, _____, 20, 27
(a) 14 (b) 16 (c) 18 (d) 24
42. 18, 10, 6, 4, 3, _____
(a) 8 (b) 4 (c) 3.5 (d) 2.5
43. 3, 8, 22, 63, 185, _____
(a) 285 (b) 295 (c) 310 (d) 550
44. 12, 32, 72, 152, _____, 632
(a) 515 (b) 613 (c) 815 (d) 312

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) 110 (d) 120

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 mother 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

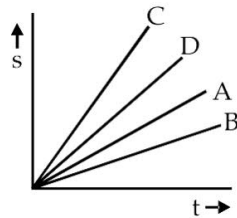
PHYSICS

61. In the steam engine, most of the heat energy is converted into _____ .

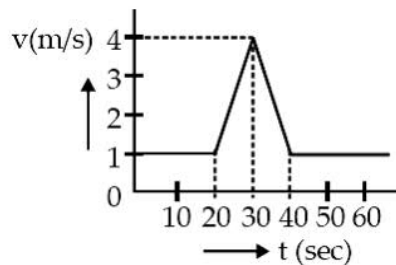
- (a) electrical energy (b) light energy (c) sound energy (d) mechanical energy

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. Motion of a stone dropped from the top of a tower is an example of →
 (a) Uniform motion (b) Circular motion
 (c) Uniformly accelerated motion (d) None of the above
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. When an object is moved away from a convex mirror, the image
 (a) becomes smaller (b) moves closer to the focus
 (c) becomes inverted (d) Both (a) and (b)
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. The ratio of unit of acceleration and velocity gives unit of the physical quantity _____.
 (a) time (b) frequency (c) amplitude (d) speed
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 m × 5 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 ($\mu = \frac{4}{3}$). 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) $\frac{18}{5}$

81. A ray of light is incident on a glass slab normally. Calculate the percent change in the angle of refracted ray with respect to the normal. The refractive index of glass is 1.5 :
- (a) 15% (b) 1.5% (c) 0.05% (d) 0%
82. A boy is suffering from fever and doctor said that his body temperature is 105. Then temperature should be expressed in :
- (a) °C (b) °F (c) K (d) all of these
83. The surface of water in a lake is just going to freeze. What is the temperature of water at the bottom and at upper surface respectively :
- (a) 4°C, 0°C (b) less than 0°C, 0°C (c) 0°C, 0°C (d) more than 4°C, 0°C
84. A person suffering from myopia must wear
- (a) Convex lens (b) Convex mirror (c) Concave mirror (d) Convave lens
85. What is the relation between radius of curvature and focal length of a spherical mirror ?
- (a) $R = 2f$ (b) $R = \frac{f}{2}$ (c) $R = f$ (d) $R = 4f$

CHEMISTRY

86. Which among the following acids is present in lemons?
- (a) Acetic acid (b) Oleic acid (c) Stearic acid (d) Ascorbic acid
87. The strong mineral acid among the following is _____.
- (a) Palmitic acid (b) Acetic acid (c) Carbonic acid (d) Hydrochloric acid
88. 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
89. Which among the following bases is most basic ?
- (a) Calcium hydroxide (b) Sodium hydroxide
(c) Potassium hydroxide (d) Copper hydroxide
90. Choose the correct option by matching the entries given in column A with the appropriate ones in column B.
- | Column A | Column B |
|-------------------------------|------------------------------|
| (p) Nitric acid | (i) Weak acid |
| (q) Phosphoric acid | (ii) Strong acid |
| (r) Calcium hydroxide | (iii) Acid rain |
| (s) Carbonic acid | (iv) Bleaching powder |
| (a) p-ii, q-i, r-iv, s-iii,i | (b) p-ii, q-i, r-iv, s-i,iii |
| (c) p-ii, q-iv, r-i, s-ii,iii | (d) p-ii, q-iv, r-i, s-i,iii |
91. Which of the following salts is formed by the neutralisation reaction of Sodium hydroxide and hydrochloric acid?
- (a) Sodium chloride (b) Sodium sulphate (c) Sodium nitrate (d) None of these

92. 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
93. Calamine solution contains:
 (a) Zinc chloride (b) Zinc hydroxide (c) Zinc carbonate (d) All of these
94. 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 , $\text{Ca}(\text{OH})_2$, NO_2
95. Non-metals can react with:
 (a) conc. HNO_3 acid (b) dil. H_2SO_4 acid
 (c) dil. HCl acid (d) All of these
96. Which of the following processes is not involved in the purification of drinking water?
 (a) Sedimentation (b) Filtration (c) Chlorination (d) Distillation
97. 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
98. The density of water is _____ than oil.
 (a) less (b) more (c) equal (d) None of these
99. What is the latent heat of fusion of 1g of ice?
 (a) 80 cal (b) 540 cal (c) 100 cal (d) 400 cal
100. 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
101. Chemical treatment of surface water can be carried out by the addition of _____.
 (a) bleaching powder (b) alum
 (c) oxygen (d) Carbon dioxide
102. 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) $A \rightarrow b$; $B \rightarrow a$; $C \rightarrow d, c$; $D \rightarrow e$ (b) $A \rightarrow c$; $B \rightarrow b$; $C \rightarrow c, e$; $D \rightarrow d$
 (c) $A \rightarrow b$; $B \rightarrow c$; $C \rightarrow d$; $D \rightarrow e$ (d) $A \rightarrow a$; $B \rightarrow c$; $C \rightarrow d, e$; $D \rightarrow b$
103. 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

104. Wool : Fleece of sheep, Silk : _____.
- (a) Silkworms (b) Silk flies (c) Cocoon (d) None of these
105. Which of the following materials is/are used for clothing in ancient times ?
- (a) Animal skins (b) Leaves (c) Vines (d) All of these
106. Clothes do not protect us from which of the following condition?
- (a) Heat (b) Cold (c) Blood pressure (d) Dust and germs
107. Silk fibres are obtained from which of the following organisms?
- (a) Silk flies (b) Silk animals (c) Silk sheep (d) Silkworms
108. Neutralisation reaction can also be called _____ reaction.
- (a) Exothermic (b) Endothermic (c) Displacement (d) None of these
109. Jute is obtained from _____ of plant.
- (a) flower (b) stem (c) fruit (d) None of these
110. Natural fibres are obtained from which of the following?
- (a) Fleece of sheep (b) Cotton plants (c) Jute plants (d) All of these

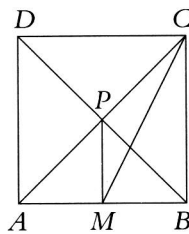
BIOLOGY

111. 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.
112. The equation given below represents photosynthesis.
- $$X + \text{Water} \xrightarrow[\text{Chlorophyll}]{\text{Sunlight}} \text{Glucose} + Y$$
- Which of the following is represented by X and Y in the given equation?
- (a) X – Carbon dioxide, Y – Oxygen (b) X – Oxygen, Y – Carbon dioxide
 (c) X – Carbon dioxide, Y – Hydrogen (d) X – Oxygen, Y – Nitrogen
113. The assimilatory power which is formed during light reaction of photosynthesis includes:
- (a) ATP only (b) NADPH only
 (c) Both ATP and NADPH (d) AMP only
114. In which part of human large intestine, vermiform appendix is located?
- (a) Caecum (b) Colon (c) Rectum (d) Anus
115. Which component of food gets digested in human stomach?
- (a) Only carbohydrates (b) Mainly proteins
 (c) Mainly fats (d) None of the above
116. The site of complete digestion of food in human alimentary canal is _____
- (a) Large intestine (b) Small intestine (c) Stomach (d) Mouth
117. Name the organism which breathes through its skin.
- (a) Human (b) Dog (c) Earthworm (d) Elephant

118. 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
119. The instrument which is used to measure air pressure is :
- (a) Rain gauge (b) Barometer (c) Thermometer (d) None of these
120. What is the adaptation of red-eyed frogs to climb trees?
- (a) Have long tails for grasping branches of trees.
(b) Have long claws to grasp branches.
(c) Their hands and feet are modified to hold on to the branches.
(d) Developed sticky pads on feet to climb trees.

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.



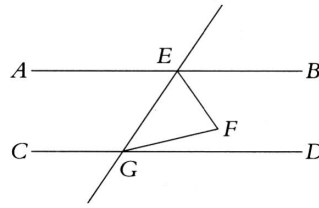
In the figure above, ABCD is a square of side 8 cm and $\overline{PM} \perp \overline{AB}$. Find the length of MC.

- (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

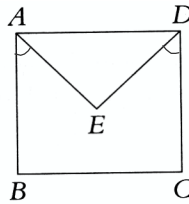
132.



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.



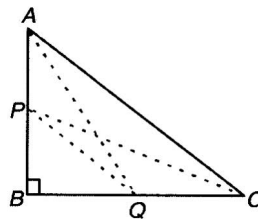
In the figure above, $\overline{AB} \parallel \overline{CD}$, $\angle BAE = 30^\circ$ and $\angle CDE = 35^\circ$. If $\overline{AB} \perp \overline{BC}$, then find $\angle AED$.

- (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:

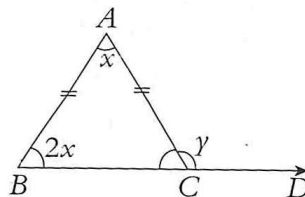
- (a) 3 (b) 4 (c) 5 (d) 8

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:



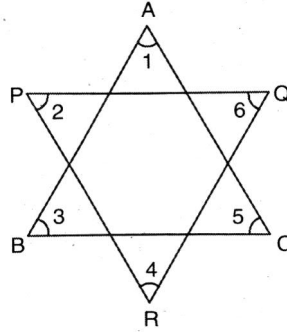
- (a) $AQ^2 + CP^2 = 2(AC^2 + PQ^2)$ (b) $2(AQ^2 + CP^2) = AC^2 + PQ^2$
 (c) $AQ^2 + CP^2 = AC^2 + PQ^2$ (d) $AQ + CP = \frac{1}{2}(AC + PQ)$

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



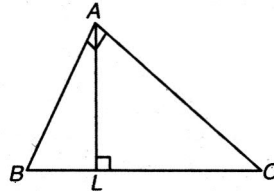
- (a) 120° (b) 160° (c) 40° (d) 144°

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:

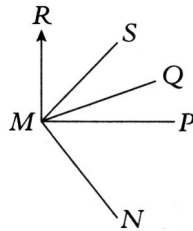


- (a) $\angle ALC$ (b) $\angle ACB$ (c) $\angle BAC$ (d) $\angle B - \angle BAL$

139. Which of the following statements is true?

- (a) Every trapezium is a parallelogram (b) Every square is a rhombus
 (c) Every rectangle is a square (d) Every parallelogram is a rectangle

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. Mean of x and $\frac{1}{x}$ is k , then find the mean of x^2 and $1/x^2$.

- (a) $k^2 - 1$ (b) $2k^2 - 2$ (c) $k^2 - 2$ (d) $2k^2 - 1$

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. The value of $\frac{(5)^{0.25} \times (125)^{0.25}}{(256)^{0.10} \times (256)^{0.15}}$ is:

- (a) $\frac{\sqrt{5}}{2}$ (b) $\frac{5}{4}$ (c) $\frac{25}{2}$ (d) $\frac{25}{16}$

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. The present age of a father and that of his son are in the ratio 7 : 1. After 4 years, the ratio will be 4 : 1. What is the son's present age (in years)?

- (a) 3 (b) 4 (c) 5 (d) 6