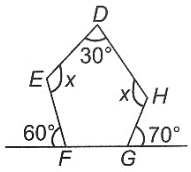
IMPORTANT INSTRUCTIONS

- The maximum marks are **300.** Time allotted is **90 MINTUES.**
- There are three sections in the question paper having total **75 questions:**
  - Section – A : Maths (20 Questions)
  - Section – B : Science (20 Questions)
  - Section – C : English (20 Questions)
  - Section – D : Aptitude (15 Questions)
- Each question carries **4 marks**
- **Negative Marking**: **1/4 (one-fourth) marks** will be deducted for every incorrect answer.
- **Use only BLUE / BLACK pen to fill the circles in bubble sheet.**
- Use of pencil is strictly **not allowed.**
- **Do not use marker or correction pen** to hide the mark.

SECTION – A MATHS

1. In the given figure, the value of x is_____.



(a) 100° (b) 140° (c) 70° (d) 90°

2. To construct a kite, which of the following is necessary?
(a) Two adjacent unequal sides and included diagonal
(b) Two adjacent equal sides and included diagonal
(c) Length of opposite sides
(d) none of these

3. If $\sqrt{4+\frac{81}{400}} = \frac{-1}{20}$, then a is _____.

(a) 8 (b) 41 (c) 61 (d) 21

4. Simplify : $\frac{3}{2}x^2(x^2-1)+\frac{1}{4}x^2(x^2+x)-\frac{3}{4}x(x^3-1)$

(a) $x^4+\frac{1}{2}x^3-\frac{1}{4}x^2+x$ (b) $2x^4+\frac{1}{4}x^3-\frac{3}{4}x^2+\frac{1}{4}x$

(c) $x^4+\frac{1}{4}x^3-\frac{3}{2}x^2+\frac{3}{4}x$ (d) $2x^4+\frac{3}{4}x^3-\frac{1}{4}x^2+\frac{3}{4}x$

5. If $x^2 + y^2 = 29$ and $xy = 2$, then find the value of

(i) $x + y$ (ii) $x - y$ (iii) $x^4 + y^4$

	(i)	(ii)	(iii)
(a)	$\pm\sqrt{35}$	± 6	849
(b)	$\pm\sqrt{23}$	± 5	83
(c)	$\pm\sqrt{33}$	± 5	833
(d)	$\pm\sqrt{29}$	± 3	849

6. Match the following:

Column I	Column II
(P) The smallest number that should be subtracted from130 to make it perfect cube is	(i) 4
(Q) The smallest number that should be subtracted from9268 to make it perfect cube is	(ii) 3
(R) The smallest number that should be added to 2194 tomake it perfect cube is	(iii) 5
(S) The smallest number that should be added to 6855 tomake it perfect cube is	(iv) 7

(a) P → (iii); (Q) → (i); (R) → (iv); (S) → (ii)
(b) P → (ii); (Q) → (iv); (R) → (i); (S) → (iii)
(c) P → (iii); (Q) → (i); (R) → (ii); (S) → (iv)
(d) P → (iii); (Q) → (iv); (R) → (ii); (S) → (i)

7. If $\frac{(243)^{0.13} \times (243)^{0.07}}{(7)^{0.25} \times (49)^{0.075} \times (343)^{0.2}} = \left[\frac{7}{3}\right]^{2x}$ then the value of x is

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

8. Select the INCORRECT match.

Principal (in ₹)	Rate% (p.a.)	Time (in years)	C.I. (in ₹)
(a) 1000	5%	3	157.63
(b) 360	20%	2	158.40
(c) 3000	10%	3	939
(d) 72000	6%	3	13753.15

9. The difference between the compound interest and simple interest on a certain sum of money at 10% per annum for 2 years is ₹ 500. Find the sum when the interest is compounded annually.

(a) ₹ 50000 (b) ₹ 550000 (c) ₹ 40000 (d) ₹ 65000

10. State 'T' for true and 'F' for false.
    (a) Pentagonal prism has 5 pentagons
    (b) Euler's formula is true for all three dimensional figures.
    (c) All cubes are prism.
    (d) A polyhedron with least number of faces is known as a triangular pyramid.

	(i)	(ii)	(iii)	(iv)
(a)	F	T	T	F
(b)	T	T	T	F
(c)	F	T	F	T
(d)	F	F	T	T

11. The value of $\frac{2^{2001}+2^{1999}}{2^{2000}-2^{1998}}$, is

    (a) 2 (b) 10/3 (c) $2^{2001}+1$ (d) 10

12. By what number should $\left(\frac{-3}{2}\right)^{-3}$ be divided so that the quotient is $\left(\frac{-9}{4}\right)^{-2}$?

    (a) $\frac{-3}{2}$ (b) $\frac{-1}{2}$ (c) $\frac{-4}{2}$ (d) none of these

13. If $\frac{4x+8}{5x+8} = \frac{5}{6}$, then x =?

    (a) 4 (b) 6 (c) 3 (d) – 3

14. If the simple interest on a sum of money at 10% per annum for 3 years is ₹ 1500, then the compound interest on the same sum at the same rate for the same period is

    (a) ₹ 1655 (b) ₹ 1155 (c) ₹ 1555 (d) ₹ 1855

15. Fill in the blanks:

    (i) If $m^2 = 27^{2/3} \times 16^{-3/2}$, then $m =$ **P**

    (ii) If $ab = 1$, then $\frac{1}{1+a^{-1}} + \frac{1}{1+b^{-1}}$ = **Q**

    (iii) If $x = \left(8^{2/3}.32^{-2/5}\right)$, then x^{-5} = **R**

	P	Q	R
(a)	5/4	0	10/7
(b)	1	1	5/16
(c)	3/8	1	1
(d)	7/8	0	7/8

16. Which of the following options hold?

    Statement-1: The value of the product $(4a^2+3b)(4a^2+3b)$ at $a = 1$ and $b = -2$ is 100.

    Statement-2 : Value of : $\frac{(997+496)^2-(997-496)^2}{997 \times 496}$

    (a) Both Statement-I and Statement-II are true.
    (b) Statement-I is false but Statement-II is true.
    (c) Statement-I is true but Statement-II is false.
    (d) Both Statement-I and Statement-II are false.

17. If $\frac{6x+1}{3} + 1 = \frac{x-3}{6}$, then x = ?

(a) 1 (b) – 1 (c) 3 (d) – 3

18. **Select the Incorrect Match:**

		Faces	Vertices	Edges
(a)		9	9	16
(b)		9	8	15
(c)		5	5	8
(d)		8	6	12

19. T.V. is sold for ₹ 9,000 after giving successive discount 20% and 10% respectively. Find the marked price.

(a) ₹ 12,500 (b) ₹ 10,000 (c) ₹ 5,000 (d) None of these

20. A bag contains coins of denomination of 50 paise and five rupees. The total value of these coins is ₹ 300. If the total number of coins in the bags is 150, find the number of coins of each type.

(a) 100 (b) 50 (c) 25 (d) none of these

SECTION – B SCIENCE

21. Crop plants may be attacked by pests which affect the crop production. Fungi are such type of pests which cause diseases like:

(a) smut of wheat (b) citrus canker (c) blight of potato (d) both (a) and (c)

22. Refer to the given passage.

The mosquito P is a carrier of virus that spreads a disease Q. Another mosquito R is a carrier of protozoan S that spreads a disease called T.

Select the option which correctly identifies P, Q, R, S and T.

(a) P-Aedes, Q-Dengue, R-Anopheles, S-Plasmodium, T-Malaria

(b) P-Tse-tse fly, Q-Dengue, R-Anopheles, S-Plasmodium, T-Malaria

(c) P-Aedes, Q-Dengue, R-Tse-tse fly, S-Entamoeba, T-Amoebic dysentery

(d) P-Tse-tse fly, Q-Dengue, R-Aedes, S-Entamoeba, T-Amoebic dysentery

23. Which of the following reactions are possible?

(a) $Mg + CuSO_4 \rightarrow MgSO_4 + Cu$ (b) $Ca + MgSO_4 \rightarrow CaSO_4 + Mg$

(c) $Cu + ZnSO_4 \rightarrow CuSO_4 + Zn$ (d) $Fe + MgSO_4 \rightarrow FeSO_4 + Mg$

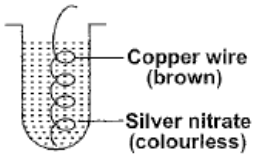
24. Substance X reacts with dilute HCl violently, Y reacts slowly while Z does not react at all X, Y and Z could be respectively

(a) Cu, Al, Fe (b) Al, Na, Cu (c) Na, Cu, Fe (d) K, Al, Cu

25. A brief information about three different plastics is given below:
X: Thermoplastic which can be rolled into sheets
Y: Thermoplastic which is used as a covering for electric wires.
Z: Thermosetting which is used for making plugs and switches.
Identify X, Y and Z

	X	Y	Z
(a)	Melamine	Teflon	Bakelite
(b)	Bakelite	Malamine	Polythene
(c)	Polythene	Polyvinyl	Bakelite
(d)	Polyvinyl	Polythene	Melamine

26. Vidisha placed a copper wire in silver nitrate solution as shown in the figure.



Which of the following represents the correct observation?
(a) The colour of the solution turned blue and precipitate of solid silver was obtained.
(b) Colour of solution turned green and copper wire turned blue.
(c) There was no change in the colour of solution or colour of the wire.
(d) Colour of the solution became silver and there was no change in the colour of copper wire.

27. Mr. Ramakant, a science teacher organised a quiz in the class. He stated few applications of non-metals and asked students to guess the names of the non-metals. Mark the correct option.
(a) Non-metals used in fertilisers-K, Cl
(b) Non-metal used in water purification process-Br
(c) Non-metal used in crackers-N
(d) Non-metal used as an antiseptic-I

28. Read the given passage and fill in the blanks by selecting an appropriate option.
The process of conversion of wood into coal is called **(i).** There are three main varieties of coal which vary in their carbon content. **(ii)** has upto 96 percent of carbon, **(iii)** has about 65 percent carbon while **(iv)** has about 38 percent carbon.

	(i)	**(ii)**	**(iii)**	**(iv)**
(a)	Destructive distillation	Lignite	Anthracite	Bituminous coal
(b)	Carbonisation	Anthracite	Lignite	Bituminous coal
(c)	Carbonisation	Anthracite	Bituminous coal	Lignite
(d)	Destructive distillation	Bituminous coal	Anthracite	Lignite

29. Match the Column I with Column II and select the correct option from the given codes.

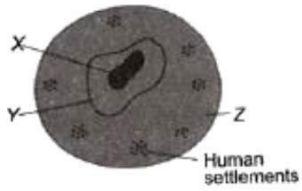
Column I	**Column II**
P. Rusting	(i) Explosion
Q. Burning of paper	(ii) Spontaneous combustion
R. Sodium	(iii) Rapid combustion
S. Fire crackers	(iv) Slow process

(a) P-(ii), Q-(iii), R-(i), S-(iv)
(b) P-(i), Q-(iii), R-(ii), S-(iv)
(c) P-(iii), Q-(iv), R-(i), S-(ii)
(d) P-(iv), Q-(iii), R-(ii), S-(i)

30. Pachmarhi Biosphere Reserve includes X national park and two wildlife sanctuaries – Y and Z
Select the option which correctly identify X, Y and Z.
(a) X– Satpura; Y – Bori; Z – Pachmarhi
(b) X – Bori; Y – Satpura; Z – Pachmarhi
(c) X – Bori; Y – Satpura; Z – Pachmarhi
(d) X – Tawa; Y – Bori; Z – Pachmarhi

31. Which of the following represents the correct increasing order of calorific value of the given fuels?
    (a) Hydrogen < LPG < Biogas < Cow dung cake < Coal
    (b) Cow dung cake < Biogas < LPG < Coal < Hydrogen
    (c) Cow dung cake < Coal < Biogas < LPG < Hydrogen
    (d) Hydrogen < Cow dung cake < LPG < Biogas < Coal

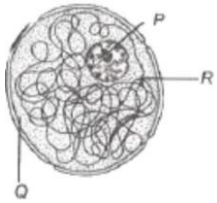
32. Refer to the given diagrammatic representation of a Biosphere reserve.



    Select the incorrect statement regarding X, Y and Z.
    (i) X is divided to strict protection of wildlife and no human activity is allowed in this zone.
    (ii) In Y, only limited human activity (compatible with conservation) is allowed.
    (iii) In Z, commercial exploitation of natural resources is allowed.
    (iv) Tourism is allowed upto Z zone only.
    (v) Zone Y helps to maintain the lifestyle of the tribal people living in the area.
    (a) (iii), (iv) and (v) only (b) (ii), (iii) and (v) only
    (c) (i), (iii) and (iv) only (d) (ii), (iii) and (iv) only

33. Which of the following statements is/are correct?
    (i) The nucleoplasm and the cytoplasm together make up the protoplasm.
    (ii) Chloroplasts are a type of plastids, which occur in plant cells.
    (iii) In many multicellular organisms, all cells have projections called cilia and flagella.
    (iv) Cell destruction occurs by centrosomes.
    (a) (i) and (ii) only (b) (i), (ii) and (iv) only (c) (i) only (d) (iii) and (iv) only

34. Refer to the given figure and select the correct statement regarding it.



    (i) P is the site of protein ribosome synthesis.
    (ii) R transfers the characteristics of a cell that are formed during cell division.
    (iii) Q is a dense fluid like a granular substance.
    (iv) P contains DNA while R contains RNA.
    (a) (i) and (ii) only (b) (i), (ii) and (iv) only
    (c) (i), (ii) and (iii) only (d) (iii) and (iv) only

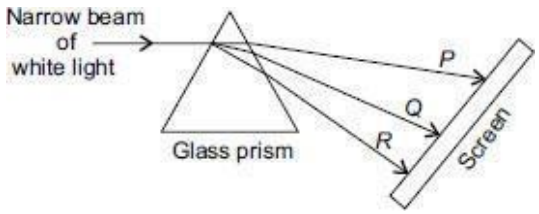
35. The surface area of the base of a brick X is 100 cm^2. The surface area of the base of the brick Y is 250 cm^2. Each brick weighs 100 N. Which of the following is correct if P_1 and P_2 are the pressure exerted by the bricks X and Y respectively?
    (a) $P_1 = P_2$ (b) $P_1 > P_2$ (c) $P_1 < P_2$ (d) $P_1 = P_2 = 0$

36. Consider the following statements and select the option which correctly identifies True (T) and False (F) ones.
(i) Reproductive life of woman lasts from menarche to menopause.
(ii) In females, the uterus wall thickens to receive the embryo.
(iii) Estrogen is released by testes at the onset of puberty.
(iv) Hormones secreted by adrenal glands stimulate testes and ovaries to produce their hormones.

	(i)	(ii)	(iii)	(iv)
(a)	T	F	T	F
(b)	T	F	F	F
(c)	T	T	F	F
(d)	T	T	F	T

37. Read the given statements and select the correct option.
Statement1: In human male, testes lie outside the abdominal cavity in a thin pouch called scrotum.
Statement2: Scrotum helps in maintaining the low temperature of the testes necessary for spermatogenesis.
(a) Both statements 1 and 2 are true and statement 2 is the correct explanation of statement 1.
(b) Both statements 1 and 2 are true but statement 2 is not the correct explanation of statement 2.
(c) Statement 1 is true but statement 2 is false.
(d) Both statement 1 and 2 are false.

38. A narrow beam of white light is passed through a glass prism as shown in the figure.



Which of the following is the correct order of colours emerging from the prism?

	P	Q	R
(a)	Red	Blue	Green
(b)	Red	Green	Blue
(c)	Blue	Green	Red
(d)	Blue	Red	Green

39. Read the given statement and select the correct option.
Statement 1: A beam of light emitted by the point source placed in water always diverges in air
Statement 2: The refracted ray moves away from normal when a ray goes from a denser medium to a rarer medium.
(a) Both statements 1 and 2 are true and statement 2 is the correct explanation of statement 1.
(b) Both statements 1 and 2 are true but statement 2 is not the correct explanation of statement 2.
(c) Statement 1 is true but statement 2 is false.
(d) Both statement 1 and 2 are false.

40. Fill in the blanks with the most appropriate option.
If a guitar string is pulled strongly, its amplitude of vibration **(i)** and the note heard is **(ii),** If its is pulled lightly, its amplitude of vibration **(iii)** and the note heard is **(iv).**

	(i)	**(ii)**	**(iii)**	**(iv)**
(a)	Increases	Louder	Increases	Louder
(b)	Decrease	Softer	Decreases	Softer
(c)	Increase	Louder	Decrease	Softer
(d)	Decrease	Softer	Increases	Louder

SECTION – C
ENGLISH

- **Read the passage carefully and answer the following questions.**

In this life, there is no gain without pain. Life indeed would be dull if there was no difficulties. Game loses its zest if there is no real struggle in it and the result is a foregone conclusion. Both the winner and the loser enjoy a game most if it is closely contested to the last. No victory is a real triumph unless the foe is worthy of the steel. Whether we like it or not life is a continuous competitive examination.

41. What is the central idea of the passage?
(a) Life is full of agony and suffering (b) Life is an enjoyable game without struggle
(c) Suffering is not necessary for achievement in life (d) Life is a never-ending struggle

42. What does the statement "the foe is the worthy of the steel" mean?
(a) The enemy is very clever and intelligent (b) The enemy is too powerful to defeat
(c) The enemy is capable of defending himself (d) The enemy is equipped with fatal weapons

43. Which of the following is antonym of the word 'dull'.
(a) beautiful (b) popular (c) attractive (d) interesting

44. Which of the following is synonym of the word 'zest'.
(a) craze (b) enthusiasm (c) hope (d) interest

45. Fill in the blank with the correct tense:
I am happy about her promotion, but I _____ if she will be able to handle this role properly.
(a) doubt (b) will doubt (c) have doubted (d) am doubtin

Word and Structure Knowledge

46. Choose the correct spelling.
(a) Endeavor (b) Endeavour (c) Indeavor (d) Endevor

47. Choose the odd pair.
(a) Desire : Aspiration (b) Pacify : Calm (c) Agony : Misery (d) Ferocious : Merciful

48. Choose the correct option.
The sight _____ us with joy and happiness.
(a) were filling (b) filled (c) was being filled (d) has being filled

49. Choose the incorrect part of the given sentence.
The Taj Residency / is not as expensive than / The four Seasons Hotel / No error
(a) (b) (c) (d)

50. Choose the correct proportion. They went to Manali _____ train.
(a) by (b) into (c) from (d) on

51. Which of the following idiom is correct:
(a) Once bitten, twice shy (b) Once bitten, always shy
(c) Twice bitten, never shy (d) Twice bitten, always shy

52. Identify the tense : He was always smiling.
(a) Past Continuous (b) Present Continuous (c) Simple Past (d) Simple Present

53. Choose the option which reports the following sentence in indirect speech:
Mona said to Nicky, "Don't make a lot of noise, but she wanted to listen to the news.
(a) Mona told Nicky not to make a lot of noise, but she wanted to listen to the news.
(b) Mona told Nicky not to make a lot of noise, as she wanted to listen to the news.
(c) Mona told Nicky not to make a lot of noise, as she was listening to the news.
(d) Mona told Nicky not to make a lot of noise, as she will listen to the news.

54. Choose a suitable phrasal verb to fill in the blank:
The requirements of Jenney's new job _____ on her.
(a) weighed out (b) weighed in (c) weighed down (d) weighed up

55. In this question, out of the four alternatives choose the one which can be substituted for the given word/sentence.
Person working in same organization.
(a) Colleague (b) Antagonist (c) Opposer (d) Detractor

56. Fill in the blank with correct word from the options given below that makes the sentence meaningful.
This cup of milk is _____.
(a) hot enough to drink (b) hot to drink (c) too hot to drink (d) to hot drink

57. Fill in the blanks with the correct preposition.
She leaned _____ the wall because she was tired.
(a) Under (b) Against (c) Down (d) Above

58. Choose the article/articles to complete the sentence:
I'm staying at _____ beach view resort on _____ Hudson river. It's a very beautiful place to stay.
(a) a, no article required (b) a, the (c) the, a (d) no article required, a

59. Choose the option which best express the same sentence in passive/Active voice:
She did not know about them. She was kept completely in dark.
(a) It were not known about them by her. She was kept completely in dark.
(b) It was not being known about them by her. She was kept completely in dark.
(c) It was not known about them by her. She was kept completely in dark.
(d) It did not know about them by her. She was kept completely in dark.

60. Choose the correct type of noun for the quoted word:
Soldiers were rewarded for their "bravery".
(a) Common Noun (b) Proper Noun (c) Collective Noun (d) Abstract Noun

SECTION – D
APTITUDE

61. A term of this series is wrong. Identify the wrong term.
0, 1, 4, 10, 16, 25, 36, 49
(a) 4 (b) 10 (c) 25 (d) 49

62. If 'A ×B' means that 'A is the sister of B', 'A ÷ B' means that 'A is the daughter of B', 'A – B' means that 'A' is the son of B', then how P related to S in relationship P – Q × R ÷ S?
(a) Brother (b) Son (c) Grandson (d) None of these

63. Priyanshu walked 8 m in East, then he turned right and walked 3 m. Again he turned to the right and walked 12 m. How far is he now from the starting point?
(a) 20 m (b) 4 m (c) 5 m (d) 23 m

One figure of this series is missing. Choose the missing figure from the options.



(A)  (B)  (C)  (D) 

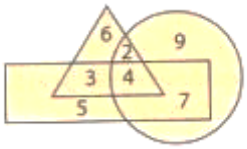
64. In a certain code language, the word CONFUSED is written as EMNBEFTV. How will the word SECLUDED be written in that language?
(a) RDBKEFEV (b) KBDRCDCT (c) KBDREFEV (d) MDFTCDCT

65. In a certain code language, 'what else can you do for me Mr Ajay's written as "you Mr what can Ajay else do me for'. How will 'anyone else who can do such favour to me' be written in that language?
(a) can to who anyone me else do favour such (b) can favour anyone who me else do to such
(c) can to anyone who me else do favour such (d) can to anyone who me do else favour such

66. Which of the following diagrams indicates the best relation amongst the following?
Lion, Dog and Snake

(a)  (b)  (c)  (d) 

67. In the given figure, triangle represents healthy people, rectangle represents old persons and circle represents men. What is the number of those men who are healthy but not old?



(a) 3 (b) 4 (c) 6 (d) 2

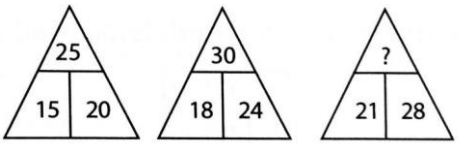
68. One of the words given in the options. CANNOT be formed by using the letters given in the question. Find out that word.: CONCENTRATE
(a) TREAT (b) CONCERN (c) TRAIN (d) CENTRE

79. Five Children are sitting in a row facing the North. S is sitting next to P but not T. K is sitting next to R, who is sitting on the extreme left and T is not sitting next to K. Who is/are sitting adjacent to S?
(a) K and P (b) R and P (c) Only P (d) P and T

70. If 'A' means '–' , 'B' means '+', 'C' means '×' , and 'D' means '÷', then 32 D 4 B 7 C 2 A 6 = ?
(a) 47 (b) 40 (c) 90 (d) 16

71. Ravi introduces Raman as the son of the brother of his father's wife. How is Raman related to Ravi?
(a) Son (b) Cousin (c) Uncle (d) Son-in-law

72. Find the missing number, if same rule is followed in all the figures.



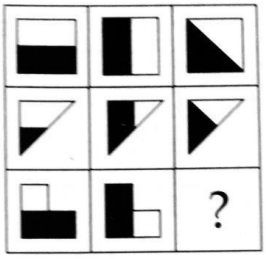
(a) 35 (b) 25 (c) 28 (d) 30

73. Which of the following interchanges in signs makes the given statement true?

$5 \times 15 \div 7 - 20 + 4 = 77$

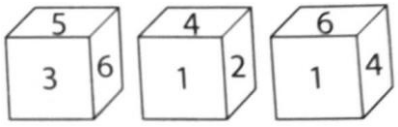
(a) − and + (b) + and × (c) ÷ and + (d) ÷ and ×

74. Select a figure from the options which completes the figure matrix.



(a)  (b)  (c)  (d) 

75. Three positions of a dice are shown. When 3 is at the bottom, which number will be on the top?



(a) 4 (b) 2 (c) 5 (d) 6