RRB Technician Grade III 2024 Previous Year Paper Shift 3

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MATHEMATICS

Q1. In a parallelogram two adjacent sides are in the ratio 2 : 3 and the perimeter is 60 cm. The length of each of the two shorter sides of this parallelogram is:

(a) 12 cm
(b) 13 cm
(c) 19 cm
(d) 18 cm

Q2. 1 kW power is equal to _____. (kW stands for kilowatt.)

(a) 1 J/s
(b) 1000 J/s
(c) 10 J/s
(d) 100 J/s

Q3. A and B invest Rs. 30,000 and Rs. 24,000, respectively, for one year. If they get a profit of Rs. 13,500, then the share of A in the profit will be:

(a) Rs. 7,500
(b) Rs. 9,450
(c) Rs. 9,000
(d) Rs. 6,000

Q4. Which of the following is NOT an example of homogeneous mixture?

(a) A mixture of copper sulphate in water
(b) A mixture of sugar in water
(c) A mixture of salt in water
(d) A mixture of iron nails in water

Q5. Consider a parallel combination of 3 resistors R1, R2 and R3, with currents I1, I2 and I3, respectively. Which of the following is true? (I = total current, Req = equivalent resistance of the circuit)

(a) Req = R1 + R2R3 / (R2 + R3)
(b) I = I1 + I2 + I3
(c) 1/I = 1/I1 + 1/I2 + 1/I3
(d) Req = R3 + R2R1 / (R2 + R1)

Q6. The power input in a circuit P can be expressed in terms of voltage V and current I in the circuit as follows:

(a) $P = V/I$
(b) $P = V^2/I$
(c) $P = VI$
(d) $P = V^2I$

Q7. What is the measure of each exterior angle of a regular octagon?

(a) 30°
(b) 60°
(c) 45°
(d) 80°

Q8. Who took oath as Chief Minister for the second time and the first to assume office after the scrapping of Article 370 in Jammu and Kashmir?

(a) Mehbooba Mufti
(b) Shri Farooq Abdullah
(c) Shri Manoj Sinha
(d) Shri Omar Abdullah

Q9. The danger signal lights are usually red in colour because red is:

(a) highest reflected by fog or smoke
(b) least scattered by fog or smoke
(c) not scattered at all by fog or smoke
(d) highest scattered by fog or smoke

Q10. Which of the following can increase the work done by a force on an object?

(a) Increasing the displacement.
(b) Reducing the displacement.
(c) Reducing the force.
(d) Reducing the mass.

Q11. Identify the INCORRECT statement about muscle tissue.

(a) Muscle tissues are made up of cuboidal cells.
(b) Special contractile proteins are present in muscles.
(c) Microscopes reveal alternate light and dark bands in voluntary muscles.
(d) The limbs have voluntary muscles.

Q12. The average of thirteen consecutive integers is 36. If two times the smallest of these 13 integers is added to the largest of these 13 integers, what will be the sum obtained?

(a) 102
(b) 115
(c) 121
(d) 110

Q13. In a certain code language, 'ROAM' is coded as '2835' and 'MORE' is coded as '4538'. What is the code for 'A' in the given code language?

(a) 3
(b) 8
(c) 5
(d) 2

Q14. If A means +, B means -, C means ×, D means ÷, then what will come in place of the question mark (?) in the following equation?

21 D 3 B 4 C 5 A 22 = ?

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

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Q15. What is the SI unit of universal gravitational constant G?

(a) N m^2/kg^{-1}
(b) N m^2/kgs^{-1}
(c) N kgm^2
(d) N m^2/kg^2

Q16. Which of the following unicellular organism change their shape?

(a) Yeast
(b) Amoeba
(c) Paramoecium
(d) Bacteria

Q17. While subtracting 4 from -3/13, the resultant value is:

(a) -53/13
(b) -55/13
(c) -51/13
(d) -54/13

Q18. Based on the English alphabetical order, three of the following four letter-cluster pairs are alike in a certain way and thus form a group. Which pair does not belong to that group?

(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter cluster.)

(a) OJ-MP
(b) SN-QU
(c) QL-OR
(d) UP-SV

Q19. Two pipes A and B can fill the tank in 40 and 60 minutes, respectively. Both the pipes are opened together. After how many minutes should the pipe B be turned off, so that the tank be fill in 30 minutes?

(a) 15 min
(b) 25 min
(c) 20 min
(d) 28 min

Q20. What is the title of the book by Nandan Kamath that won the Sports Book of the Year award in 2024?

(a) Playing It My Way
(b) Boundary Lab
(c) Spirit of Sports
(d) The Winning Mindset

Q21. What was India’s rank in the 2024 Global Hunger Index (GHI), a tool used to measure and track hunger at the global, regional and national levels?

(a) 105
(b) 119
(c) 111
(d) 110

Q22. Which of the following is/are called biological catalysts?

(a) Digestive juices
(b) Enzymes
(c) Hydrochloric acid
(d) Mucus

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Q23. Read the given statements and conclusions carefully. You have to take the given statements to be true even if they seem to be at variance from commonly known facts and decide which conclusion(s) logically follow(s) from the given statements.

Statements:

Some pulses are flours.

All biscuits are curds.

All biscuits are flours.

Conclusions:

(I) All flours are curds.

(II) Some biscuits are pulses.

(a) Neither conclusion (I) nor (II) follows.
(b) Only conclusion (I) follows.
(c) Only conclusion (II) follows.
(d) Both conclusions (I) and (II) follow.

Q24. The term 'Catenation' is used to define a unique property of carbon. Which of the following gives the correct definition of catenation?

(a) Unique ability to form bonds with other atoms of hydrogen.
(b) Unique ability to form bonds with other atoms of carbon.
(c) Unique ability to form bonds with other atoms of oxygen.
(d) Unique ability to form bonds with other atoms of nitrogen.

Q25. Which of the following forms a common passage for both the sperms and urine in males?

(a) Scrotum
(b) Urethra
(c) Urinary bladder
(d) Vas deferens

GENERAL INTELLIGENCE AND REASONING

Q26. The average of Kanchan's marks in 7 subjects is 75. Her average in six subjects excluding Science is 72. How many marks did she get in Science?

(a) 90
(b) 93
(c) 95
(d) 72

Q27. Which new initiative was launched by the government on National Sports Day 2024?

(a) Retired Sportsperson Empowerment Training (RESET) Programme
(b) National Fitness Challenge
(c) Fit India Movement
(d) National Sports Scholarship Scheme

Q28. What is the value of x for balanced chemical equation $3Fe + xH2O \rightarrow Fe3O4 + 4H2$?

(a) 5
(b) 1
(c) 3
(d) 4

Q29. $(a - b)^3 + (b - c)^3 + (c - a)^3 = ?$, which of the following should come in place of ? so that relation always holds true?

(a) $2(a - b)(b - c)(c - a)$
(b) $(a + b + c)(a^2 + b^2 + c^2 - ab - bc - ca)$
(c) $3(a - b)(b - c)(c - a)$
(d) $(a - b)(b - c)(c - a)$

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Q30. Refer to the given series and answer the question that follows (all numbers are single-digit numbers only, and all counting is to be done from left to right).

(Left) 2 2 4 8 2 4 6 4 2 6 8 8 6 7 4 5 3 6 2 8 7 1 3 3 6 8 6 4 (Right)

How many such odd digits are there, each of which is immediately preceded by a perfect square and immediately followed by an even digit?

(Note: 1 will be considered as a perfect square.)

(a) 1
(b) 0
(c) 4
(d) 2

Q31. The greatest number among √2, 3^(1/3), 4^(1/4) is:

(a) All are equal
(b) 4^(1/4)
(c) 3^(1/3)
(d) √2

Q32. Most mature plant cells have a _____ that helps to maintain the turgidity of the cell and store important substances including wastes.

(a) small ribosome
(b) large central vacuole
(c) leucoplasts
(d) chromoplasts

Q33. Find one-third part of a number whose one-third part exceeds the one-fifth part by 6.

(a) 24
(b) 15
(c) 5
(d) 45

Q34. Select the triad which follows the same pattern as that followed by the two triads given below. Both triads follow the same pattern.

UQ-VR-WY

RN-SO-TV

(a) NK-PL-QR
(b) OK-PL-QS
(c) NK-PM-QS
(d) OK-PM-QR

Q35. If the roots of a plant always grow downwards due to geotropism, then the growth of pollen tubes towards ovules is due to _____.

(a) phototropism
(b) geotropism
(c) hydrotropism
(d) chemotropism

Q36. Select the set in which the numbers are related in the same way as are the numbers of the following sets.

(NOTE: Operations should be performed on the whole numbers, without breaking down the numbers into its constituent digits. E.g. 13 – Operations on 13 such as adding/subtracting/multiplying etc. to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)

(12, 38, 26)

(50, 75, 25)

(a) (8, 32, 7)
(b) (21, 40, 15)

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(c) (9, 28, 16)
(d) (14, 42, 28)

Q37. Which of the following is NOT an abiotic component of the ecosystem?
(a) Rainfall
(b) Grass
(c) Wind
(d) Soil

Q38. The fragmentation method of reproduction is shown in _____.
(a) Spirogyra
(b) Amoeba
(c) Plasmodium
(d) Hydra

Q39. Select the set in which the numbers are related in the same way as are the numbers of the following sets.
(NOTE: Operations should be performed on the whole numbers, without breaking down the numbers into its constituent digits. E.g. 13 – Operations on 13 such as adding/subtracting/multiplying etc. to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)
(25, 5, 20)
(40, 8, 32)
(a) (100, 16, 64)
(b) (80, 16, 60)
(c) (80, 16, 64)
(d) (80, 14, 64)

Q40. At which event was Ram Charan awarded the title of Ambassador for Indian Art and Culture?
(a) Cannes Film Festival 2024
(b) Toronto International Film Festival 2024
(c) Indian Film Festival of Melbourne (IFFM) 2024
(d) International Film Festival of India 2024

Q41. ATP is broken down giving rise to a fixed amount of energy that can drive the endothermic reactions taking place in which cell organelle of a cell?
(a) Mitochondria
(b) Ribosome
(c) Chloroplast
(d) Lysosome

Q42. Refer to the given series and answer the question that follows (all numbers are single-digit numbers only, and all counting is to be done from left to right).
(Left) 2 1 6 8 3 9 5 2 7 6 3 2 9 9 7 3 9 6 4 6 3 2 6 2 2 0 3 4 7 2 (Right)
How many such even digits are there, each of which is immediately preceded by an odd digit and also immediately followed by an odd digit?
(a) 5
(b) 4
(c) 2
(d) 3

Q43. CaO(s) + H2O(l) → Ca(OH)2(aq) + Heat, this reaction is called:
(a) decomposition reaction
(b) combination reaction
(c) Wurtz fittig reaction
(d) Wurtz reaction

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Q44. In a certain code language, 'BEAM' is coded as '9483' and 'DAME' is coded as '9683'. What is the code for 'B' in the given code language?

(a) 4
(b) 8
(c) 9
(d) 3

Q45. Which of the following colours of light is bent through a minimum angle when passing through a glass prism?

(a) Green
(b) Violet
(c) Yellow
(d) Blue

Q46. When three parallel lines are cut by two transversals and the intercepts made by the first transversal are in the ratio 3 : 5, then the intercepts made by the second transversal are in the ratio _____.

(a) 3 : 5
(b) 9 : 25
(c) 3 : 2
(d) 1 : 1

Q47. If the matrix of bone cells contains calcium and phosphorus compounds, then what do we find in the matrix of cartilage?

(a) Proteins and sugars
(b) Proteins and fats
(c) Phosphorus and sugars
(d) Calcium and sugars

Q48. Based on the English alphabetical order, three of the following four letter-clusters are alike in a certain way and thus form a group. Which letter-cluster does not belong to that group?

(Note: The odd man out is not based on the number of consonants/vowels or their position in the letter cluster)

(a) EMS
(b) AHO
(c) HOV
(d) VCJ

Q49. The simplified value of √1.0816 is:

(a) 0.904
(b) 1.35
(c) 1.286
(d) 1.04

Q50. At what rate (in percentage) per annum will Rs. 1,300 give Rs. 520 as simple interest in 8 years?

(a) 8%
(b) 7%
(c) 4%
(d) 5%

BASIC SCIENCE AND ENGINEERING

Q51. Which of the following options should come in place of the question mark (?) in the given series based on the English alphabetical order?

HLG, KOJ, NRM, QUP, ?

(a) TXS
(b) XST

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(c) XTS
(d) TSX

Q52. A 70 cm long wire is to be cut into two pieces so that one piece will be 2⁄5 of the other. How many centimetres will the shorter piece be?
(a) 10 cm
(b) 25 cm
(c) 30 cm
(d) 20 cm

Q53. By which unit do the successive members of the homogenous series CH4, C2H6, and C3H8 differ from each other?
(a) CH3
(b) CH
(c) CH4
(d) CH2

Q54. Parbati Baruah was awarded the Padma Shri-2024. For which achievement is she known?
(a) Lion conservation
(b) Rhino conservation
(c) First woman mahout
(d) Tiger conservation

Q55. Two numbers are respectively 30% and 37% less than a third number. What percentage of the first number is the second number?
(a) 10%
(b) 80%
(c) 90%
(d) 20%

Q56. Nayab Singh Saini was appointed the Chief Minister of _____ in October 2024.
(a) Himachal Pradesh
(b) Haryana
(c) Jharkhand
(d) Punjab

Q57. Simplify the given expression.
10 + 8 + 6 - 48 ÷ (4 × 6)
(a) -1
(b) 22
(c) 26
(d) 12

Q58. Seven people, A, B, E, G, P, Q and R, are sitting in a row, facing north. Only two people sit to the left of B. Only three people sit between B and R. P sits second to the right of B. Only two people sit between P and A. G sits at some place to the right of E but at some place to the left of Q. How many people sit to the right of G?
(a) Three
(b) Four
(c) One
(d) Two

Q59. D, E, F, G, L, M and N are sitting around a circular table facing the centre. F sits third to the left of L. N sits second to the left of E. L is an immediate neighbour of both D and N. G is not an immediate neighbour of F. How many people sit between M and N when counted from the right of M?
(a) Four
(b) Three
(c) One

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(d) Two

Q60. Which of the following options should come in place of the question mark (?) in the given series based on the English alphabetical order?

MPL, ORN, QTP, SVR, ?

(a) UXT
(b) XTU
(c) UTX
(d) XUT

Q61. After fertilisation, which of the following develops a tough coat, is gradually converted into a seed and the zygote divides several times to form an embryo within it?

(a) Ovary
(b) Gynoecium
(c) Ovule
(d) Pistil

Q62. Which of the following reactions is an example of double displacement reaction?

(a) $Fe(s) + CuSO4 (aq) \rightarrow FeSO4 (aq) + Cu(s)$
(b) $Na2\ SO4 (aq) + BaCl2 (aq) \rightarrow BaSO4 (s) + 2NaCl (aq)$
(c) $Pb(s) + CuCl2 (aq) \rightarrow PbCl2 (aq) + Cu(s)$
(d) $Zn(s) + CuSO4 (aq) \rightarrow ZnSO4 (aq) + Cu(s)$

Q63. The value of $\sin^2 \theta + \cos^2 \theta - (\sec^2 \theta - \tan^2 \theta) + \tan \theta \cos \theta + \sin \theta$ is _____.

(a) $\sec^2 \theta$
(b) $2\sin\theta$
(c) -1
(d) 0

Q64. Ramesh has borrowed an amount of Rs. 2,00,000 from a bank to start a business. How much simple interest will he pay at a rate of 11% per annum after 2 years?

(a) Rs. 44,000
(b) Rs. 44,600
(c) Rs. 45,500
(d) Rs. 46,000

Q65. After getting two successive discounts, a shirt with a list price of Rs. 150 is available at Rs. 105. If the second discount is 12.5%, then find the first discount.

(a) 25%
(b) 20%
(c) 15%
(d) 12%

Q66. Which of the following banks launched a special debit card for visually impaired customers in October 2024?

(a) State Bank of India
(b) Punjab National Bank
(c) HDFC Bank
(d) Canara Bank

Q67. The cause of being the refractive index(μ) of transparent medium > 1, is:

(a) Speed of light in vacuum > speed of light in transparent medium
(b) Speed of light in vacuum < speed of light in transparent medium
(c) Wavelength of light gets change as it moves from denser to rarer medium
(d) Speed of light in vacuum = speed of light in transparent medium

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Q68. If the cross-sectional area of a conductor is doubled, other factors remaining the same, the resistivity of the conductor will be:

(a) same
(b) one fourth
(c) halved
(d) doubled

Q69. Which of the following statements is correct for a homogeneous mixture of sugar in water?

(a) Water is the solvent.
(b) Sugar is the solvent.
(c) Water is the solute.
(d) Both water and sugar are solvents.

Q70. Evaluate the given expression.

$5 \times 3 - 12 \div 4 + 8$

(a) 4
(b) 3
(c) 20
(d) 14

Q71. Swarna runs at a speed of 10 km/h. How long will she take to cover 200 m?

(a) 120 seconds
(b) 54 seconds
(c) 90 seconds
(d) 72 seconds

Q72. Which of the following elements does NOT usually form molecules and is found in its atomic form?

(a) Hydrogen
(b) Helium
(c) Nitrogen
(d) Oxygen

Q73. Read the given statements and conclusions carefully. You have to take the given statements to be true even if they seem to be at variance from commonly known facts and decide which conclusion(s) logically follow(s) from the given statements.

Statements:

Some games are boards.

No board is a dice.

No remote is a game.

Conclusions:

(I) No game is a dice.

(II) Some remotes are boards.

(a) Only conclusion (II) follows.
(b) Both conclusions (I) and (II) follow.
(c) Neither conclusion (I) nor (II) follows.
(d) Only conclusion (I) follows.

Q74. A retailer permits a trade discount of 25%, followed by a cash discount of 8%, on an article. The net percentage of discount is:

(a) 33%
(b) 34%
(c) 32%
(d) 31%

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Q75. Lavanya got married 10 years ago. Now her age is 1 1⁄5 times her age at the time of marriage. Her son's present age is one-tenth of her present age. Find her son's present age.

(a) 6 years
(b) 5 years
(c) 20 years
(d) 12 years

Q76. Which of the following scientists proposed the ‘Law of Constant Proportions’?

(a) JJ Thomson
(b) Joseph Proust
(c) Ernest Rutherford
(d) E Goldstein

Q77. Refer to the given series and answer the question that follows (all numbers are single-digit numbers only, and all counting is to be done from left to right).

(Left) 3 5 5 7 1 6 1 8 8 7 6 2 2 5 9 8 1 1 5 3 3 2 8 1 7 9 2 (Right)

How many such even digits are there each of which is immediately preceded by a perfect square and immediately followed by an odd digit? (Note: 1 will be considered as a perfect square.)

(a) 0
(b) 2
(c) 3
(d) 4

Q78. Which of the following describes dendrites?

(a) Short and branched
(b) Long and branched
(c) Short and unbranched
(d) Long and unbranched

Q79. In which of the following situations is potential energy being stored?

(a) Pushing a vehicle on the plane road
(b) Moving a pencil across a table
(c) Stretching a rubber band
(d) Lighting a matchstick

Q80. Two numbers are less than a third number by 30% and 37%, respectively. By what percentage is the second number less than the first?

(a) 15%
(b) 8%
(c) 12%
(d) 10%

GENERAL AWARENESS

Q81. On 30th September 2024, Union Minister for Information and Broadcasting Ashwini Vaishnaw announced that the jury had selected veteran film actor _____ as the recipient of the prestigious Dadasaheb Phalke Lifetime Achievement Award for 2022.

(a) Rajinikanth
(b) Mithun Chakraborty
(c) Shah Rukh Khan
(d) Asha Bhosle

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Q82. In a certain code language,

'A + B' means 'A is the mother of B',

'A – B' means 'A is the brother of B',

'A x B' means 'A is the wife of B'

and 'A ÷ B' means 'A is the father of B'.

How is H related to L if 'H + J x K ÷ M – L'?

(a) Wife's mother
(b) Mother's sister
(c) Mother's mother
(d) Father's mother

Q83. The centre of curvature of a concave mirror lies _____ the mirror, whereas it lies _____ the mirror for a convex mirror.

(a) behind, behind
(b) behind, in front of
(c) in front of, in front of
(d) in front of, behind

Q84. Which of the following options represents the number of neutrons present in aluminium?

(a) 13
(b) 14
(c) 15
(d) 27

Q85. SDFG is related to YJKM in a certain way based on the English alphabetical order. In the same way, QBZE is related to WHEK. To which of the following options is ITOW related, following the same logic?

(a) OZTC
(b) HBCT
(c) RYOM
(d) MJVY

Q86. Identify the name of an alloy formed when mix of copper and tin (Cu and Sn)?

(a) Brass
(b) Solder
(c) Gold
(d) Bronze

Q87. Which of the following options should come in place of the question mark (?) in the given series to make it logically complete?

81, 108.6, 136.2, 163.8, ?

(a) 198.2
(b) 191.4
(c) 183.6
(d) 174.8

Q88. The motion of the moon around the earth is due to the:

(a) Centripetal force
(b) Coriolis force
(c) Coulomb force
(d) Centrifugal force

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Q89. Select the correct statement related to the characteristics of prokaryotic cell.

(a) It has more than one chromosome.
(b) Nuclear region is well defined and surrounded by nuclear membrane.
(c) It has a single chromosome.
(d) Membrane bound cell organelles are present.

Q90. Gautam starts from Point A and drives 30 km towards South. He then takes a left turn, drives 15 km, turns left and drives 42 km. He then takes a left turn and drives 7 km. He takes a final left turn, drives 12 km and stops at Point P. How far (shortest distance) and towards which direction should he drive in order to reach Point A again?

(All turns are 90 degree turns only unless otherwise specified.)

(a) 5 km towards West
(b) 8 km towards West
(c) 10 km towards West
(d) 10 km towards East

Q91. Which of the following chemical reactions represents the displacement reaction?

(a) $2AgCl(s) \rightarrow 2Ag(s) + Cl2(g)$
(b) $C(s) + O2(g) \rightarrow CO2(g)$
(c) $CaO(s) + H2O(l) \rightarrow Ca(OH)2(aq)$
(d) $Zn(s) + CuSO4(aq) \rightarrow ZnSO4(aq) + Cu(s)$

Q92. What will come in the place of the question mark '?' in the following equation, if '+' and '÷' and '-' and '×' are interchanged?

11 + 12 ÷ 4 - 5 × 6 = ?

(a) 22
(b) 28
(c) 16
(d) 20

Q93. B, C, D, E, F, K and L are sitting around a circular table, facing the centre. D sits to the immediate right of E. Only three people sit between E and L. B sits to the immediate right of C. Only three people sit between D and F when counted from the left of D. How many people sit between K and C when counted from the left of C?

(a) Four
(b) One
(c) Two
(d) Three

Q94. Study the following chart and answer the question that follows.

What is the absolute difference between the export by company X in February and export by company Y in April?

(a) 10 crore
(b) 20 crore
(c) 5 crores
(d) 15 crore

Q95. Which of the following after fertilisation grows rapidly and ripens to form a fruit. Meanwhile, the petals, sepals, stamens, style and stigma may shrivel and fall off?

(a) Ovule
(b) Ovary
(c) Gynoecium
(d) Pistil

Q96. In this question, a statement is followed by two courses of actions, numbered I and II. You must assume everything in the statement to be true and on the basis of the information given in the statement, decide which of the course of action/s logically follow for pursuing.

Statement – In City X, the number of car accidents has spiked recently due to poor road conditions and lack of

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adequate signage.

I. The city should launch an awareness campaign to educate drivers on safe driving practices.

II. Immediate Road repair and installation of proper signage should be carried out.

(a) Only I follows
(b) Neither I nor II follows
(c) Both I and II follow
(d) Only II follows

Q97. TakeMe2Space (TM2Space), an innovative space technology firm, is based in which city of India?

(a) New Delhi
(b) Kolkata
(c) Hyderabad
(d) Chennai

Q98. Where should the object be placed around the concave mirror to ensure that the size of the image is the same as the size of the object?

(a) Between focus F and centre of curvature C
(b) At focus F
(c) At C, centre of curvature
(d) Between focus F and pole P

Q99. Two pipes C and D can fill a tank in 6 hours and 9 hours, respectively. They are opened alternately for 1 hour each, starting with C first. In what duration, will the tank be filled?

(a) 5 hours
(b) 6 hours
(c) 8 hours
(d) 7 hours

Q100. A student in a lab noted the pH value of a solution to be 10. Which of the following statements is correct about a solution?

(a) A solution is basic with a high hydrogen ion concentration.
(b) A solution is acidic with a high hydrogen ion concentration.
(c) A solution is basic with a high hydroxide ion concentration.
(d) A solution is acidic with a high hydroxide ion concentration.

ANSWER KEY

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

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