Question Booklet No.

200011

Invigilator's signature

R/A/PR EXAM.
2021

GENERAL KNOWLEDGE AND ELEMENTARY MATHEMATICS

Time : 2 Hours   Maximum Marks : 100

ROLL NO. ☐☐☐☐☐☐

INSTRUCTIONS FOR CANDIDATES

1. Immediately after the commencement of the Examination, candidate should check that this Booklet **DOES NOT** have any unprinted, torn or missing pages/Sl. No. etc. If any defect is found, get it replaced by a Complete Question Booklet.

2. This question paper consists of 100 (objective type) questions. It has two parts, PART—A (General Knowledge) and PART—B (Elementary Mathematics).

3. DO NOT write your Name or anything else in the Question Booklet except your Roll No. and signature in the space provided.

4. Enter correct and entire digits of your Roll No. in the appropriate boxes and darken the corresponding bubbles in the OMR RESPONSE SHEET.

5. DO NOT handle your OMR RESPONSE SHEET in such a manner as to mutilate, fold, etc.

6. This Question Booklet contains **100** questions carrying *1* mark each. Each question contains four responses. Choose **only one response/answer** for each question and darken the appropriate bubble on the OMR RESPONSE SHEET.

7. The Centre Supdt./Asstt. Centre Supdt. of the Examination Hall will be the time-keeper and his/her decision in this regard is final.

8. Candidates are strictly prohibited to possess any book, notebook or loose paper, calculator, mobile phone, electronic gadgets etc., inside the Examination Hall, except his/her Admit Card and writing materials only.

9. Immediately after the final bell indicating the closure of the Examination, stop markings. Be seated till the OMR RESPONSE SHEET is collected. After handing over the OMR RESPONSE SHEET to the Invigilator and after you have been permitted by the Invigilator to leave, you may leave the examination hall.

10. Violation of any of the above rules will render the Candidate liable to be expelled and disqualified from the examination and according to the nature and gravity of his/her offence, he/she may be debarred from future Examinations and Interviews to be conducted by the Commission and other such organizations (i.e. UPSC, SSC and SPSCs).

NB : CANDIDATES ARE ALLOWED TO TAKE THIS QUESTION BOOKLET ONLY AFTER COMPLETION OF 2 (TWO) HOURS EXAMINATION TIME

DO NOT OPEN THE SEAL UNTIL INSTRUCTED TO DO SO

R/A/PR EXAM. 2021/**124**

SEAL

PART—A
GENERAL KNOWLEDGE

1. Who among the following was a Padma Shri awardee folk musician?

(A) Rangasami L. Kashyap

(B) Sonam Tshering Lepcha

(C) Mangal Singh Hazowary

(D) Tsultrim Chonjor

2. Which Indian company received the first consignment of carbon-neutral oil from the USA?

(A) Tata Group

(B) Adani Wilmar

(C) Reliance Industries Ltd.

(D) Mahindra and Mahindra

3. When is ISRO scheduled to launch its first unmanned space mission of Gaganyaan?

(A) September 2021

(B) December 2021

(C) March 2022

(D) June 2022

4. What is 'Rakshita'?

(A) Defence satellite launched by India

(B) An indigenous vaccine under trial

(C) A new app for women protection

(D) Bike ambulance launched by DRDO and CRPF

5. Which nation has been elected as a member of the United Nations Commission on Status of Women for the period 2021–2025?

(A) India

(B) Zimbabwe

(C) Sri Lanka

(D) Malaysia

6. Which Indian State has launched 'Mission Shakti'?

(A) Madhya Pradesh

(B) Karnataka

(C) Uttar Pradesh

(D) Maharashtra

7. Which of the following novels is based on Arunachal Pradesh?

(A) *A Bowstring Winter*

(B) *Two States*

(C) *The Black Hill*

(D) *Bitter Wormwood*

8. When is World Mental Health Day celebrated?

(A) 10th October

(B) 11th October

(C) 14th November

(D) 18th December

9. What is the rank of India in Bloomberg Innovation Index, 2021?

(A) 105th

(B) 50th

(C) 74th

(D) 7th

10. Among the Northeast States, what is the rank of Arunachal Pradesh in terms of Human Capital as per the India Innovation Report 2020?

(A) 3rd

(B) 4th

(C) 5th

(D) 6th

11. Which team won the 10th National Ice Hockey Championship, 2021?

(A) ITBP

(B) Railways

(C) BSF

(D) Delhi Police

12. Which of the following awards is conferred for lifetime contribution towards sports?

(A) Dronacharya Award

(B) Arjuna Award

(C) National Sports Award

(D) Dhyan Chand Award

13. How much has been allocated to the Indian Railways under Budget 2021 for boosting of infrastructure?

(A) ₹ 1.1 lakh crore

(B) ₹ 2.1 lakh crore

(C) ₹ 2.2 lakh crore

(D) ₹ 3.0 lakh crore

14. Which nation's military contingent took part in Republic Day Parade, 2021?

(A) Bangladesh

(B) Sri Lanka

(C) Spain

(D) France

15. Which of the following countries honoured Prime Minister Sri Narendra Modi with the 'Legion of Merit' award?

(A) Russia

(B) USA

(C) Afghanistan

(D) Canada

16. Who was awarded the ICC Spirit of Cricket Award of the Decade?

(A) Virat Kohli

(B) Steve Smith

(C) MS Dhoni

(D) Chris Gayle

17. What is the focus of "India@75 Summit --Mission 2022"?

(A) Youth empowerment

(B) Reinventing technology in India

(C) Gender equality

(D) Green energy

18. Which country has signed a MOU with India for cooperation in the field of geology and mineral resources?

(A) Finland

(B) Japan

(C) Indonesia

(D) Yugoslavia

19. Which international organization has partnered with the Ministry of Youth Affairs and Sports to strengthen the Government of India's resolution to mobilize 1 crore youth volunteers for Atmanirbhar Bharat?

(A) WHO

(B) IMF

(C) UNICEF

(D) World Bank

20. What is CRISPR test used for?

(A) Detection of bacterial immunology

(B) Detection of Novel Coronavirus

(C) Detection of protein synthesis in insects

(D) Detection of light sensitivity

21. Which Article of the Indian Constitution bars interference in poll matters set in motion by the State Election Commissions?

(A) Article 324

(B) Article 21

(C) Article 243–O

(D) Article 243(C3)

22. What is meant by 'zoonotic disease'?

(A) Infectious disease that is transmitted between animals and humans

(B) Disease that affects animals kept in zoos

(C) Disease that can be cured with animal proteins

(D) Disease that have no specific nomenclature

23. What is the full form of UMANG?

(A) Unified Manually Assisted Naval Gadget

(B) Unified Mobile Application for New-age Governance

(C) Unidentified Manual Assistance for Navigation Guide

(D) Unified Manned Artificial Navigation Guide

24. Who is the present Chairman of TRAI?

(A) Meenakshi Gupta

(B) V. Raghunandan

(C) Rajiv Sinha

(D) Dr. P. D. Vaghela

25. Which of the following is **not** an infectious disease?

(A) Cancer

(B) Diphtheria

(C) Influenza

(D) Giardiasis

26. What is the name of the flagship programme of the Government of India for improving nutrition outcomes for children, pregnant women and lactating mothers?

(A) Kishori Shakti Yojana

(B) Pradhan Mantri Surakshit Matritva Abhiyaan

(C) POSHAN Abhiyaan

(D) PMKVY

27. Who is the Secretary–General of the United Nations Organization?

(A) Filippo Grandi

(B) Kofi Annan

(C) Volkan Bozkir

(D) António Guterres

28. What is the name of Barack Obama's autobiography?

(A) *An American Life*

(B) *A Promised Land*

(C) *A World Transformed*

(D) *Decision Point*

29. Which of the following awards is given to recognize 'Yeoman's service rendered by individuals and institutions to provide succor and uplift the vast majority of our population dependent on agriculture'?

(A) Gramodaya Bandhu Mitra Puraskar

(B) Vyas Samman

(C) Premchand Fellowship

(D) Champions of Change Award

30. Who was the first Governor of Arunachal Pradesh?

(A) Sri R. D. Pradhan

(B) Dr. Gopal Singh

(C) Sri Bhishma Narain Singh

(D) Sri Mata Prasad

31. Who is the recipient of Mahavir Chakra 2021?

(A) Colonel Bikkumalla Santosh Babu

(B) Subedar Sanjeev Kumar

(C) Major Anuj Sood

(D) Havildar Tejinder Singh

32. Vanadium, which has been found in Arunachal Pradesh, is a

(A) salt

(B) precious alloy
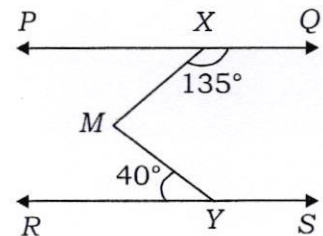
(C) rare metal

(D) reactive compound

33. Which nation hosted the recent G7 Summit in 2021?

(A) Canada

(B) India

(C) England

(D) USA

34. Which Indian state has launched hot air balloon safari in tiger reserve?

(A) Gujarat

(B) Madhya Pradesh

(C) Uttarakhand

(D) Assam

35. Indian government has drawn a five-year action plan for the conservation of which of the following bird species?

(A) Vultures

(B) Siberian Crane

(C) Eagles

(D) Crows

36. Which state receives the maximum rainfall in India?

(A) Arunachal Pradesh

(B) Sikkim

(C) Odisha

(D) Meghalaya

37. What is the maximum number of judges for the Supreme Court of India including the Chief Justice?

(A) 30

(B) 31

(C) 33

(D) 34

38. How many members are nominated to the Rajya Sabha?

(A) 10

(B) 11

(C) 12

(D) 13

39. Which state in India has the highest literacy rate as per 2011 census?

(A) Maharashtra

(B) Kerala

(C) Mizoram

(D) Sikkim

40. Which element is symbolized by 'Pb' in Chemistry?

(A) Lead

(B) Gold

(C) Silver

(D) Mercury

41. Which Indian Physicist worked with Albert Einstein and discovered a new particle?

(A) Sir C. V. Raman

(B) Meghnad Saha

(C) S. N. Bose

(D) Vikram Sarabhai

42. Garba is a dance form from which state?

(A) Karnataka

(B) Gujarat

(C) Kerala

(D) Tamil Nadu

43. Which city has the highest carbon footprint in the country?

(A) Delhi

(B) Mumbai

(C) Kolkata

(D) Vizag

44. Water from which of the following sources has maximum salt concentration?

(A) Perennial rivers

(B) Glacial lake

(C) Mountain spring

(D) Sea

45. Which country produces maximum greenhouse gas in the world?

(A) China

(B) America

(C) India

(D) UK

46. Which Indian state has more forest cover than Arunachal Pradesh?

(A) Jharkhand

(B) Chhattisgarh

(C) Gujarat

(D) Madhya Pradesh

47. Which organization publishes the Living Planet Report?

(A) World Wide Fund for Nature

(B) UNESCO

(C) National Geographic Society

(D) Springer Nature

48. Which of the following is a flagship programme of the Government of Arunachal Pradesh?

(A) Sukanya Samriddhi Yojana

(B) Ujala

(C) Dulari Kanya

(D) NSAP

49. Which state has the best Male-Female Gender Ratio in India?

(A) Nagaland

(B) Arunachal Pradesh

(C) Rajasthan

(D) Gujarat

50. What was the theme of National Youth Day 2021?

(A) YUVAAH — Utsah Naye Bharat Ka

(B) Channelizing Youth Power for Nation Building

(C) Transforming Education

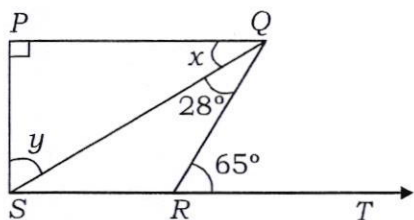(D) Sankalp Se Siddhi

PART—B
ELEMENTARY MATHEMATICS

51. The four rational numbers between 1 and 2 are

(A) $(3/2, 5/2, 7/2, 9/2)$

(B) $(3/2, 5/4, 11/8, 1/4)$

(C) $(3/2, 5/4, 11/8, 13/8)$

(D) None of the above

52. Square root of $\left(4 + 2\sqrt{3}\right)$ is

(A) $\pm\left(\sqrt{5} - 1\right)$

(B) $\pm\left(\sqrt{3} + 1\right)$

(C) $\pm\left(\sqrt{3} - 1\right)$

(D) None of the above

53. The zero of the polynomial $P(x) = 8x^3 - 24x^2 + 24x - 8$ is

(A) 1

(B) 0

(C) 2

(D) −2

54. The distance of a point from the Y-axis and the X-axis are respectively called

(A) ordinate and abscissa

(B) abscissa and ordinate

(C) vertical distance and horizontal distance

(D) None of the above

55. The linear equation $2x + \sqrt{7}y = 5$ has/have

(A) a unique solution

(B) two solutions

(C) no solution

(D) infinitely many solutions

56. The graph of the equation $7x + 3y = 21$ intersects X-axis and Y-axis at the points

(A) $(1, 0)$ and $(0, 7)$

(B) $(3, 0)$ and $(0, 7)$

(C) $(7, 0)$ and $(0, 3)$

(D) $(0, 0)$ and $(3, 7)$

57. If the sum of two adjacent angles is 180°, then they are called

(A) vertically opposite angles

(B) linear pair of angles

(C) complementary angles

(D) alternate angles

58. In the following figure, if $PQ \parallel RS$, $\angle MXQ = 135°$ and $\angle MYR = 40°$, then $\angle XMY = ?$

(A) 85°

(B) 45°

(C) 75°

(D) None of the above

59. In the figure given below, if $PQ \perp PS$, $PQ \parallel SR$, $\angle SQR = 28°$ and $\angle QRT = 65°$, then the values of x and y will be

(A) $x = 53°$, $y = 37°$

(B) $x = 45°$, $y = 45°$

(C) $x = 65°$, $y = 25°$

(D) $x = 37°$, $y = 53°$

60. The area of a trapezium, length of whose parallel sides are given as 22 cm and 12 cm and the length of the other sides are 14 cm each, is
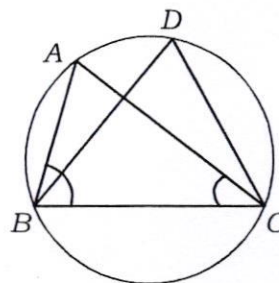
(A) $51\sqrt{19}\,cm^2$

(B) $45\sqrt{17}\,cm^2$

(C) $37\sqrt{13}\,cm^2$

(D) None of the above

61. An arc is a _____ when its ends are the ends of a diameter.

(A) diameter

(B) semi-circle

(C) chord

(D) secant

62. The area of triangle, with given two sides 18cm and 10cm respectively and perimeter equal to 42 cm, is

(A) $20\sqrt{11}\,cm^2$

(B) $19\sqrt{11}\,cm^2$

(C) $22\sqrt{11}\,cm^2$

(D) $21\sqrt{11}\,cm^2$

63. In the figure given below $\angle ABC = 69°$, $\angle ACB = 31°$, then $\angle BDC = ?$

(A) 90°

(B) 100°

(C) 71°

(D) None of the above

64. The length, breadth and height of a room are 5 m, 4 m and 3 m respectively. The cost of whitewashing the walls of the room and the ceiling at the rate of ₹ 7·50 per m^2 will be

(A) ₹ 490

(B) ₹ 480

(C) ₹ 475

(D) ₹ 555

65. The diameter of a roller is 84 cm and its length is 120 cm. It takes 500 complete revolutions to move once over to level a playground. Then the area of the playground in m^2, is

(A) 1580

(B) 1584

(C) 1400

(D) 1600

66. The following observations have been arranged in ascending order. If the median of the data is 63, find the value of x :

   29, 32, 48, 50, x, $x + 2$, 72, 78, 84, 95

(A) 62

(B) 63

(C) 64

(D) 65

67. The record of a weather station shows that out of the past 250 consecutive days, its weather forecasts were correct 175 times. What is the probability that it was not correct on a given day?

(A) 0·4

(B) 0·3

(C) 0·2

(D) None of the above

68. The denominator of a rational number is greater than its numerator by 8. If the numerator is increased by 17 and the denominator is decreased by 1, the number obtained is 3/2. What is the rational number?

(A) 3/11

(B) 9/117

(C) 11/19

(D) 13/21

69. If slant height of a cone is 21 cm and diameter of its base is 24 cm, the total surface area of the cone is

(A) 1200·77 sq.cm

(B) 1177 sq.cm

(C) 1222·77 sq.cm

(D) 1244·57 sq.cm

70. How many sides does a regular polygon have if each of its interior angles is 165°?

(A) 24

(B) 23

(C) 20

(D) 19

71. Which one of the following is **not** a Pythagorean triplet?

(A) (12, 35, 37)

(B) (8, 15, 16)

(C) (6, 8, 10)

(D) (5, 12, 13)

72. The greatest 4-digit perfect square number is

(A) 8100

(B) 9604

(C) 6400

(D) 9801

73. $\sqrt[3]{1}$ = ?

(A) 1, 1, 1

(B) 1, −1, 1

(C) 1, −1, −1

(D) None of the above

74. The cost of an article was ₹ 15,500. ₹ 450 was spent on its repairs. If it is sold for a profit of 15%, then the selling price of the article was

(A) ₹ 18250·50

(B) ₹ 18342·50

(C) ₹ 17540·50

(D) ₹ 17875·40

75. What amount is to be repaid on a loan of ₹ 12,000 for $1\frac{1}{2}$ years at 10% per annum compounded half-yearly?

(A) ₹ 13891·50

(B) ₹ 14250·25

(C) ₹ 14750·50

(D) ₹ 13750·75

76. The population of a city was 20,000 in the year 2017. It increased at the rate of 5% p.a. Find the population at the end of the year 2020.

(A) 23150

(B) 24000

(C) 23153

(D) 23157

77. Find the value of $t^6 + \dfrac{1}{t^6}$, if $t - \dfrac{1}{t} = 2$.

(A) 196

(B) −240

(C) 192

(D) 198

78. Identify the equation from the following :

(A) $a^2 - b^2 = (a + b)(a - b)$

(B) $x^2 - 2xa + a^2 = 4$

(C) $x^3 - 1 = (x - 1)(x^2 + x + 1)$

(D) $xy = \left(\dfrac{x+y}{2}\right)^2 - \left(\dfrac{x-y}{2}\right)^2$

79. For a polyhedron, if F stands for number of faces, V stands for number of vertices and E stands for number of edges, then which of the following relationships is named as Euler's formula?

(A) $F + V = E + 2$

(B) $F + E = V + 2$

(C) $V + E = F + 2$

(D) $F + V = E - 2$

80. Intersection of a sphere by a plane is

(A) a circle

(B) a sphere

(C) a semi-circle

(D) a hemisphere

81. The number of edges that a rectangular parallelepiped has, is equal to

(A) 6

(B) 8

(C) 10

(D) 12

82. The height of a circular cylinder having radius 7 cm and the total surface area 968 cm^2, is

(A) 15 cm

(B) 18 cm

(C) 19 cm

(D) None of the above

83. Water is poured into a cuboidal reservoir at the rate of 60 litres per minute. If the volume of the reservoir is 108 m^3, then how many hours are required for filling the reservoir?

(A) 23 hours

(B) 27 hours

(C) 30 hours

(D) 33 hours

84. The value of $\dfrac{3^{-5} \times 10^{-5} \times 125}{5^{-7} \times 6^{-5}}$ is

(A) 3225

(B) 3125

(C) 4225

(D) 3250

85. The scale of a map is given as 1 : 30000000. Two cities are 4 cm apart on the map. Then the actual distance between the cities is

(A) 1200 km

(B) 1125 km

(C) 1350 km

(D) 1175 km

86. If 15 workers can finish a task in 42 hours, then the number of workers required to complete the same task in 30 hours is

(A) 21

(B) 22

(C) 23

(D) 25

87. Factorize the following :

$$25a^2 - 4b^2 + 28bc - 49c^2$$

(A) $(5a + 2b + 7c)\,(5a + 2b - 7c)$

(B) $(5a + 2b + 7c)\,(5a - 2b - 7c)$

(C) $(5a - 7c - 2b)\,(5a - 7c + 2b)$

(D) $(5a - 2b + 7c)\,(5a + 2b - 7c)$

88. Additive identity for the set of integers is

(A) 1

(B) −1

(C) 0

(D) 0 and 1

89. The first known proof that 'the circle is bisected by its diameter' was given by

(A) Pythagoras

(B) Thales

(C) Euclid

(D) Hypatia

90. Multiplicative inverse of −2 is

(A) 2

(B) −1/2

(C) 1/2

(D) None of the above

91. For any integer a, $a \div 0$ is equal to

(A) 0

(B) a

(C) Not defined

(D) None of the above

92. Improper fraction is a fraction where

(A) numerator > denominator

(B) numerator < denominator

(C) numerator = denominator

(D) numerator / denominator < 1

93. Choose the correct option from the following :

(A) $0\cdot8 > 0\cdot88$

(B) $0\cdot8 < 0\cdot88$

(C) $0\cdot8 = 0\cdot88$

(D) None of the above

94. Laxmi's father is 49 years old. He is 4 years older than three times Laxmi's age. What is laxmi's age?

(A) 15 years

(B) 17 years

(C) 19 years

(D) 20 years

95. A tree is broken at a height of 5 m from the ground and its top touches the ground at a distance of 12 m from the base of the tree. What was the original height of the tree?

(A) 13 m

(B) 17 m

(C) 18 m

(D) 20 m

96. Reena's mother said, to make idlis, you must take two parts rice and one part urad dal. What percentage of such a mixture would be rice and what percentage would be urad dal?

(A) Rice : 75%, Urad dal : 25%

(B) Rice : 60%, Urad dal : 20%

(C) Rice : $66\frac{2}{3}$%, Urad dal : $33\frac{1}{3}$%

(D) None of the above

97. Selling price of a toy car is ₹ 540. If the profit made by the shopkeeper is 20%, what is the cost price of this toy?

(A) ₹ 480

(B) ₹ 470

(C) ₹ 490

(D) ₹ 450

98. The area of a square park is the same as of a rectangular park. If the side of the square park is 60 m and the length of the rectangular park is 90 m, then what is the breadth of the rectangular park?

(A) 50 m

(B) 40 m

(C) 30 m

(D) 20 m

99. The area of a circular garden having diameter 9·8 m is

(A) 78·25 m^2

(B) 70·45 m^2

(C) 78 m^2

(D) 75·46 m^2

100. What should be subtracted from $2a + 8b + 10$ to get $-3a + 7b + 16$?

(A) $5a + b - 6$

(B) $5a + b - 10$

(C) $-5a - b + 6$

(D) $5a - b - 6$