RGUKT CET – 2020
MODEL PAPER

Candidate's Roll number

Booklet Code:

Time Allowed: 120 Minutes   **Total Questions : 100**   **Maximum Marks : 100**

Instructions to Candidates

Read the following instructions carefully before you answer the questions. Answers are to be SHADED on a SEPARATE OMR Answer sheet given, with **Black or Blue Ball Point Pen**. Read the **Instructions printed on the OMR sheet carefully before answering the questions.**

1. The candidate Roll No. and all other relevant information is printed on the OMR.
2. This test consists of 100 questions(Q.Nos. 1 to 50 Mathematics, 51 to 75 Physical Science, 76 to 100 Biological Science).
3. Each question carries **one** mark.
4. Blank pages are provided for rough work at the end of question paper.
5. **REMEMBER YOU HAVE TO SHADE ANSWERS ON A SEPARATE OMR ANSWER SHEET PROVIDED**
6. Shade the correct answer in the OMR Sheet for the corresponding question.
7. The candidate **need not return** this Question Paper booklet and can take it after completion of the examination. No candidate should leave the examination hall before the end of the examination.
8. Now turn to the next page and start answering the questions.

MATHEMATICS

1. The HCF of a^2b^3c and ab^2c where a,b and c are prime numbers is   [   ]
  A) $a^2b^3c^2$ B) $a^2b^2c^2$ C) ab^2c D) a^2b^3c

2. The non terminating and repeating decimal among the following is   [   ]
   A) 13/3125   B) 15/1600   C) 29/343   D) 143/110

3. $2 \log (5/8) + \log (128/125) + \log(5/2) =$ _____   [   ]
  A) 1   B) 0   C) -1   D) 2

4. A= { x/xεN, 2≤x≤7} then A = ____   [   ]
  A) {1,3,4}   B) { 2,3,4,5,6}   C) {2,3,4,5,6,7}   D) {3,4,5}

5. A is the set of all factors of 24, B is the set of all factors of 48 then   [   ]
  A) A B   B) B A   C) A=B   D) A∩B=Φ

6. If there are 'n' elements in the set, then the number of proper subsets is ____   [   ]
  A) 2^{n-1} B) 2^n C) $2^n -1$ D) 2-n

7. If one zero of the quadratic polynomial $2x^2+kx-15$ is 3 then the other zero is   [   ]
   A) -15/2   B) K   C) -5/2   D) -15

8. If α,β are zeroes of the polynomial $p(x)=x^2-5x+6$ then the value of $α+β-3αβ$ is   [   ]
   A) -13   B) 6   C) 13   D) -5

9. If α,β,γ are the zeroes of the polynomial $f(x)= ax^3+ bx^2+ cx+ d$ then $α^2+β^2+γ^2=$ ___   [   ]
   A) $b^2+ 2ac/c^2$ B) $b^2- ac/c^2$ C) $b^2- 2ac/a^2$ D) $b^2+ ac/c^2$

10. The value of K for which the system of equations
    x+2y=5,   3x+Ky+15=0 has no solution is   [   ]
   A) 6   B) -6   C) 3/2   D) None

11. The age of a daughter is one third the age of her father. If the present age of father
    is x years, then the age of daughter after 18 years is   [   ]
   A) x+18/3   B) x/3 +8   C) x+18   D) x/3 + 18

12. 2/x+ 3/y=13 ; 5/x-4/y= -2 then the solution is   [   ]
   A) (-1/2, -1/3)   B) (-1/2, 1/3)   C) (1/3,1/2)   D) (1/2,1/3)

13. The sum of the squares of two consecutive odd numbers is 74 then the smaller

number is   [   ]
A) 11   B) 3   C) 7   D) 5

14. The value of K such that Q.E $2x^2+Kx+3=0$ has two equal roots is   [   ]
A) $\pm 2\sqrt{6}$ B) $\pm \sqrt{6}$ C) $\pm 2\sqrt{3}$ D) $\pm\sqrt{3}$

15. The sum of a number and its reciprocal is 5/2 then the number is   [   ]
A) 2 or 1/3   B) 3 or 1/2   C) 2 or 1/2   D) 5 or 1/5

16. If k+2, 4k-6 and 3k-2 are three consecutive terms of an A.P then k is __   [   ]
A) 1   B) 2   C) 0   D) 3

17. Which terms of the A.P   24,21,18,--- is first negative   [   ]
A) a_{10} B) a_9 C) a_6 D) a_{11}

18. The common ratio of G.P is 1-1/3+1/9-1/27+ --- is   [   ]
A) 1/3   B) 3   C) -1/3   D) -3

19. The first term of G.P is 50 and 4th term is 1350 then the 5th term is   [   ]
A) 8050   B) 5050   C) 4050   D) 6050

20. $\tan \pi/3$, $\tan \pi/4$ and $\tan \pi/6$ are in _____   [   ]
A) AP   B) GP   C) HP   D) Both A, C

21. If (a,b) lies in Q_4 then (-a,b) lies in   [   ]
A) Q_1 B) Q_2 C) Q_3 D) Q_4

22. A circle is drawn with origin as centre and passing through (2,3) then its radius is   [   ]
A) 2   B) 3   C) 13   D) $\sqrt{13}$

23. Centroid divides each median in the ratio   [   ]
A) 1:2   B) 2:1   C) 1:1   D) 4:1

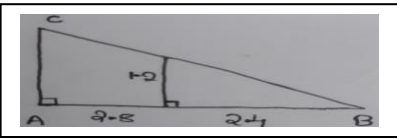24. (p,1) (-3,4) (7,-1) are collinear then p = ___   [   ]
A) 0   B) -1   C) -2   D) 1

25.Slope of the line passing through (0,3) (5,7) is   [   ]
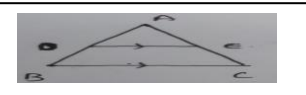A) 2   B) 4/5   C) 1/2   D) 4

26.   then AC= ___   [   ]

A) 2.6   B) 5.2   C) 4.3   D) 5.6

27. If the diagonal of square is $7\sqrt{2}$ cm then its area is _____   [   ]
A) 28 cm²   B) 14√2 cm²   C) 21 cm²   D) 49 cm²

28.   In the figure D,E are the mid point of the sides AB and AC. If DE= 4 cm then BC=   [   ]

A) 4 cm   B) 6 cm   C) 8 cm   D) 12 cm

29. The diagonal of Rhombus are 24 cm and 32 cm then its perimeter is _____   [   ]
A) 80 cm   B) 45 cm   C) 38.4 cm   D) 56 cm

30.   In the figure x = _____   [   ]
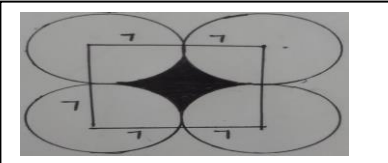A) 60   B) 100   C) 110   D) 120

31.If two tangents inclined at an angle of 60^0 are drawn to circle of radius 3cm, the
length of each tangent is equal to   [   ]
A) 6   B) $3\sqrt{3}$ C) 3   D) $3\sqrt{\sqrt{3}}/4$

32.   Area of shaded region   [   ]

A) 42 cm²   B) 40 cm² C) 22 cm² D) 20 cm²

33. The surface areas of two spheres are in the ratio 1:4 then ratio of their volume is ____   [   ]
A) 1:4   B) 4:1   C) 1:16   D) 1:64

34. The diameter of ruler is 3cm and its length is 42cm. The volume of wood required to make the ruler is ___ [   ]
    A) 397   B) 197   C) 297   D) 497
35. The length of equator on the globe is 88 cm then r = ___ [   ]
    A) 12   B) 10   C) 16   D) 14
36. If the length of diagonal of a cube is $6\sqrt{3}$ cm, then the length of its edge is ___ [   ]
    A) 8cm   B) 12cm   C) 14cm   D) 6cm
37. $\sqrt{sec^2-\theta}/sec\theta$ = [   ]
    A) $-sin\theta$ B) $cos\theta$ C) $sin\theta$ D) None
38. $cos^217-sin^273$ = ___ [   ]
    A) 1   B) 1/3   C) 0   D) -1
39. $\sqrt{3}\ tan\theta = 3\ sin\theta$ then the value of $sin^2\theta - cos^2\theta$ = ___ [   ]
    A) $1/\sqrt{3}$ B) $1/\sqrt{2}$ C) -1/3   D) 1/4
40. $\sqrt{(cosec^2\theta - sin^2\theta - cos^2\theta)}$ = [   ]
    A) $cot\theta$ B) $tan\theta$ C) $sec\theta$ D) $cosec\theta$
41. $1/(sec\theta + tan\theta)$ = [   ]
    A) $sec\theta + tan\theta$ B) $cos\theta + sin\theta$ C) $cot\theta - sin\theta$ D) $sec\theta - tan\theta$
42. The length of the shadow of a tree of 8cm long when seens angle of elevation is 45^0 is [   ]
    A) $8/\sqrt{3}$ B) $8\sqrt{3}$ C) 8   D) $16\sqrt{3}$
43. A ladder 10m in length touches a wall at a height of 5m, the angle made by the ladder with the horizontal is ___ [   ]
    A) 30   B) 90   C) 60   D) 45
44. The probability that the student gets less than 70% of the marks in a unit test is [   ]
    A) 0.4   B) 0.6   C) 0.7   D) 0.3
45. In a single throw of two dice, the probability of getting even doublet is [   ]
    A) 3/13   B) 1/12   C) 1/15   D) 1/18
46. From the month of August, a day is selected whose first day is Tuesday. Find the probability that the day selected is not a Tuesday [   ]
    A) 1/2   B) 31/6   C) 26/31   D) none
47. P(E) = 0.455 then P(È) = ___ [   ]
    A) 0.745   B) 0.645   C) 0.455   D) 0.545
48. The A.M of 10 consecutive numbers starting with x+1 is [   ]
    A) x+55   B) 10x+55   C) 10x+5.5   D) x+5.5
49. Range of first 'n' whole numbers is ___ [   ]
    A) n+1   B) n-1   C) 1-n   D) (n-1)/2
50. Class marks of a class x-y is [   ]
    A) (x-y)/2   B) (x+y)/2   C) x-y   D) x+y

PHYSICAL SCIENCE

51. The temperature of a substance is 27^0C, when its kinetic energy is y. If we tripled the average kinetic energy then its temperature becomes [   ]
    A) 81^0C B) 54^0C C) 900K   D) 300K
52. How much heat energy is required to convert 1 gm of ice to liquid [   ]
    A) 540 cal   B) 80 cal   C) 100 cal   D) 373 cal
53. Which of the following substances when mixed together will produce table salt [   ]
    A) Sodium thiosulphate and sulphur dioxide   B) Hydrochloric acid and Sodium hydroxide
    C) Chlorine and Oxygen   D) Nitric acid and Sodium carbonate
54. Identify the pair p^H values of strong acid and strong base [   ]
    A) (6,14)   B) (1,8)   C) (7,7)   D) (2,14)
55. Irrespective of the position of the object on the principal axis a concave lens gives an image of nature ___ [   ]
    A) real, inverted   B) real, erect   C) virtual, inverted   D) virtual, erect
56. A real image is formed at a distance of 60cm from the centre of a convex lens when the object distance is 30cm. The focal length of the lens is ___ [   ]
    A) 90cm   B) 20cm   C) 2cm   D) 0.05cm

57. The characteristics of light are not altered by refraction [   ]
   A) Speed   B) Wavelength   C) Frequency   D) All
58. The refractive index of the medium depends on [   ]
   A) Nature of the substance   B) Wavelength of light used   C) Optical density   D) All
59. When light travels from denser medium to rarer medium, the relation between r and i is? [   ]
   A) r = i   B) r > i   C) r < i   D) i > r
60. Actual shape of a rainbow is _____ [   ]
   A) Three dimensional sphere   B) Three dimensional cone
   C) Three dimensional cylinder   D) Three dimensional cube
61. n=3, l=3, m_l=0, m_s= +1/2 . This orbital is _____ [   ]
   A) 3f   B) 3p   C) 3s   D) 3d
62. Aufbau principle is violated in [   ]
   A) $1s^2 2s^2$ B) $1s^2 2s^2 2p^6$ C) $1s^2 2s^2 2p^6 3s^1$ D) $1s^2 2s^2 2p^6 3s^2 3p^6 3d^1$
63. Predict the reason for placing inert gas in the 18th group [   ]
   i) They have octet valency   ii) They have zero reactivity   iii) They are highly reacting
   A) i, ii   B) i, iii   C) ii, iii   D) i, ii, iii
64. Pyramidal shape molecule is [   ]
   A) H_2O B) NH_3 C) CH_4 D) BF_3
65. The number of sigma bonds in CH_4 molecule is ____ [   ]
   A) 2   B) 3   C) 4   D) 1
66. X: 1 ampere = 1 C/ 1s   Y: 1 V= 1J/1C [   ]
   A) X and Y are true   B) X true, Y false   C) X false, Y true   D) X and Y false
67. S.I unit of resistivity [   ]
   A) ohm- m   B) ohm/m   C) $(ohm-m)^{-1}$ D) ohm
68. Potential difference is also called [   ]
   A) Voltage   B) Current   C) Both A and B   D) EMF
69. During corrosion _____ process takes place [   ]
   A) reduction   B) oxidation   C) thermite   D) refining
70. The method suitable for purification of low boiling metals is _____ [   ]
   A) calcination   B) distillation   C) roasting   D) electrolysis
71. Which of the following is a example of Dobereiner's triad [   ]
   A) Li, Na,K   B) Li, Na, Mg   C) Li, Na, Al   D) Li, Mg, K
72. The charge is moving along the direction of magnetic field. Then force acting on it is [   ]
   A) 0   B) Maximum   C) Infinate D) All
73. Splitting of spectral lines in magnetic field is known as [   ]
   A) Zeeman effect   B) Stark effect   C) Photo electric effect   D) None
74. The general formula of Alkanes [   ]
   A) C_nH_{2n} B) C_nH_{2n+1} C) C_nH_{2n+2} D) C_nH_{2n-2}
75. Which of the following is a dehydrating agent
   A) C_2H_4 B) C_2H_6 C) C_3H_6 D) Con.H_2SO_4

BIOLOGICAL SCIENCE

76. The given plant carry out reproduction through spore formation [   ]
   A) Bigoniya   B) fern   C) mosses   D) B and C
77. In plants ovule develop into [   ]
   A) Fruit   B) Flower   C) seed   D) embryo
78. During meiosis the parent produce _____ cells [   ]
   A) 2   B) 4   C) 3   D) B&C
79. Example for Rhizome is _____ [   ]
   A) Root   B) Tuber   C) Ginger   D) Dhalia
80. Planeria shows _ __type of reproduction [   ]
   A) Regeneration   B) Reproduction   C) Parthenosis   D) Fragmentation
81. Grafting process can be found in _____ plants [   ]
   A) Jasmine B) Hibiscus C) Apple D) Nerium
82. ___ Bactiria convert milk into curd [   ]

A) Lactobacillus   B) cyanobacteria   C) A&B   D) none

83. The placenta formed at around _____ weeks of pregnency   [   ]
   A) 11 weeks   B) 12 weeks   C) 13 weeks   D) 14 weeks

84. Hunger pangs continue up to _____ minutes   [   ]
   A) 10 -15   B) 15 -25   C) 30-45   D) 35-45

85. Suppresses hunger   [   ]
   A) Greelin   B) leptin   C) A&B   D) mucus

86. Spincter that helps in opening of stomach into duodenum   [   ]
   A) Cardia   B) pyloric   C) anal   D) gastric

87. Mendal had chosen_____ pair of contrasting characters for his study   [   ]
   A) 6   B) 17   C) 18   D) 7

88. Monohybrid genotype ration is _____   [   ]
   A) 1:1:2   B) 1:2:1   C) 2:1:1   D) 3:1

89. Who is responsible for the baby's sex   [   ]
   A) Father   B) Mother   C) A&B   D) Producer

90. The small changes with in the species _____   [   ]
   A) Macro evolution   B) Evolution   C) Micro   D) evolution A&C

91. The food chain always start with _____   [   ]
   A) Herbivore   B) Carnivore   C) A&B   D) Producer

92. _____ plant grows to make the soil Nitrogen -rich   [   ]
   A) Gliricidia   B) madri   C) A&B   C) Mango

93. _____ plants are used for production of bio fuel   [   ]
   A) Mimosa   B) Jatropa   C) Parthonium   D) A&C

94. _____is the functional region of contact between two neurons   [   ]
   A) Synapse   B) Stimulus   C) Response   D) Protoplasm

95. Quinine alkaloid is used to _____   [   ]
   A) Pain killer   B) Insecticide   C) Anti malarial   D)None

96. Life span of RBC _____ days   [   ]
   A) 125   B) 122   C) 120   D) 127

97. A series inherited blood disorder   [   ]
   A) Yellow fever   B) Typhoid   C) Thalassemia   D) B.P

98. The plant respire through   [   ]
   A) Stomata   B) Lenticalls   C) Fruit   D) A&B

99. Emulcification belongs to _____ substance   [   ]
   A) Carbohydrates   B) proteins   C) fats   D) B and C

100. Internal factor of photosynthesis   [   ]
   A) CO_2 B) H_2O C) Sunlight   D) chlorophyll