

AP & TS

### SEC: SR-CAO-REG & CEO-IC EAMCET MODEL DATE : 03-10-2022

### TIME : 3Hrs Max. Marks: 160

**MATHS-IIA**

1. 

1) 6 2) 7 3) 8 4) 9

2. Let  and then A is

1) Idempotent matrix 2) Involutary matrix 3) Symmetric matrix 4) Scalar matrix

3. 

1)  2)  3)  4) 

4. If  then =

1)  2)  3)  4) 

5. If  then the value of =

1)  2)  3)  4) 

6. If  are the roots of the equation , then 

1) 64 2) 32 3) -32 4)-64

7. If  are roots of  then 

1)  2)  3)  4) 

8.  and  are roots of  then

1)  2)  3)  4) 

9. If  are the roots of the equation  then 

1) 2 2) 3 3) 4 4) 5

10. If  is a R.E. of first type and odd degree then a factor of  is

1) x-2 2) x-1 3) x 4) x+1

11. From a company of 20 soldiers any 5 are placed on guard, each batch to watch 5 hours. For what length of time in hours can different batches be selected is

1)  2)  3)  4) 

12. The number of all three element subsets of the set which contain  is

1)  2)  3)  4) 

13. In a shelf there are 10 English and 8 Telugu books. The number of ways in which 6 books can be chosen if a particular English book is excluded and a particular Telugu book is excluded is

1)  2)  3)  4) 

14. The number of ways in which a team of 11 players can be selected from 22 players including 2 of them and excluding 4 of them is

1)  2)  3)  4) 

15. The number of permutations of n things taken r at a time if 3 particular things always occur is

1)  2)  3)  4) 

16. A group contains 6 men and 3 women. A committee is to be formed with 5 people containing 3 men and 2 women. The number different committees that can be formed is

1)  2)  3)  4) 

17. If a line segment be cut at ‘n’ points, then the number of line segments formed is

1)  2)  3)  4) n

18. There are ‘p’ points in space of which ‘q’ points are coplanar. Then the number of planes formed is

1)  2)  3)  4) 

19. The number of ways of selecting two squares (1x1) in a chess board such that they have a side in common is

1) 224 2) 112 3) 56 4) 68

20. The number of rectangles which are not squares in a chess board is

1)  2)  3)  4) 

21. A basket contains 4 Oranges, 5 Apples, 6 Mangoes. The number of ways a person make selection of fruits from the basket is

1) 209 2) 210 3) 211 4) 212

22. The number of odd divisors of 128 is

1) 8 2) 7 3) 0 4) 1

23. The number of odd proper positive divisors of  is 

1) (a+1)(b+1)(c+1)-2 2) (a+b+c+1)(c+1)-1 3) (a+1)(b+1)(c+1)-1 4) (a+1)(b+1)(c+1)

24. If the set S= is to be partitioned into three sets A,B,C of equal size such that then the number of ways of partitioning S is

1)  2)  3)  4) 

25. The number of non-negative integral solutions of  (where n is a non- negative integer) is

1)  2)  3)  4) 

26. If A and B are two Mutually Exclusive events in a sample space S such that P(B)=2P(A) and  then P(A)=

1)  2)  3)  4) 

27. A coin is tossed twice. If the second throw result is a tail, a die is thrown. Then, the total number of the outcomes of this experiment is

1) 11 2)13 3) 14 4) 16

28. The probability of getting at least 2 heads, when an unbiased coin is tossed 6 times is

1)  2)  3)  4) 

29. Two symmetrical dice are thrown at a time. If the sum of points on them is 7, the chance that one of them will show a face with 2 points is

1)  2)  3)  4) 

30. Two dice are thrown. The probability that the absolute difference of points on them is 4 is

1)  2)  3)  4) 

31. On a symmetrical die the numbers 1,-1,2,-2,3 and 0 are marked on its 6 faces. If such a die is thrown 3 times, the probability that the sum of points on them is 6 is

1)  2)  3)  4) 

32. A coin and a six faced die, both unbiased, are thrown simultaneously. The probability of getting a head on the coin and an odd number on the die is

1) 1/2 2) 3/4 3) 1/4 4) 2/3

33. In a non leap year the probability of getting 53 Sundays or 53 Tuesdays or 53 Thursdays

1)  2)  3)  4) 

34. 5 persons entered the lift cabin on the ground floor of an eight floor house. suppose each of them independently leave the cabin at any floor beginning with 1st floor, the probability of all the 5 persons leaving at different floor is

1)  2)  3)  4) 

35. Three electric lamps are to be fitted in a room. Three bulbs are chosen at random from 10 bulbs having 6 good bulbs and fitted. The chance that the room is lighted is

1)  2)  3)  4) 

36. Four numbers are chosen at random from .The probability that they are not consecutive is

1)  2)  3)  4) 

37. A pack of cards is distributed among four hands equally. The probability that 5 spades, 3 clubs, 3 hearts and the rest diamonds may be in a particular hand is

1)  2) 

3)  4) 

38. A card is drawn from an ordinary pack of 52 playing cards and a gambler bets it as a spade or an ace. The probability that he wins the bet is

1)  2)  3)  4) 

39. In shuffling a pack of cards, four cards are accidentally dropped. The probability that the cards dropped are one from each suit is

1)  2)  3)  4) 

40. The face cards are removed from a well shuffled pack of 52 cards. Out of the remaining cards 4 are drawn at random. The probability that they belong to different suits is

1)  2)  3)  4) 

**MATHS – IIB**

41. 

1)  2)  3)  4) 

42. =

1) e-2 2)  3)  4) 

43.  is equal to

1) 0 2) 1 3) 2 4) 4

44. 

1) 0 2) 1 3) – 1 4) 4

45. 

1) 0 2) – ½ 3) 1/3 4) ½

46. If  and

1) ½ 2) 3/2 3) 2 4) 1

47. 

1)  2)  3)  4) 

48. If 

1) 0 2) 1 3) 2 4) 3

49. 

1) 0 2)  3) 1 4) 

50. The function F(x) = is

1) a periodic function 2) an even function 3) an odd function 4) even or odd

51. 

1)  2)  3)  4) 

52. If  then A and B can be

1)  2)  3)  4) 

53. If  then for any 

1)  2)  3)  4) 

54. =

1)  2)19 3)  4) 

55. 

1)  2)  3)  4) 

56. 

1) 1 2) 2 3) 0 4) 3

57. 

1)  2)  3)  4) 

58. 

1)  2)  3)  4) 

59. 

1)  2)  3)  4) 

60. The area (in square units) of the region bounded by the curves  and x=0 is

1)  2)  3) 1 4) 2

61. The area of the region formed by the curve  between co-ordinate axes is

1)  2)  3)  4) 

62. The area bounded by the curve , the lines y=a, y=b in sq units is

1)  2)  3)  4) 

63. The area enclosed between the curves  is 1 sq. unit. Then a=

1)  2)  3)  4) 

64. The area bounded by the ellipse  with the co-ordinate axes in sq. units is

1)  2)  3)  4) 

65.  (where  is the largest integer not exceeding x)

1)  2) 101 3)  4) 

66.  fractional part of x

1) 24 2) 36 3) 12 4) 48

67. If  , then 

1)  2) 1 3)  4) 0

68. If  then  equals

1) 1 2) 2 3) 0 4) 4

69. 

1)  2)  3)  4) 

70. If  where  are constants, then the value depends on

1)  2)  3)  4) 

71. If 

1)  2)  3)  4) 

72. 

1)  2) 

3)  4) 

73. 

1)  2)  3)  4) 

74. 

1)  2)  3)  4) 

75. If  then 

1)  2)  3)  4) 

76. Locus of the point of intersection of perpendicular tangents drawn one to each of the circles  and  is

1)  2)  3)  4) 

77. Equation of circles touching x-axis at the origin and the line 4x-3y+24=0 are

1)  2) 

3)  4) 

78. 2x+y=0 is the equation of a diameter of the circle which touches the lines 4x-3y+10=0 and

4x-3y-30=0. The centre and radius of the circle are

1) (-2,1) ; 4 2) (1,-2) ; 8 3) (1,-2) ; 4 4) (1,-2) ; 16

79. If 3x+2y=3 and 2x+5y=1 are conjugate lines w.r.t the circle  then =

1)  2)  3)  4) 

80. Centre of the circle inscribed in a rectangle formed by the lines  and  is

1) (4,7) 2) (7,4) 3) (9,4) 4) (4,9)

**PHYSICS**

81. The equation represents the stationary wave setup in a vibrating sonometer  wire, where x,y are in cm and t in second. The distances of second and third nodes from one end are (in cm).

1) 50,75 2) 25,50 3) 15,50 4) 20,50

82. A ray of light incident on an equilateral prism shows minimum deviation of. The speed of light through the prism is

1)  2)  3)  4) 

83. The distance between an object and its doubly magnified image by a concave mirror of focal length f is :

1) 3 f/2 2) 2 f/3 3) 3f 4) depends on whether the image is real or virtual

84. Two coherent sources of different intensities send waves that interfere. The ratio of maximum to minimum intensity is 25. The intensity ratio of the sources is

1) 25:1 2) 5:1 3) 9:4 4) 625:1

85. A body has a charge of coulomb. It is

1) Possible 2) not possible 3) may (or) may not possible 4) data not sufficient

86. The dipole moment of the given system is

-2q

-

q q

1)  along perpendicular bisector of q-q line

2) 2 q1 along perpendicular bisector of q-q line

3) q1  along perpendicular bisector of q-q line

4) 0

87. The equivalent capacitance of the network given below is 1 F. the value of ‘C’ is

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1)  2)  3)  4) 1

88. An electron of mass m, moves around the nucleus in a circular orbit of radius ‘r’ under the action of centripetal force ’F’. the equivalent electric current is

1)  2)  3)  4) 

89. Two parallel conductors A and B separated by 5cm carry electric current of 6A and 2A in the same direction. The point between A and B where the field is zero at

1) 0.25cm for B 2) 1 cm from B 3)1.25cm from B 4) 3.75cm from B

90. A coil of area 100 having 500 turn carries a current of 1mA. It is suspended in a uniform magnetic field of induction , its plane makes on angle of with the lines of induction. The torque acting on the coil is

1)  2)  3)  4) 

91. The magnetic moment of a bar magnet is x. Its pole strength is 120mA.m. its magnetic length is

1) 3cm 2) 0.3cm 3) 33.33cm 4) 

92. Two magnets have their lengths in the ratio 2:3 and their pole strengths in the ratio 3:4. The ratio of their magnetic moment is

1) 2:1 2) 4:1 3) 1:2 4) 1:4

93. A magnet of magnetic moment M and length  is bent at its midpoint such that the angle of bending is  . the new magnetic moment is

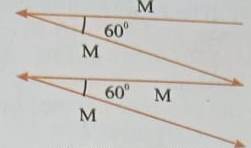
1) M 2)  3) 2M 4) 

94. The length of a magnet is 16 cm. its pole strength is 250mA.m. When it is cut into four equal pieces parallel to its axis, the magnetic length, pole strength and magnetic moments of each piece respectively are:

1) 4cm;62.5milli Am;250milli amp.  2) 8cm;500milli Am;400milli amp. 

3) 16cm;250milli Am;4000milli amp.  4) 16cm;62.5milli Am;0.01A. 

95. The resultant magnetic moment for the following arrangement is



1) M 2) 2M 3) 3M 4) 4M

96. The pole strength of a horseshoe magnet is 90 Am and distance between the poles is 6cm. the magnetic induction at mid point of the line joining the poles is,

1)  2) Zero 3) 4) 

97. If area vector of a coil is and flux density vector is  Then magnetic flux linked with the coil is

1) 31Wb 2) 9000Wb 3)65Wb 4) 100Wb

98. The magnetic induction field strength at a distance 0.3m on the axial line of a short bar magnet of moment 3.6Ais

1)  2)  3)  4) 

99. A short bar magnet produces magnetic fields of equal induction at two points one on the axial line and the other on the equatorial line. The ratio of their distances is

1) 2:1 2)  3)  4) 

100. A magnetic pole of pole strength 9.2 Am. is placed in a field of induction  tesla. The force experienced by the pole is

1) 46N 2)  3)  4) 460N

101. .A bar magnet of moment  is placed in a magnetic field of induction . The torque acting on the magnet is

1)  2)  3)  4) 

102. A short magnetic needle is pivoted in a uniform magnetic field of induction 1T. Now simultaneously another magnetic field of induction  is applied at right angles to the first field. If the needle deflects through an angle , then the value of  is

1)  2)  3)  4) 

103. A bar magnet of magnetic moment  is free to rotate about a vertical axis passing through its center. The magnet is released from rest from east-west position. Then the KE of the magnet as it takes N-S position is 

1)  2)  3)  4) 

104. A bar magnet of magnetic moment ‘M’ is bent in the form of an are which makes angle . The percentage change in the magnetic moment is

1) 9% Increase 2) 9% Decrease 3) 4.5% Decrease 4) 4.5% Increase

105. The ratio of magnetic fields on the axial line of a along magnet at distances of 10cm and 20cm is 12.5:1. The length of the magnet is

1) 5cm 2) 10cm 3) 10m 4) 15m

106. A square of side L metres lies in the xy-plane in a region, where the magnetic field is given by

B=, where  is constant. The magnitude of flux passing through the square is

1)  2)  3)  4) 

107. A field of strength  ampere turns/meter acts at right angles to the coil of 50 turns of area . The coil is removed from the field in 0.1 second. Then the induced emf in the coil is

1) 0.1V 2) 0.2V 3) 1.96V 4) 0.98V

108. A coil has 1,000 turns and 500  as its area. The plane of the coil is placed at right angles to magnetic induction field of 2X. the coil is rotated through  in 0.2 seconds. The average emf induced in the coil in milli volts, is :

1) 5 2) 10 3) 15 4) 20

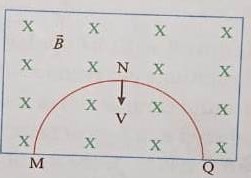
109. A closed coil with a resistance R is placed in a magnetic field. The flux linked with the coil is. If the magnetic field is suddenly reversed in direction, the charge that flows through the coil will be

1)  2)  3)  4) zero

110. An aeroplane with wing span 50 m is flying horizontally with a speed of 360km/hr. over a place where the vertical component of the earth’s magnetic field is . The potential difference between the tips of the wings would be :

1) 0.1V 2) 1.0V 3) 0.2V 4) 0.01V

111. A thin semicircular conduction ring of radius R is falling with its plane vertical in a horizontal magnetic induction B (figure). At the position MNQ the speed of the ring is V. the potential difference developed across the ring is :



1) Zero 2)  and M is at higher potential

3)  and Q is at higher potential 4) 2RBV and Q is at higher potential

112. In an AC generator; a coil with N turns, all of the same area A and total resistance R, rotates with frequency  in a magnetic field B. the maximum value of emf generated in the coil is

1) NABR 2) NAB 3) NABR 4) NAB

113. A coil has self inductance of 0.01H. the current through it is allowed to change at the rate of 1A in .the induced emf is

1) 1V 2) 2V 3) 3V 4) 4V

114. A coil of 100 turns with a current of 5A produced a magnetic flux of 1Wb and each turn of the coil. The coefficient of self induction is

1)  2)  3)  4) 

115. Two inductors each of inductance L are joined in parallel. Their equivalent inductance is

1) Zero 2) 2L 3)  4) L

116. A current of 2A is increasing at the rate of 4 A/s through a coil of inductance 2H. The energy stored in the inductor per unit time is

1) 2 W 2) 1 W 3)16 W 4) 4 W

117. Two coils are at fixed location. When coil 1 has no current and the current in coil 2 increases at the rate of 15.0 A/s, the emf in coil 1 is 25.0 mV, when coil 2 has no current and coil 1 has a current of 3.6 A, the flux linkage in coil 2 is

1) 16mWb 2)10mWb 3) 4.00mWb 4) 6.00mWb

118. A circular coil of ‘n’ turns is kept in a uniform magnetic field such that the plane of the coil is perpendicular to the field. The magnetic flux associated with the coil is now . Now the coil is opened and made into another circular coil of twice the radius of the previous coil and kept in the same field such that the plane of the coil is perpendicular to the field. The magnetic flux associated with this coil now is

1)  2)  3)  4) 

119. Two parallel rails of a railway track insulated form each other and with the ground are connected to a millivolt meter. The distance between the rails is one metre. A train is travelling with a velocity of 72 kmph along the track. The reading of the millivoltmeter (in mV) is: (Vertical component of the earth’s magnetic induction is )

1) 144 2) 0.75 3) 0.4 4) 0.2

120. The flux linked with a coil is 0.8 Wb when a 2A current is flowing through it. If this current begins to increase at the rate of 400A/s, the induced emf in the coil will be

1) 20V 2) 40 V 3) 80 V 4) 160 V

**CHEMISTRY**

121. The threshold energy of a chemical reaction depends upon

1) Nature of reacting species 2) temperature

3) concentration of species 4) number of collisions

122. For producing the effective collisions, the colliding molecules must posses

1) A certain minimum amount of energy ` 2) energy equal to greater than threshold energy

3) Proper geometry 4) threshold energy and proper orientation

123. Which of the following is a poor conductor of electricity

1)  2)  3) NaCl 4) KOH

124. During electrolysis electrons flow from

1) Cations to cathode 2)anode to anions 3)cathode to anode 4)anions to anode

125. When 1 amp of current is passed through an electrolyte for one second, the mass deposited is equal to

1) 1 mole of hydrogen 2) 1 gram equivalent of hydrogen

3)1 electro-chemical equivalent 4) 1 gram of any substance

126. On electrolysis 1 mole A atoms will be deposited by

1) 1 mole of electrons 2) 2 mole of electrons 3) 3 mole of electrons 4) 6 mole of electrons

127. The unit of cell constant is

1)  2) ohm-cm 3)  4) 

128. Which of the following solutions has the highest equivalent conductance?

1) 0.5 M NaCl 2) 0.05 M NaCl 3) 0.005 M NaCl 4) 0.02 M NaCl

129. In a galvanic cell electron flow will be from

1) Negative electrode to positive electrode 2) positive electrode to negative electrode

3) there will be no flow of electrons 4) cathode to anode in the external circuit

130. Agar-Agar is used in salt bridge since it is

1) Electrolyte 2)Non- electrolyte 3) Inert electrolyte 4) A solid

131. Arrange the following in the order of their decreasing electrode potentials: Mg, K, Ba, Ca

1) K, Ba, Ca, Mg 2) Ba, Ca, K, Mg 3) Ca, Mg, K, Ba 4) Mg, Ca, Ba, K

132. EMF of a cell in terms of reduction potential of its left and right electrode is :

1)  2)  3)  4) 

133. The relationship between free energy and electrode potential is

1)  2)  3)  4) 

134. The relationship between standard reduction potential of a cell and equilibrium constant is shown by

1)  2)  3)  4) 

135. In dry cell cathode is

1) Zn 2) Carbon rod 3)  4) 

136. In Leclanche cell, Zinc rod is placed in

1) 10%  2) 20% 3) 30% 4) 40%

137. If mercury is used as cathode in the electrolysis of NaCl solution, the ions discharged at cathode are

1)  2)  3)  4) 

138. Which of the following occurs at cathode

1)  2)  3)  4) 

139. During electric conduction, the composition of which of the following is changed?

1) Graphite 2) Zinc wire 3) Copper wire 4) 

140. The electrochemical equivalent of a metal is “x” g. The equivalent weight of metal is

1) X 2)  3)  4) X

141. Which of the following solution of KCl has the lowest value of specific conductance (with same molar conductance)

1) 1M 2) 0.1M 3) 0.01M 4) 0.001M

142. The correct order of equivalent conductance at infinite dilution of LiCl, NaCl and KCl is

1) LiCl>NaCl>KCl 2) KCl>NaCl>LiCl 3)Nacl>KCl>LiCl 4) LiCl>KCl>NaCl

143. Which of the following is most powerful oxidizing agent?

1)  2) 

3)  4) 

144. Which metal pairs when coupled will get maximum emf for a voltaic cell

1) Fe and Cu 2) Pb and Cu 3) Cu and Au 4) Ca and Cu

145. When Zn metal is added to  solution Cu is precipitated. It is due to

1) Oxidation of  2) Reduction of  3) Hydrolysis of  4) Ionization of 

146.  The standard EMF of the cell constructed with these electrodes is

1) +0.066V 2) -0.066V 3) +0.490V 4) -.0.82V

147. During the electrolysis of aqueous solution of sodium chloride,  of the electrolyte

1) Remains Constant 2) Gradually increases

3) Gradually decreases 4) Decrease first and then increases

148. A quantity of electricity required to reduce 12.3g of nitrobenzene to aniline arising 50% current efficiency is

1) 115800C 2) 579000C 3) 231600C 4) 289500C

149. Which one of the following could not be liberated from a suitable electrolyte by the passage of 0.25 faraday of electricity through that electrolyte

1) 0.25 mole of Ag 2) 16gm of Cu 3) 2gm of  4) 2.8ltrs of  at STP

150. When during electrolysis of a solution of 9650 couloumb of charge pass through the electroplating bath, the mass of silver deposited on the cathode will be:

1) 10.8 g 2) 21.6 3) 108g 4) 1.08g

151. What is the composition of gases in the tanks used by the scuba divers?

1) 11.7%helium 32.1% nitrogen 56.2% oxygen 2) 11.7%helium 56.2% nitrogen 32.1% oxygen

3) 56.2%helium 11.7% nitrogen 32.1% oxygen 4) 56.2%helium 32.1% nitrogen 11.7% oxygen

152. Which salt shows maximum osmotic pressure in its 1m solution.

1)  2)  3)  4) 

153. Which of the following is least effective in causing flocculation of  sol

1) 2)  3) KBr 4) 

154. Blood is

1) Positive sol 2) negative sol 3) nutral sol 4) emulsion

155. Total volume of atoms present in a face centred cubic unit cell of a metal is (r=radius of atom)

1)  2)  3)  4) 

156. Distance ratio for simple cubic crystal is ?

1)  2) 

3)  4) None of these

157. Which of the following is outer orbital complex

1)  2)  3)  4) 

158. The complex  should have a spin only magnetic moment of

1)  2)  3)  4) 6BM

159. Which of the following two are isostructural?

1)  2)  3)  4) 

160. , solution on reaction with changes to?

1)  2)  3)  4) 

|  |  |  |  |
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| **Paper Setters (VJN - PSR)** | | | |
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