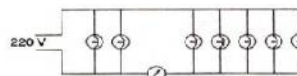
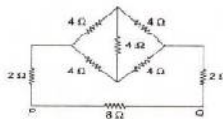


Model Test Paper for T.N.T.S.E / N.T.S.E

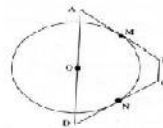
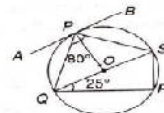
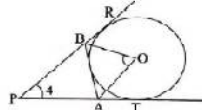
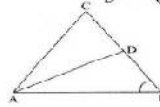
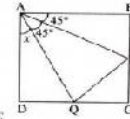
SCIENCE

1. Six equal resistances, each $1\ \Omega$, are joined to form a network as shown in figure. Then the resistance between any two corners is
 - (a) $0.5\ \Omega$
 - (b) $2\ \Omega$
 - (c) $1\ \Omega$
 - (d) $1.5\ \Omega$
2. The resistance of the following circuit between P and Q is
 - (a) $8\ \Omega$
 - (b) $6\ \Omega$
 - (c) $4\ \Omega$
 - (d) $2\ \Omega$
3. Two heaters, each marked $1000\ \text{W}$, $250\ \text{V}$ are connected in series with a $250\ \text{V}$ supply. Assuming that their resistance remains constant, their combined rate of heating will be
 - (a) $250\ \text{W}$
 - (b) $500\ \text{W}$
 - (c) $1000\ \text{W}$
 - (d) $2000\ \text{W}$
4. A concave mirror of focal length f produces an image m times the size of the object. If image is real, then the distance of the object from mirror is
 - (a) $(m+1)f$
 - (b) $\left(\frac{m+1}{m}\right)f$
 - (c) $\left(\frac{m-1}{m}\right)f$
 - (d) mf
5. Two metallic wires of the same material and same length have different diameters. If we connect them in series across a battery, the heat produced is H_1 . If we connect them in parallel to the same battery the heat produced during the same time is H_2 . From the above, we infer that
 - (a) $H_1 > H_2$
 - (b) $H_1 < H_2$
 - (c) $H_1 = H_2$
 - (d) nothing can be decided
6. Seven identical lamps of resistance $220\ \Omega$ each are connected to a $220\ \text{V}$ line as shown in Figure. Then the reading in the ammeter will be
 - (a) $\frac{1}{10}\ \text{A}$
 - (b) $\frac{2}{5}\ \text{A}$
 - (c) $\frac{3}{10}\ \text{A}$
 - (d) none of these
7. A convex mirror of focal length f produces an image $\left(\frac{1}{n}\right)^{\text{th}}$ of the size of the object. Then the distance of the object from the mirror is
 - (a) nf
 - (b) $(n+1)f$
 - (c) $(n-1)f$
 - (d) $\left(\frac{n}{n+1}\right)f$
8. Cathode rays can be deflected by
 - (a) magnetic field only
 - (b) electric field only
 - (c) both types of fields
 - (d) none of these
9. p-orbital can accommodate a maximum ofelectrons.
 - (a) 2
 - (b) 6
 - (c) 8
 - (d) 10
10. Variable valency in general, exhibited by
 - (a) gaseous elements
 - (b) s-block elements
 - (c) non-metals
 - (d) transition elements
11. Which element of the second period form most acidic oxide?
 - (a) Barium
 - (b) Carbon
 - (c) Nitrogen
 - (d) Fluorine
12. The number of covalent bonds in ethylene is
 - (a) 2 double bonds, 2 single bonds
 - (b) 2 double and 4 single bonds
 - (c) 2 single and 2 double bonds
 - (d) 1 double and 4 single bonds
13. Which of the following is appreciably soluble in water?
 - (a) CS_2
 - (b) $\text{C}_2\text{H}_5\text{OH}$
 - (c) CCl_4
 - (d) CHCl_3
14. The reaction of one mol of bromine with ethyne yields
 - (a) $\text{BrCH}_2\text{-CH}_2\text{Br}$
 - (b) BrCH=CHBr
 - (c) $\text{Br}_2\text{CH-CHBr}_2$
 - (d) $\text{CH}_3\text{-CH}_2\text{Br}$
15. The chlorophyll in photosynthesis is used for
 - (a) absorbing light
 - (b) breaking down water molecule
 - (c) no function
 - (d) reduction of CO_2
16. Protein after digestion are converted into
 - (a) carbohydrates
 - (b) small globules
 - (c) amino acids
 - (d) starch
17. Carbohydrates in plants are stored in the form of
 - (a) Glycogen
 - (b) Starch
 - (c) Glucose
 - (d) Maltose
18. Main site of photosynthesis
 - (a) leaf
 - (b) stem
 - (c) chloroplast
 - (d) guard cells
19. The small pores present on leaf's surface are called
 - (a) stomata
 - (b) chlorophyll
 - (c) guard cells
 - (d) none of these
20. Photosynthesis is a
 - (a) Catabolic process
 - (b) Parabolic process
 - (c) Amphibolic process
 - (d) Photochemical process




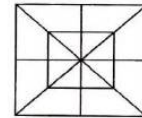
MATHEMATICS

21. If the zeroes of the polynomial $64x^3 - 144x^2 + 92x - 15$ are in A.P., then the difference between the largest and the smallest zeroes of the polynomial is
 (a) 1 (b) $\frac{7}{8}$ (c) $\frac{3}{4}$ (d) $\frac{1}{2}$
22. Each of the sides of a triangle is 8 cm less than the sum of its other two sides. Area of the triangle (in cm^2) is
 (a) 8 (b) $8\sqrt{3}$ (c) 16 (d) $16\sqrt{3}$
23. A sector with acute central angle θ is cut from a circle of diameter 14 cm. The area (in cm^2) of the circle circumscribing the sector is
 (a) $\frac{22}{7} \sec^2 \frac{\theta}{2}$ (b) $\frac{77}{2} \sec^2$ (c) $\frac{77}{2} \cos^2 \frac{\theta}{2}$ (d) $\frac{77}{2} \sec^2 \frac{\theta}{2}$
24. In the figure, ABCD is a square of side 1 cm and $\angle PAQ = 45^\circ$. The perimeter (in cm) of the triangle PQC is
 (a) 2 (b) $1 + \sqrt{2}$ (c) $2\sqrt{2} - 1$ (d) $1 + \sqrt{3}$
25. In the figure ABC is a triangle in which AD bisects $\angle A$, $AC = BC$, $\angle B = 72^\circ$ and $CD = 1$ cm. Length of BD (in cm) is
 (a) 1 (b) $\frac{1}{2}$ (c) $\frac{\sqrt{5}}{2}$ (d) $\frac{\sqrt{3} + 1}{2}$
26. In the figure, ΔAPB is formed by three tangents to the circle with center O. If $\angle APB = 40^\circ$, then the measure of $\angle BOA$ is
 (a) 50° (b) 55°
 (c) 60° (d) 70°
27. In a ΔABC , G is centroid. Then area of ΔAGC is of..... area of ΔABC .
 (a) $\frac{1}{2}$ (b) $\frac{1}{3}$ (c) $\frac{1}{4}$ (d) $\frac{2}{3}$
28. The circumference of the base of a 9 m high wooden solid cone is 44 m. The slant height of the cone is
 (a) $\sqrt{110m}$ (b) $\sqrt{130m}$ (c) $\sqrt{150m}$ (d) $\sqrt{180m}$
29. The value of $\frac{(2.3)^3 - 0.027}{(2.3)^2 + 0.69 + 0.09}$ is equal to
 (a) 2.327 (b) 2.273 (c) 2 (d) 3
30. The value of expression $\cos \sec(75^\circ - \theta) - \sec(15^\circ + \theta) - \tan(55^\circ + \theta) + \cot(35^\circ - \theta)$ is
 (a) -1 (b) 0 (c) 1 (d) $\frac{3}{2}$
31. Two students while solving a quadratic equation in x, one copied the constant term incorrectly and got the roots 3 and 2. The other copied the constant term and the coefficient of x^2 correctly as -6 and 1 respectively. The correct roots are
 (a) 3, -2 (b) -3, 2 (c) -6, -6 (d) 6, -1
32. If α, β are the roots of $ax^2 + 2bx + c = 0$ and that of $Ax^2 + 2Bx + C = 0$ be $\alpha + \delta, \beta + \delta$, then the value of $\frac{b^2 - ac}{B^2 - AC}$ is
 (a) $\left(\frac{a}{A}\right)^2$ (b) $\left(\frac{A}{a}\right)^2$ (c) 0 (d) 1
33. The 4th term of A.P. is equal to 3 times the first term and 7th term exceed the third term by 1. Find its n th term.
 (a) $n + 2$ (b) $3n + 1$ (c) $(2n + 1)$ (d) $3n + 2$
34. Which term of an A.P. 3, 15, 27, 39, Will be 132 more than its 54th term?
 (a) 1 st (b) 63rd (c) 65th (d) none of these
35. A man saves Rs. 320 during the first month, Rs. 350 in the second month, Rs. 400 in the third month. If he continues his savings in this sequence, in how many months will he save Rs. 20,000?
 (a) 28 (b) 25 (c) 22 (d) 20
36. In the given figure, APB is a tangent, $\angle QPS = 80^\circ$, $\angle PSQ = 65^\circ$ and $\angle SQR = 25^\circ$, then
 (a) $\angle SPB = 35^\circ$ (b) $\angle APQ = 65^\circ$ (c) $\angle QRS = 55^\circ$ (d) all of these
37. If $x + \sqrt{y} = \frac{\sqrt{a} + \sqrt{b}}{\sqrt{a} - \sqrt{b}}$, where x and y are rational numbers, which of the following can be true?
 (a) $x + y = 1$ (b) $x - y = 1$ (c) $x^2 + y^2 = 1$ (d) $x^2 - y = 1$
38. Find the value of
 (a) $2 + \sqrt{5}$ (b) $\frac{1}{4}$ (c) 0.236 (d) 0.243
39. ABCD is a trapezoid with AD parallel to BC. O is a point on the side AD such that a circle with center O touches AB and CD at M and N, respectively. If $AD = 92$, $AB = 70$, $BC = 19$, $CD = 50$, find the length of OA.
 (a) 46 (b) $\frac{161}{3}$ (c) $\frac{151}{3}$ (d) $\frac{161}{2}$
40. In a shop, the cost of 3 burgers, 7 milkshakes and French fries is Rs. 120. In the same shop, the cost of 4 burgers, 10 milkshakes and French fries is Rs. 164.5. Find the cost of 1 burger, 1 milkshake and French fries in the shop.
 (a) Rs. 41 (b) Rs. 21 (c) Rs. 51 (d) Rs. 51



MENTAL ABILITY

41. Haematology : Blood :: Phycology : ?
 (a) Diseases (b) Fungi (c) Fishes (d) Algae
42. cbba_cab.....acabac
 (a) bcabb (b) babcc (c) abcbc (d) acbcb
43. 
 Which number indicates doctors who are not married?
 (a) 6 (b) 4 (c) 2 (d) 1
44. If "A × D" means "A is the sister of D" A+D" means "D is the daughter of A" and "A ÷ D" means "A is the mother of D", then how will "N is the aunt of M" be denoted?
 (a) $M + L \times N$ (b) $M \div L + N$ (c) $L \div N \div M$ (d) $N \times L \div M$
45. If four examiners can examine a certain number of answer books in 8 days by working 5 hours a day, for how many hours a day would 2 examiners have to work in order to examine twice the number of answer book in 20 days?
 (a) 6 hours (b) $7\frac{1}{2}$ hours (c) 8 hours (d) 9 hours
46. If RESPOND is coded as EMPOTDS and SENSE is coded as FRODT, then CLARIFY will be coded as
 (a) EDTOJME (b) ZEJSBMD (c) ZEJQBKD (d) ZDKSBKD
47. Madhu walks 15 m towards north, then she turns left at 90° and walks 30 m, then turns right at 90° and walks 25 m. How far is she from the starting point and in which direction?
 (a) 55 m; north-east (b) 50 m; north-west (c) 60 m; north (d) 50 m; west
48. If $54/32 = 4$, $36/42 = 3$ and $92/22 = 7$, then what is the value of $28/33$?
 (a) 5 (b) 6 (c) 4 (d) 9
49. Identify the missing number in the following sequence: 2,17,52.....,206
 (a) 73 (b) 85 (c) 113 (d) 184
50. What are the total number of triangles and the total number of squares in the given figure?
 (a) 28 triangles, 10 squares (b) 28 triangles, 8 squares
 (c) 32 triangles, 10 squares (d) 32 triangles, 8 squares



ANSWER KEY

1	2	3	4	5	6	7	8	9	10
A	C	B	B	B	D	C	A	D	A
11	12	13	14	15	16	17	18	19	20
B	D	B	B	A	C	B	C	A	A
21	22	23	24	25	26	27	28	29	30
A	D	D	A	C	D	B	B	C	B
31	32	33	34	35	36	37	38	39	40
D	A	C	C	B	D	D	C	B	C
41	42	43	44	45	46	47	48	49	50
D	D	D	D	C	C	B	C	C	C