

Mock Paper 2



BITS MCA

Birla Institute of Technology, Ranchi (Mesra)

Instructions

- This Mock Paper consists of two subjects. Sub Test-I (Quantitative and Mathematical Ability Test) consisting of 50 objective questions. Sub Test-II (Computer and Logical Ability Test) consisting of 50 objective questions.
- Attempt all the questions.
- Each test paper carries 200 marks. Each question consists of 4 marks. One mark will be deducted for wrong answer.
- Use a soft HB pencil darken the appropriate bubble.

Sub Test-I. Quantitative and Mathematical Ability Test

M. Marks: 200

Time: 75 min.

- The section of the sphere $(x-a)^2 + (y-b)^2 + (z-c)^2 = r^2$ with the plane $lx + my + nz = k$, is a great circle, if
 - $l^2a^2 + m^2b^2 + n^2c^2 = 0$
 - $\frac{l}{a} + \frac{m}{b} + \frac{n}{c} = 0$
 - $al + bm + cn = k$
 - $bcl + cam + abm = 0$
- The equation of a right circular cone, whose vertex is origin and axis is OX, semi vertical angle α , is
 - $y^2 + z^2 = x^2 \cos^2 \alpha$
 - $y^2 + z^2 = x^2 \sin^2 \alpha$
 - $y^2 + z^2 = yz \cos \alpha$
 - $y^2 + z^2 = x^2 \tan^2 \alpha$
- The equations of the lines on which the perpendiculars from the origin made 30° angle with x-axis and which form a triangle of area $\frac{50}{\sqrt{3}}$ with axis, are
 - $x + \sqrt{3}y + 10 = 0$
 - $\sqrt{3}x + y + 10 = 0$
 - $x - \sqrt{3}y + 10 = 0$
 - None of these
- The distance between the chords of contact of the tangent to the circle $x^2 + y^2 + 2gx + 2fy + c = 0$ from the origin and the point (g, f) is
 - $g^2 + f^2$
 - $\frac{1}{2}(g^2 + f^2 + c^2)$
 - $\frac{1}{2} \frac{g^2 + f^2 + c^2}{\sqrt{g^2 + f^2}}$
 - $\frac{1}{2} \frac{g^2 + f^2 + c^2}{\sqrt{g^2 + f^2}}$



5. If y_1, y_2 are the coordinates of two points P and Q on the parabola and y_3 is the coordinate of the point of intersection of tangents at P and Q , then
- (a) y_1, y_2, y_3 are in AP (b) y_1, y_2, y_3 are in HP
(c) y_1, y_2, y_3 are in GP (d) y_1, y_3, y_2 are in GP
6. If S and S' are two foci of an ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ ($a > b$) and $P(x_1, y_1)$ a point on it, then $SP + S'P$ is equal to
- (a) $2a$ (b) $2b$ (c) $a + ex_1$ (d) $b + ey_1$
7. The equation to the enveloping cylinder of the sphere $x^2 + y^2 + z^2 - 2x - 8y - 1 = 0$, having its generator parallel to the line $x = y = z$ is
- (a) $x^2 + y^2 + z^2 - 2xy - yz - zx - 4x - y - 5z - 1 = 0$
(b) $x^2 + y^2 + z^2 - 4xy - yz - zx - 4x - y - 5z - 2 = 0$
(c) $x^2 + y^2 + z^2 - xy - yz - zx - 4x - 5y - z - 2 = 0$
(d) None of the above
8. The eccentricity of the hyperbola $3x^2 - 4y^2 = 12$ is
- (a) $\sqrt{\frac{7}{3}}$ (b) $\sqrt{\frac{7}{2}}$ (c) $\sqrt{\frac{7}{3}}$ (d) $\sqrt{\frac{7}{2}}$
9. Let the unit vectors \mathbf{a} and \mathbf{b} be perpendicular to each other and the unit vector \mathbf{c} be inclined at angle θ to both \mathbf{a} and \mathbf{b} . If $\mathbf{c} = x\mathbf{a} + y\mathbf{b} + z(\mathbf{a} \times \mathbf{b})$, then
- (a) $x = \cos \theta, y = \sin \theta, z = \cos 2\theta$ (b) $x = \sin \theta, y = \cos \theta, z = \cos 2\theta$
(c) $x = y = \cos \theta, z^2 = \cos 2\theta$ (d) $x = y = \cos \theta, z^2 = \cos 2\theta$
10. If the vectors $\mathbf{r}_1 = a\hat{\mathbf{i}} + \hat{\mathbf{j}} + \hat{\mathbf{k}}, \mathbf{r}_2 = \hat{\mathbf{i}} + b\hat{\mathbf{j}} + \hat{\mathbf{k}}, \mathbf{r}_3 = \hat{\mathbf{i}} + \hat{\mathbf{j}} + c\hat{\mathbf{k}}$ ($a \neq 1, b \neq 1, c \neq 1$) are coplanar, then the value of $\frac{1}{1-a} + \frac{1}{1-b} + \frac{1}{1-c}$ is
- (a) 1 (b) 1 (c) 0 (d) None of these
11. If A be $n \times n$ non-singular matrix, then which of the following is true
- (a) $|\text{adj}(\text{adj } A)| = |A|^{2n-2}$ (b) $|\text{adj}(\text{adj } A)| = |A|^{(n-1)^2}$
(c) $|\text{adj}(\text{adj } A)|^2 = |A|^{n-1}$ (d) None of these
12. If $a = \frac{a-1}{(a-1)^2} + \frac{2n^2}{(a-1)^3} + \frac{4n-2}{3n^2} + \frac{3n^2-3n}{3n}$, then $\frac{1}{a-1}$ is equal to
- (a) 0 (b) 1
(c) $\frac{n(n-1)}{2} + \frac{a(a-1)}{2}$ (d) None of these
13. $(1-i)^5 + (1+i)^5$ is equal to
- (a) $8i$ (b) 8 (c) 32 (d) 8



14. Let S be the set of all real numbers. Define a relation R on S by $a R b \iff |a| = b$. Then R is
- reflexive but neither symmetric nor transitive
 - symmetric but neither reflexive nor transitive
 - transitive but neither reflexive nor symmetric
 - an equivalence relation
15. If for all $a, b \in G$, $(ab)^2 = a^2b^2$, then
- G is cyclic
 - G is not abelian
 - G may be abelian
 - G is an abelian
16. The transformation equation of the equation $72x^3 - 54x^2 - 45x - 7 = 0$ into another form with integral coefficients and unity for the coefficients of the leading term; is
- $x^3 - 9x^2 - 90x - 168 = 0$
 - $x^3 - 9x^2 - 90x + 168 = 0$
 - $x^3 - 9x^2 - 90x - 168 = 0$
 - None of these
17. The finite dimensional vector space $V(F)$ is a direct sum of two subspaces W_1 and W_2 and dimensional $W_1 = 2$ and dimensional $W_2 = 3$, then dimensional V is equal to
- 2
 - 3
 - 5
 - 6
18. The function $f(x) = \begin{cases} 1, & |x| < 1 \\ \frac{1}{n^2}, & \frac{1}{n} < |x| < \frac{1}{n-1}, \\ 0, & x = 0 \end{cases} \quad n = 2, 3$
- is discontinuous at finitely many points
 - is continuous everywhere
 - is discontinuous only at $x = \frac{1}{n}$
 - None of these
19. The function $f(x) = 1 - |\sin x|$ is
- continuous now where
 - continuous everywhere
 - differentiable now where
 - None of these
20. A differentiable function $f(x)$ has a relative minimum at $x = 0$, then the function $y = f(x) - ax + b$ has a relative minimum at $x = 0$ for
- all b if $a = 0$
 - all a and all b
 - all $b = 0$
 - all $a = 0$
21. Which of the following functions satisfies the conditions of Rolle's theorem ?
- $f(x) = \frac{x-1}{\sqrt{x}} \quad x \in [0, 1]$
 - $f(x) = \sqrt{x}(x-1) \quad x \in [0, 1]$
 - $f(x) = \frac{\tan x}{\sqrt{x}} \quad x \in [0, \pi]$
 - $f(x) = \sin \frac{1}{x} \quad x \in \left[\frac{1}{2}, \frac{1}{\pi}\right]$
22. The horizontal asymptotes of the curve given by $y = \frac{x^3 - x - 1}{x^2 - 3x - 2}$ is
- $x = 1$
 - $x = 2$
 - $x = 1, 2$
 - None of these
23. If $f(n) = ae^{2n} + be^n + cn$ satisfies the condition $f(0) = 1, f(\log_2 3) = 31, \int_0^{\log_2 4} [f(n) - cn] dn = \frac{39}{2}$, then
- $a = 5$
 - $b = 6$
 - $c = 2$
 - $a = 3$



24. The value of the integral $\int_0^1 \cot^{-1}(1-x-x^2) dx$ is
 (a) $\log 2$ (b) $\frac{1}{2} \log 2$ (c) $\log 2$ (d) $\frac{1}{2} \log 2$
25. If area bounded by the curves $y^2 = 4ax$ and $y = mx$ is $\frac{a^2}{3}$, then the value of m is
 (a) 2 (b) $\frac{1}{2}$ (c) $\frac{1}{2}$ (d) None of these
26. The solution of the differential equation $(x-y)^2 dx - 2xy dy = 0$ is
 (a) $y = e^{(y^2/x)} + A$ (b) $x = e^{(y^2/x)} + A$ (c) $y = e^{(x/y^2)} + A$ (d) $x = e^{(x/y^2)} + A$
27. If $f(x), g(x)$ be two differentiable functions on $[0, 2]$ satisfying $f(x) = g(x)$, $f(1) = 2g(1) = 4$ and $f(2) = 3g(2) = 9$, then $f(x) = g(x)$ at $x = 4$ equals
 (a) 0 (b) 8 (c) 10 (d) 2
28. If $Z = f(x-ay) + (x-ay)$, then
 (a) $Z_{xx} = Z_{yy}$ (b) $2Z_{xx} = a^2 Z_{yy}$ (c) $Z_{yy} = a^2 Z_{xx}$ (d) None of these
29. The curve $y^3 = (x-1)^2(2x-1)$ has a
 (a) single cusp of first species at $(\frac{2}{3}, 0)$ (b) single cusp of double species at $(1, 0)$
 (c) double cusp of first species at $(\frac{2}{3}, 0)$ (d) single cusp of first species at $(1, 0)$
30. Let $f(x) = x(x-1)(x-2)$ be defined in $0, \frac{1}{2}$. Then, the value of c of the mean value theorem is
 (a) 0.24 (b) 0.16 (c) 0.20 (d) None of these
31. The numerically greatest term in the expansion of $(2-3x)^{12}$ when $x = 5/6$ is
 (a) ${}^{12}C_7 5^4 4$ (b) ${}^{12}C_8 \frac{5^8}{2^4}$ (c) ${}^{12}C_7 \frac{5^7}{7} 2^5$ (d) None of these
32. Which one of the following is false
 (a) the series $\frac{2}{1} - \frac{3}{4} + \frac{4}{9} - \frac{5}{16} + \dots + \frac{n-1}{n^2} + \dots$ is divergent
 (b) the series $\frac{1}{2} - \frac{\sqrt{2}}{5} + \frac{\sqrt{3}}{10} - \dots + \frac{\sqrt{n}}{n^2-1} + \dots$ is oscillatory
 (c) the series whose n th term is $\sqrt{n^2-1} - \sqrt{n^2}$ is convergent
 (d) the series whose n th term is $\sin \frac{1}{4}$ is convergent
33. If $0 < U_1 < 3$ and $U_{n+1} = \frac{12}{1+U_n}$, then the sequence (U) converges to
 (a) 3 (b) 4 (c) 4 (d) 5



34. The series $\frac{4}{1} \frac{7}{2} \dots \frac{(3x-1)}{x} x^4$ is convergent, if
 (a) $|x| < 1$ (b) $|x| < \frac{1}{3}$ (c) $|x| < \frac{1}{4}$ (d) $|x| < \frac{1}{2}$
35. In what interval is the infinite series $1 - \frac{x}{2^2} + \frac{x^2}{3^2} - \frac{x^3}{4^2} + \dots$ divergent
 (a) $]-1, 1[$ (b) $]1, 1[$ (c) $]1, [$ (d) None of these
36. The probability that the sum of two numbers x and y randomly chosen in the interval $(0, 1)$ greater than 1 while the sum of the squares less than 1 is equal to
 (a) $\frac{2}{3}$ (b) $\frac{1}{4}$ (c) $\frac{1}{6}$ (d) $\frac{1}{2}$
37. An unbiased die, with faces numbered 1, 2, 3, 4, 5, 6 is thrown n times and the list on n numbers showing up is noted. The probability that among the numbers 1, 2, 3, 4, 5, 6 only three numbers appears in the list is
 (a) $\frac{{}^6C_3 \cdot 2^n}{({}^6C_3)^2}$ (b) $\frac{{}^6C_3 \cdot (3)^n}{6^n \cdot 2^n}$
 (c) $\frac{{}^6C_3 [3^n - 3(2^n - 3) - 3]}{6^n}$ (d) None of these
38. If A and B are two independent events, then $P(\bar{A} / \bar{B})$ equals
 (a) $\frac{1 - P(A|B)}{1 - P(B)}$ (b) $1 - P(A/B)$ (c) $1 - P(\bar{A}/B)$ (d) $\frac{P(\bar{A})}{P(\bar{B})}$
39. The Kurtosis of a data is given by
 (a) $\frac{3}{2}$ (b) $\frac{4}{2}$ (c) $\frac{3}{2}$ (d) $\frac{3}{2}$
40. The mean and variance of binomial distribution 4 and $\frac{4}{3}$ respectively, then $P(X = 1)$ is
 (a) 0.98063 (b) 0.89863 (c) 0.97036 (d) 0.99863
41. If X and Y are random variables with the same standard deviation and coefficient of correlation r the coefficient of correlation between X and $X + Y$ is
 (a) $\frac{1+r}{2}$ (b) $\sqrt{\frac{1+r}{2}}$ (c) $\frac{1-r}{2}$ (d) $\sqrt{\frac{1-r}{2}}$
42. In a partially destroyed laboratory record of an analysis of correlation data, the following results only are legible regression lines $8x - 10y = 66$, $0, 40x - 18y = 214$ variance of $x = 9$, then standard deviation of y is
 (a) 9 (b) 13 (c) 4 (d) None of these
43. If X and Y are independent Poisson variates such that $P(X = 1) = P(X = 2)$ and $P(Y = 2) = P(Y = 3)$, then $\text{var.}(X + 2Y)$ is equal to



- (a) 14 (b) 12 (c) 11 (d) 9
44. For the continuous distribution $dF = y_0(x - x^2) dx$; $0 < x < 1$, y_0 being an arbitrary constant, then arithmetic mean is
 (a) $\frac{3}{4}$ (b) $\frac{1}{2}$ (c) $\frac{4}{5}$ (d) None of these
45. The moment generating function of the relative velocity whose moments are $t (t - 1)! \cdot 2^t$ is
 (a) $\frac{t}{(1 - t)^2}$ (b) $\frac{1}{(1 - 2t)^2}$ (c) $(1 - t)^{-2}$ (d) None of these
46. The maximum value of $P = 4x - 2y$, subjected to $4x + 2y = 46$; $x + 3y = 24$, $x \geq 0$, $y \geq 0$; occurs at
 (a) exactly one point (b) two points
 (c) three points (d) an infinite number of points
47. A sample is said to be large sized, if its size n is
 (a) less than 20 (b) less than 30
 (c) greater than 30 (d) less than or equal to 30
48. Under the null hypothesis (H_0) the two independent estimates of the population variance are homogeneous, the statistics F is given by
 (a) $\frac{x^2}{y^2}$ (b) $\frac{y^2}{x^2}$ (c) $x^2 - y^2$ (d) $x^2 + y^2$
49. The quartile deviation of 15, 60, 28, 40, 72, 30 and 50 is
 (a) 46 (b) 60 (c) 28 (d) 16
50. A distribution has a median 4, lower quartile 4 and upper quartile 6. The Bowley's coefficient of shewness is
 (a) 1.5 (b) 1 (c) 1 (d) None of these

Sub Test-II. Computer and Logical Ability Test

M. Marks: 200

Time: 60 min.

Directions (51-55):

In each of the following questions, a numbers series/character is given with one term missing. Choose the correct alternative that will continue the same pattern.

51. 2, 1, 2, 4, 4, 5, 6, 7, 8, 8, 10, 11, (.....)
 (a) 9 (b) 10 (c) 11 (d) 12
52. 2A11, 4D13, 12 G 17, ?
 (a) 36I19 (b) 48J21 (c) 36J21 (d) 48J23
53. A, CD, GHI, ?, UVWXY
 (a) MNOP (b) LMNO (c) NOPQ (d) MNO
54. $11\frac{1}{9}$, $12\frac{1}{2}$, $14\frac{2}{7}$, $16\frac{2}{3}$, (.....)
 (a) $8\frac{1}{3}$ (b) $9\frac{1}{11}$ (c) 10 (d) 20
55. In the series 3, 9, 15,, what will be the 21st term?



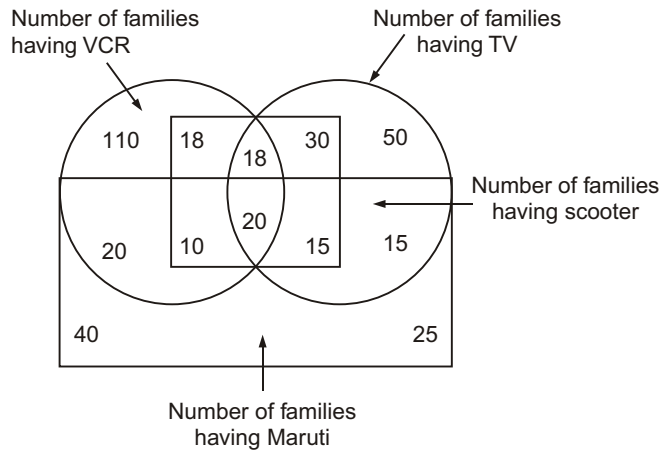
(a) 117

(b) 121

(c) 123

(d) 129

Directions (56-57):



Study the figure given below and answer the following questions

56. Find out the number of families which have all the four things mentioned in the diagram
 (a) 40 (b) 30 (c) 35 (d) 20
57. Find out the number of families have scooter
 (a) 145 (b) 100 (c) 111 (d) 240
58. Find out the number of families which have VCR and TV both
 (a) 84 (b) 24 (c) 104 (d) None of these

Directions (59-60):

Insert the missing character/digit

59.

18	24	32
12	14	16
3	?	4
72	112	128

- (a) 2 (b) 3 (c) 6 (d) 7

60.

BD ₃	CE ₅	DF ₁₅
EG ₂	FH ₄	GI ₈
HJ ₄	IK ₆	?

- (a) JL₂₄ (b) IJ₁₈ (c) JK₁₈ (d) JL₁₂

61. What will be the output of the following program segment?

```
main ( )
{
  int c 0, d 5, e 10, a;
  a c 1 ? d 1 || e 1 ? 100 : 200 : 300;
  printf ("a = %d", a);
}
```



}

- (a) 300
- (b) 200
- (c) 100
- (d) None of these

62. What will be the disjunctive normal form of the following boolean function $F(x, y, z) = (x \cdot y + x \cdot z) + \bar{x}$?

- (a) $x \cdot y \cdot z + x \cdot \bar{y} \cdot z + x \cdot y \cdot \bar{z} + x \cdot \bar{y} \cdot \bar{z}$
- (b) $x \cdot y \cdot z + 1$
- (c) $x \cdot \bar{y} \cdot z + x \cdot y \cdot \bar{z} + x \cdot \bar{y} \cdot \bar{z} + x \cdot y \cdot z$
- (d) None of these

63. The first microprocessors produced by Intel Corpn. and Texas Instruments were used primarily to control small

- (a) microwave ovens
- (b) robotics
- (c) calculators
- (d) personal computers

64. What will be output of the following program segment ?

```
class abc;
class def
{
    int i1;           //statement 1
        protected : int i2; //statement 2
        public : int i3; //statement 3
    friend abc;
};
class abc
{
    public:
    void mn (def A)
    {cout << (A . i1  3); cout << (A.i2  4); cout << (A.i3  5)}
};
void main ( )
    {def x1; abc x2; x2.mn (x1);}
```

- (a) will compile successfully if statement 1 is removed
- (b) will compile successfully if statement 2 is removed
- (c) will compile successfully if statement 3 is removed
- (d) will run successfully and print 345

65. The decimal number equivalent to binary number 1101101.1001_2

- (a) 109.5625_{10}
- (b) 106.2625_{10}
- (c) 109.2625_{10}
- (d) 108.5625_{10}

66. To store details of an employee, a storage space of 100 characters is needed. A magnetic tape, with a density of 1000 characters per inch and an inter-record gap of 1 inch is used to store information about all employees in the company. What should be the blocking factor so that the wastage does not exceed one-third of the tape?

- (a) 0.05
- (b) 20
- (c) 10
- (d) 0.1

67. An algorithm must have atleast

- (a) one input
- (b) one output
- (c) one assignment
- (d) None of these

68. What will be the output of the following program segment

```
main ( )
{
    int x, y, z;
    x = y = z = 1;
    z = x && ++y && ++z;
```



- (c) sometimes true (d) None of these
- 78.** The number of edges in a regular graph of degree d and n vertices is
 (a) maximum of n, d (b) $n - d$
 (c) nd (d) $nd/2$
- 79.** In Mahabalipuram Temple, there are some magical bells which tolls 18 times a day, simultaneously. But every bell tolls at a different interval of time, but not in fraction of minutes. The maximum number of bells in the temple can be
 (a) 18 (b) 10 (c) 24 (d) 6
- 80.** The unit digit of the expression $(1!)^1! (2!)^2! (3!)^3! \dots (100!)^{100!}$
 (a) 0 (b) 1 (c) 2 (d) 7
- 81.** A stairway of 20ft height is such that each step account for half a foot upward and one foot forward. What distance will an ant travel if it starts from ground level to reach the top of the stairway?
 (a) 59 (b) 60 (c) 58 (d) None of these
- 82.** A cigarette pack is $\frac{5}{6}$ th full its capacity, then 5 cigarettes were taken out and 2 another cigarettes were put inside the pack. Now, it is $\frac{4}{5}$ full. How many cigarettes can this pack contain when it is full?
 (a) 90 (b) 80
 (c) 72 (d) can't be determined
- 83.** Which one of the following is greatest one?
 (a) $(3)^{3322}$ (b) $(33)^{322}$
 (c) $(333)^{22}$ (d) $(22)^{333}$
- 84.** The average age of Priyambada's family consisting of 5 members 3 yr ago was 35 yr. One year ago a new baby was born in this family. Two years hence the average age of the family will be
 (a) 36 yr (b) $34\frac{5}{6}$ yr
 (c) $35\frac{4}{5}$ yr (d) None of these
- 85.** From a container of wine, a thief has stolen 15 L of wine and replaced it with same quantity of water. He again repeated the same process. Thus in three attempts the ratio of wine and water become 343:169. The initial amount of wine in the container was
 (a) 75 L (b) 100 L (c) 150 L (d) 120 L
- 86.** The dimensions of a photograph are 4 and 1.8 cm. if the breadth of the enlarged photo is 4.5 cm and it was enlarged proportionally, then what is the new length of new photograph?
 (a) 6 (b) 1.6 (c) 10 (d) 9
- 87.** Mr Scindia after selling 5.5% stock at Rs 92 realises Rs 32200. Then he invested $\frac{1}{3}$ of the amount in 4.5% stock at Rs 92, $\frac{2}{5}$ of the amount at Rs 115 in 5% stock and the remaining in 6% stock at Rs 56. The change in his income is
 (a) Rs 56 loss (b) Rs 78 profit



(c) Rs 80 profit

(d) Rs 70 loss

- 88.** A big cube is formed by rearranging the 160 coloured and 56 non-coloured similar cubes in such a way that the exposure of the coloured cube to the outside is minimum. The percentage of exposed area that is coloured is
- (a) 25.9% (b) 44.44%
(c) 35% (d) None of these
- 89.** By selling 12 apples for a rupee, a man loses 20%. How many for a rupee should he sell to gain 20%?
- (a) 8 (b) 10
(c) 15 (d) 16
- 90.** A trader marks his goods such that he can make 32% profit after giving 12% discount. However a customer availed 20% discount instead of 12%. What is the new profit percentage of trader?
- (a) 20% (b) 44%
(c) 30% (d) 28.8%
- 91.** Rs 12000 amounts to Rs 20736 in 3 yr at $r\%$ per annum of compound interest. What is the value of r ?
- (a) 10% (b) 25%
(c) 12% (d) 20%
- 92.** Kareena can do a piece of work in 9 days and Karishma can do the same work in 18 days. They started the work. After 3 days Shahid joined them, who can complete alone the same whole work in 3 days. What is the total number of days in which they had completed the work?
- (a) 12 (b) 8
(c) 4 (d) 6
- 93.** Bunty and Babli working together completed a job in 8 days. If Bunty worked twice efficiently as he actually did and Babli worked $\frac{1}{3}$ as efficiently as she actually did, the work would have been completed in 6 days. Find the time taken by Bunty to complete the job alone
- (a) 8 days (b) $\frac{38}{35}$ days
(c) $\frac{15}{2}$ days (d) $13\frac{1}{3}$ days
- 94.** The distance of the college and the home of Rajeev is 80 km. One day he was late by 1 h than the normal time to leave for the college, so he increased his speed by 4 km/h and thus he reached to college at the normal time. What is the changed (or increased) speed of Rajeev?
- (a) 28 km/h (b) 30 km/h
(c) 40 km/h (d) 20 km/h
- 95.** Varun walks on an escalator at a rate of 5 steps per second and reaches the other end in 10 s, while coming back, walking at the same speed he reaches the starting point in 40 s. What is the number of steps on the escalator?
- (a) 40 (b) 60
(c) 120 (d) 80
- 96.** Find the area of regular octagon with each side 'a' cm
- (a) $2a^2(1 - \sqrt{2})$ (b) $\sqrt{2}a(1 - \sqrt{2})$



(c) $a^2 (\sqrt{2} - 2)$

(d) None of these

97. A cone is made of a sector with a radius of 14 cm and an angle of 60° . What is total surface area of the cone?

(a) 119.78 cm^2

(b) 191.87 cm^2

(c) 196.5 cm^2

(d) None of these

98. In how many ways can 11 identical books on English and 9 identical books on Maths be placed in a row on a shelf so that two books on Maths may not be together?

(a) 110

(b) 220

(c) 330

(d) 440

99. Sunita is taller than Seema and Renu, Renu is shorter than Radha and Gauri. Bina is taller than Radha and shorter than Sunita. Sunita is not the tallest and Renu is not the shortest then who is the tallest?

(a) Sunita

(b) Bina

(c) Gauri

(d) Data inadequate

100. In the above question, who is the shortest?

(a) Radha

(b) Renu

(c) Bina

(d) None of these

