Mock Paper 4

BITS MCA

Birla Institute of Technology, Ranchi (Mesra)

Instructions

(i) 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.
(ii) Attempt all the questions.
(iii) Each test paper carries 200 marks. Each question consists of 4 marks. One mark will be deducted for wrong answer.
(iv) Use a soft HB pencil darken the appropriate bubble.

Sub Test-I. Quantitative and Mathematical Ability Test

M. Marks: 200 **Time: 75 min.**

1. Given, sin 30° = 1/2, then value of sin 3*i* correct to four decimal places by Taylor's series is
(a) 0.5051 (b) 5105 (c) 0.5151 (d) None of these

2. $\frac{\sin \quad \sin}{\cos \quad \cos}$ $f(\ )$, where 0 $\frac{}{2}$, then $f(\ )$ equals
(a) sin (b) cos (c) tan (d) cot

3. The series $1 \quad \frac{2^P}{2!} \quad \frac{3^P}{3!} \quad \frac{4^P}{4!} \quad \ldots \quad (P \quad 0)$ converges
(a) only for $P \quad 2$ (b) only for $P \quad 1$
(c) for all values of P (d) only for $P \quad 3$

4. The series $1 \quad \frac{1}{\sqrt{n}}^{n^{3/2}}$ is
(a) convergent (b) divergent (c) oscillatory (d) None of these

5. An unbounded sequence
(a) can't have a limit point (b) must have a limit point
(c) may have a limit point (d) None of these

6. In what interval is the infinite series $1 \quad 2(x \quad 3) \quad 3(x \quad 3)^2 \quad \ldots$ convergent?

(a) $1 \quad x \quad 1$ (b) $1 \quad x \quad 1$

(c) $2 \quad x \quad 4$ (d) $\quad x \quad 4$

7. The line PQ whose equation is $x \quad y \quad z$ cuts the x-axis at P and Q is $(4, \ 2 \ )$. The line PQ is rotated about P through 45 in the anticlockwise directions. The equation of the line PQ in the new position is

(a) $y \quad \sqrt{2}$ (b) $y \quad 2$ (c) $x \quad 2$ (d) $x \quad 2$

8. The pole of the line $3x \quad 4y \quad 45 \quad 0$ with respect to the circle $x^2 \quad y^2 \quad 6x \quad 8y \quad 5 \quad 0$ is

(a) $(3, 4)$ (b) $(6, \ 8)$ (c) $(5, 8)$ (d) $(\ 3, \ 5)$

9. Area of a triangle with vertices (a, b), (x_1, y_1) and (x_2, y_2), where a, x_1 and x_2 are in G.P. with common ratio r, and b y_1 and y_2 are in G.P. with common ratio s, is given by

(a) $\frac{1}{2} ab(r \quad 1)(s \quad 1)(s \quad r)$ (b) $ab(r \quad 1)(s \quad 1)(s \quad r)$

(c) $\frac{1}{2} ab(r \quad 1)(s \quad 1)(s \quad r)$ (d) $ab(r \quad 1)(s \quad 1)(r \quad s)$

10. Locus of a point (h, k) which divides chord at a distance from the centre of the circle $x^2 \quad y^2 \quad 10$ in the ratio 2:1 is

(a) $x^2 \quad y^2 \quad 16$ (b) $x^2 \quad y^2 \quad 14$

(c) $x^2 \quad y^2 \quad 8$ (d) $x^2 \quad y^2 \quad 2$

11. If the chord $y \quad mx \quad c$ subtends a right angle at the vertex of the parabola $y^2 \quad 4ax$ then the value of c is

(a) $4am$ (b) $4am$ (c) $2am$ (d) $2am$

12. A variable plane passes through a fixed point (a, b, c) and cuts the axis in A, B, C. The locus of the centre of the sphere $OABC$ is given by $\frac{a}{x} \quad \frac{b}{y} \quad \frac{c}{z} \quad k$ then k equals

(a) 1 (b) 2 (c) 3 (d) 4

13. The eccentricity of an ellipse whose pair of a conjugate diameters are $y \quad x$ and $3y \quad 2x$ is

(a) $\frac{2}{3}$ (b) $\frac{1}{3}$ (c) $\frac{1}{\sqrt{3}}$ (d) None of these

14. The equation of the cone with vertex at the origin and semivertical angle having the axis as the z-axis is

(a) $x^2 \quad y^2 \quad z^2 \tan^2$ (b) $y^2 \quad z^2 \quad x^2 \tan^2$

(c) $z^2 \quad x^2 \quad y^2 \tan^2$ (d) None of these

15. Origin is a limiting point of a co-axial system of which $x^2 \quad y^2 \quad 6x \quad 8y \quad 1 \quad 0$ is a member. The other limiting point is

(a) $(\ 2, \ 4)$ (b) $\frac{3}{25}, \frac{4}{25}$ (c) $\frac{3}{25}, \frac{4}{25}$ (d) $\frac{4}{25}, \frac{3}{25}$

16. The minimum value of $2^{(x^2 \quad 3)^3 \quad 27}$ is

(a) 2^{27} (b) 2 (c) 1 (d) None of these

17. If $\lim_{x \to a} \frac{f(x)}{g(x)}$ exists, then

(a) both $\lim_{x \to a} f(x)$ and $\lim_{x \to a} g(x)$ must exist

(b) $\lim_{x \to a} f(x)$ need not exist but $\lim_{x \to a} g(x)$ exists

(c) neither $\lim_{x \to a} f(x)$ nor $\lim_{x \to a} g(x)$ may exist

(d) $\lim_{x \to a} f(x)$ exists but $\lim_{x \to a} g(x)$ does not exist

18. The value of $\frac{ax^2 \quad b}{x\sqrt{c^2x^2 \quad (ax^2 \quad b)^2}}\,dx$ is

(a) $\sin^{1} \frac{ax \quad \frac{b}{x}}{c} \quad k$

(b) $\sin^{1} \frac{ax^2 \quad \frac{b}{x^2}}{} \quad k$

(c) $\cos^{1} \frac{ax \quad \frac{b}{x}}{c} \quad k$

(d) $\cos^{1} \frac{ax^2 \quad \frac{b}{x^2}}{c} \quad k$

19. Let $f(x) \quad \cos x \sin 2x$. Then

(a) min $\{f(x) \; 1 \quad x \quad\} \quad \frac{7}{9}$

(b) min $\{f(x) \; 1 \quad x \quad\} \quad \frac{6}{7}$

(c) min $\{f(x) \; 1 \quad x \quad\} \quad \frac{1}{9}$

(d) min $\{f(x) \; 1 \quad x \quad\} \quad \frac{2}{9}$

20. If $u \quad \cos^{1} \frac{x \quad y}{\sqrt{x} \quad \sqrt{y}}$, then $x \frac{u}{x} \quad y \frac{u}{y}$ is equal to

(a) $\frac{1}{2}u$ (b) $\frac{1}{2}\cos u$ (c) $\frac{1}{2}\cot u$ (d) None of these

21. Ratio of the area cut off a parabola by any double ordinate is that of the coresponding rectangle by the double ordinate and its distance from the vertex is

(a) 1 : 2 (b) 1 : 3 (c) 2 : 3 (d) 1 : 1

22. The differential equation of all 'Simple Harmonic Motions' of given period $\frac{2}{x}$ is

(a) $\frac{d^2x}{dt^2} \quad nx \quad 0$ (b) $\frac{d^2x}{dt^2} \quad n^2x \quad 0$ (c) $\frac{d^2x}{dt^2} \quad n^2x \quad 0$ (d) $\frac{d^2x}{dt^2} \quad \frac{1}{n^2}x \quad 0$

23. The order of the differential equation whose general solution is given by $y \quad (C_1 \quad C_2)\sin(x \quad C_3) \quad C_4e^{x \quad C_5}$ is

(a) 5 (b) 4 (c) 2 (d) 3

24. The radius of curvature at any point on curve $x \quad a(\quad \sin\ ), y \quad a(1 \quad \cos\ )$ given by

(a) $4a \sin(\ /2)$ (b) $4a \cos(\ /2)$

(c) $4a \cot(\ /2)$ (d) None of these

25. If $f(x) \quad a e^{2x} \quad be^{x} \quad cx$, satisfies the conditions $f(0) \quad 1, f\ (\log 2) \quad 31, \int_0^{\log 4} (f(x) \quad cx)\, dx \quad \frac{39}{2}$, then

(a) $a \quad 5, b \quad 6, c \quad 3$ (b) $a \quad 5, b \quad 6, c \quad 3$

(c) $a \quad 5, b \quad 6, c \quad 3$ (d) None of these

26. Origin on the curve $3x^4 \quad y^4 \quad 3y(x^2 \quad y^2) \quad 0$ is

(a) not a singular point (b) double point

(c) triple point (d) singular point of order 4

27. Let $g(x)$ be the inverse of the function $f(x)$ and $f\ (x) \quad \frac{1}{1 \quad x^3}$, then $g\ (x)$ is equal to

(a) $\frac{1}{1 \quad \{g(x)\}^3}$ (b) $\frac{1}{1 \quad \{f(x)\}^3}$

(c) $1 \quad \{g(x)\}^3$ (d) $1 \quad \{f(x)\}^3$

28. If $x(\mathbf{a} \quad \mathbf{b}) \quad y(\mathbf{b} \quad \mathbf{c}) \quad z(\mathbf{c} \quad \mathbf{a})$ and $[\mathbf{a} \quad \mathbf{b} \quad \mathbf{c}\ ] \quad \frac{1}{8}$, then $x \quad y \quad z$ is equal to

(a) $8 \quad (\mathbf{a} \quad \mathbf{b} \quad \mathbf{c})$ (b) $(\mathbf{a} \quad \mathbf{b} \quad \mathbf{c})$

(c) $8(\mathbf{a} \quad \mathbf{b} \quad \mathbf{c})$ (d) None of these

29. If the unit vectors $\mathbf{a}$ and $\mathbf{b}$ are inclined at an angle z such that $|\mathbf{a} \quad \mathbf{b}| \quad 1$ and $0 \quad$, then $\quad$ lies in the interval

(a) $[\ , \quad /6]$ (b) $[5 \quad /6\ ]$ (c) $\frac{}{6}, \frac{}{2}$ (d) $\frac{}{2}, 5 \quad /6$

30. If the rank of a matrix A is 2, then the rank of $2A$ is

(a) 4 (b) 2 (c) 3 (d) None of these

31. If x is a positive integer, then $\begin{matrix} x\,! & (x \quad 1)\,! & (x \quad 2)\,! \\ (x \quad 1)\,! & (x \quad 2)\,! & (x \quad 3)\,! \\ (x \quad 2)\,! & (x \quad 3)\,! & (x \quad 4)\,! \end{matrix}$ is equal to

(a) $2(x\,!)(x \quad 1)\,!$ (b) $2(x\,!)(x \quad 3)\,!$

(c) $2(x\,!)(x \quad 1)\,!(x \quad 2)\,!$ (d) $2(x \quad 1)\,!(x \quad 2)\,!(x \quad 3)\,!$

32. The existence of the unique solution of the system $x \quad y \quad z \quad b, 2x \quad 3y \quad z \quad 6\ 5x \quad y \quad az \quad 10$ depends on

(a) b only (b) a only

(c) a and b (d) neither a nor b

33. The values of $(1 \quad i)^{1/3}$ are

(a) $\cos \dfrac{2x \quad 3}{12} \quad i \sin \dfrac{2x \quad 3}{12}$, for $x \quad 0, 1, 2$

(b) $2^{1/6} \cos \dfrac{8x \quad 3}{12} \quad i \sin \dfrac{8x \quad 3}{12}$, for $x \quad 0, 1, 2$

(c) $3^{1/4} \cos \dfrac{2x \quad 3}{8} \quad i \sin \dfrac{2x \quad 3}{8}$, for $x \quad 0, 1, 2$

(d) None of the above

34. The set of all possible values of for which $x^2 \quad (^2 \quad 5 \quad 5)x \quad (2^2 \quad 3 \quad 4) \quad 0$ has roots whose sum and products are both less than 1 is

(a) $1, \dfrac{5}{2}$ (b) (1, 4) (c) $1, \dfrac{5}{2}$ (d) $1, \dfrac{5}{2}$

35. In the group G = {1, 3, 7, 9} under multiplication modulus 10, $(3 \quad 10^7 \quad ^1) \quad ^1$

(a) 1 (b) 3 (c) 7 (d) None of these

36. A subset W of a vector space $V(F)$ is a subspace of V, if and only if

(a) $a \quad W$ (b) $b \quad W$

(c) $a \quad b \quad W$ (d) None of these

37. In the set A {1, 2, 3, 4, 5} a relation R is defined by $R \quad \{(x, y) / x, y \quad A \text{ and } x \quad y\}$, then R is

(a) reflexive (b) symmetric

(c) transitive (d) None of these

38. The Students t for the following variable values in a sample of eight 4, 2, 2, 0, 2, 2, 3, 3 taking the mean of the universe to be zero

(a) 0.2659 (b) 0.2959 (c) 0.3201 (d) 0.3010

39. Three six-faced dice are thrown together. The probability that the sum of the number appearing on the dice k $(3 \quad k \quad 8)$ is

(a) $\dfrac{k^2}{432}$ (b) $\dfrac{k(k \quad 1)}{432}$ (c) $\dfrac{(k \quad 1)(k \quad 2)}{432}$ (d) $\dfrac{k(k \quad 1)(k \quad 2)}{432}$

40. If x is a binomial variate with parameters X and P where $0 \quad P \quad 1$ such that $\dfrac{P(X \quad r)}{P(X \quad X \quad r)}$ is independent of X and r, then P equals

(a) $\dfrac{1}{2}$ (b) $\dfrac{1}{3}$ (c) $\dfrac{1}{4}$ (d) None of these

41. If $A_1, A_2, \ldots, A_x$ are x independent events such that $P(A_i) \quad \dfrac{1}{i \quad 1}, i \quad 1, 2, \ldots x$. The probability that None of the x events occurs is

(a) $\dfrac{x}{x \quad 1}$ (b) $\dfrac{1}{x \quad 1}$ (c) $\dfrac{x}{(x \quad 1)(x \quad 2)}$ (d) None of these

42. If the standard deviation of a variable x is , then the standard deviation of $\dfrac{ax \quad b}{c}$ (a, b, c are constants) is

(a) $\dfrac{a}{c}$ (b) $\dfrac{a}{c}$ (c) $\dfrac{c}{a}$ (d) $\dfrac{c}{a}$

43. If the lines of regression of Y on X and X on Y are respectively. $y \quad k\,x \quad 4$ and $x \quad 4y \quad 5$, then

(a) $0 \quad k \quad 4$ (b) $0 \quad k \quad \frac{1}{4}$

(c) $k \quad \frac{1}{4}$ (d) None of these

44. Let $x_1, x_2, \ldots x_n$ be the ranks of n individuals according to character A and $y_1, y_2, \ldots y_n$th ranks of the same individuals according to other character B such that $x_i \quad y_i \quad n \quad 1$ for $i \quad 1, 2, .., n$. Then the coefficient of rank of correlation between the character A and B is

(a) 1 (b) 0 (c) 1 (d) None of these

45. The maximum value of $z \quad 3x \quad 4y$ subjected to the constraints $2x \quad 2y \quad 80$, $2x \quad 4y \quad 120$ and $x, y \quad 0$ is

(a) 140 (b) 120 (c) 40 (d) 130

46. The mean and mode of a given data are 110.4 and 116.1 respectively and its coefficient of skewness is 0.3. The standard deviation of the data is

(a) 1.9 (b) 19 (c) 1.9 (d) 19

47. The exponent of 12 in 1001 is

(a) 48 (b) 49 (c) 96 (d) None of these

48. Let P_m stand for ${}^m P_m$.. Then $1 \quad P_1 \quad {}^2P_2 \quad {}^3P_3 \quad \ldots {}^n P_n$ is equal to

(a) $(n \quad 1)!$ (b) $n!$ (c) $(n \quad 1)! \quad 1$ (d) None of these

49. Two unbiased dice are thrown. The expected values of the sum of number of points on them

(a) 6 (b) 5 (c) 8 (d) 7

50. The moment generating function of the random variable whose moments are

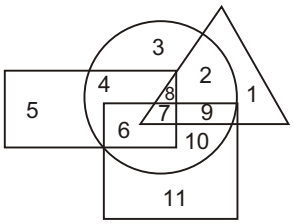
(a) $_r \quad (r \quad 1)!\,2^r$ (b) $(1 \quad 2t) \quad ^1$ (c) $(1 \quad 2t)^2$ (d) None of these

Sub Test-II. Computer and Logical Ability Test

M. Marks: 200 **Time: 60 min.**

Directions (51–55):

In the following figure, rectangle, square, circle and triangle represent the regions of wheat, grain, maize



and rice cultivation respectively. On the basis of the above figure, answer the following questions.

51. Which area is cultivated by all the four commodities?

(a) 7 (b) 8 (c) 9 (d) 2

52. Which area is cultivated by wheat and maize only?

(a) 8 (b) 6 (c) 5 (d) 4

53. Which area is cultivated by rice only?

(a) 5 (b) 1 (c) 2 (d) 11

54. Which area is cultivated by maize only?

(a) 10 (b) 2 (c) 3 (d) 4

55. Which area is cultivated by rice and maize and nothing else?

(a) 9 (b) 8 (c) 2 (d) 7

Directions (56–58):

Find out the trend and choose the missing number/character accordingly

56.

4C	2B	3A
28A	?	45B
7C	5A	15B

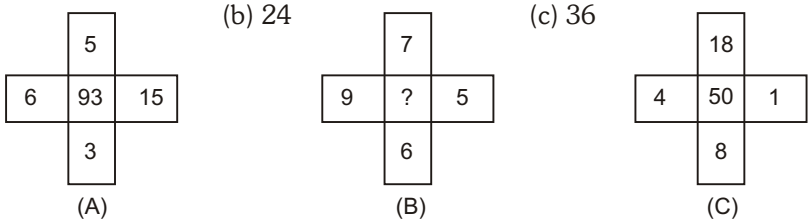
(a) 10C (b) 12C (c) 13C (d) 7C

57.

7	9	21	27
4	2	36	18
9	4	54	?

(a) 18 (b) 24 (c) 36 (d) 58

58.



(a) 5 (b) 19 (c) 27 (d) 89

Directions (59–60):

In each of the following question, one term in the number series is wrong. Find out the wrong term

59. 15, 16, 22, 29, 45, 70

(a) 16 (b) 22 (c) 45 (d) 70

60. 11, 5, 20, 12, 40, 26, 74, 54

(a) 5 (b) 20 (c) 40 (d) 26

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

```
main ( )
{
    struct num
    {
        unsigned bit 0 : 1;
        unsigned bit 1 : 1;
        unsigned bit 2 : 1;
        unsigned rest  : 5;
```

```
};
union a
{
        struct num n;
        char ch;
}b;
b.ch   32;
printf ("%d %d %d %d", b.n. bit 0, b.n. bit 1, b.n. bit 2,b.n. rest);
}
```

(a) 0, 0, 0, 4 (b) 1, 1, 1, 5
(c) 0, 1, 1, 5 (d) None of these

62. What will be the value of the boolean expression $a.b \quad a.b \quad a.b \quad a.b$?
(a) 0 (b) 1
(c) $a \quad b$ (d) None of these

63. The number of possible ordered trees with 3 nodes A, B, C is
(a) 16 (b) 12 (c) 6 (d) 10

64. The binary equivalent to decimal number 67.25 is
(a) $(1000011.01)_2$ (b) $(1100011.01)_2$
(c) $(1011011.01)_2$ (d) None of these

65. Reusability is a desirable feature of a language as it
(a) decreases the testing time (b) lowers the maintenance cost
(c) reduces the compilation time (d) reduces the execution time

66. First generation computers are characterised by
(a) Vacuum tubes and magnetic drum (b) Minicomputers
(c) Magnetic tape and transistors (d) All of these

67. What will be output of the following program segment

```
# define MUL (X) (X * X * X)
main ( )
{
        int a, b;
        b   3;
        a   MUL (b     )/b     ;
        printf ("a   %d b   %d", a.b);
}
```

(a) 64, 4 (b) 9, 7 (c) 16, 4 (d) None of these

68. A machine needs a minimum of 100 s to sort 1000 names by quick sort. The minimum time needed to sort 100 names will be approximately
(a) 50.2 s (b) 6.7 s (c) 72.7 s (d) 11.2 s

69. The octal number equivalent to the decimal number $(.509765625)_{10}$
(a) .17404.... $_8$ (b) .16404.... $_8$
(c) .17407.... $_8$ (d) None of these

70. The boolean expression $AB \quad AB \quad A\ C \quad AC$ is independent of the boolean variable

(a) A (b) B (c) C (d) None of these

71. The following information is given

```
int    a  5, b  7;
a  New (b);
cout   a    b;
```

If the function New is coded as

```
int New (const int & t)
{t  10; return (11);}
```

then

(a) it results in compile–time error (b) it results in run-time error

(c) it prints 117 (d) it prints 1110

72. What will be the dual canonical form of the boolean function $f(x, y) \quad (x.y \quad x.y) \quad x$

(a) $(x \quad y).(x \quad y)$ (b) $(x \quad y)$

(c) $y.y$ (d) None of these

73. Decimal equivalent to the octal number $(3027.105)_8$ is

(a) $(1559.143657625)_{10}$ (b) $(1559.134765625)_{10}$

(c) $(1430.14357625)_{10}$ (d) $(1447.134765625)_{10}$

74. 6 Files F 1, F 2, F 3, F 4, F 5 and F 6 have 100, 200, 50, 80, 120, 150 number of records respectively. In what order should they be stored so as to optimize access time. Assume each file is accessed with the same frequency.

(a) F 3, F 4, F 1, F 5, F 6 F, 2

(b) F 2, F 6, F 5, F 1, F 4 F, 3

(c) F 1, F 2, F 3, F 4, F 5 F, 6

(d) Ordering is immaterial as all files are accessed with the same frequency

75. Which was the world's first minicomputer and when was it introduced?

(a) PDP–1, 1958 (b) IMB System/36, 1960

(c) PDP–II, 1961 (d) VAX 11/780, 1962

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

```
main ( )
    {
        static char s [25]    "The cocaine man";
        int i   0
        char ch;
        ch   s [    i];
        printf ("%c %d\n", ch, i);
        ch   s [i     ];
        printf ("%c %d\n", ch, i);
        ch   i      [s];
        printf ("%c %d\n", ch, i);
        ch        i [s];
        printf ("%c %d\n", ch, i);
    }
```

(a) h 1
h 2

(b) c 1
d 2

(c) h 1
h 2

(d) None of these

e 3 *e* 3 *e* 3
f 3 *f* 3 !3

77. CROWN : MONARCHY :: ..... : .....

(a) Flag : Army (b) Tricolour : Freedom
(c) Swastika : Fortune (d) Insignia : Quality

Directions (78–82):

If the word 'DISINTERESTEDNESS' is re-written by reversing the order of first seven and last six letters then

78. If all vowels are removed, which letter will have one preceding and one following letter in the same order as in the English alphabet?

(a) T (b) S (c) N (d) R

79. Which letter will be the tenth letter towards right?

(a) R (b) E (c) T (d) S

80. Which will be the sixth letter from end towards left?

(a) R (b) E (c) S (d) N

81. Which constant will be exactly in the middle?

(a) T (b) E (c) S (d) None of these

82. How many vowels are there to the left of the letter exactly in the middle?

(a) 3 (b) 1 (c) 4 (d) 2

Directions (83–86):

Asha and Dara are the children of Mr. Dass. Asha marries Suresh Chopra and Sunil, Sanjay and Sonu are born to them. Sunil is married to the eldest daughter of Mr. and Mrs. Roy. Bindu is younger to Rita and older than Sita and all are daughters of Mr. and Mrs. Roy Gita is Sunil's daughter

83. What is surname of Sanjay?

(a) Dass (b) Roy
(c) Chopra (d) None of these

84. Who is married to Sunil?

(a) Bindu (b) Sita
(c) Rita (d) None of these

85. How is Dara related to Sonu?

(a) Brother-in-law (b) Uncle
(c) Maternal Uncle (d) Brother

86. What is the surname of Gita?

(a) Chopra (b) Dass
(c) Roy (d) Suresh

87. The remainder when 2^{100} is divided by 3 is

(a) 3 (b) 0 (c) 1 (d) 2

88. Three bells chime at intervals of 18 min, 24 min and 32 min respectively. At a certain time they begin to chime together. What length of time will elapse before they chime together again?

(a) 24 h and 24 min (b) 4 h and 48 min

(c) 1 h and 36 min (d) 5 h

89. A man's income is increased by Rs 1200 and at the same time, the rate of tax to be paid is reduced from 12% to 10%. He now pays the same amount of tax as before. Calculate the man's increased income

(a) 7000 (b) 6500

(c) 7200 (d) 8000

90. A man bought an article and sold it at a gain of 5%. If he had bought it at 5% less and sold it for Re 1 less, he would have made a profit of 10%. The cost price of the article was

(a) Rs 100 (b) Rs 150

(c) Rs 200 (d) Rs 500

91. The average weight in a school of 40 teachers is 80 kg. If, however the weight of the principal be included, the average decreases by 1 kg. What is the weight of the principal?

(a) 109 kg (b) 29 kg

(c) 39 kg (d) None of these

92. A train leaves the station 1 h before the scheduled time. The driver decreases its speed by 50 km/h. At the next station 300 km away, the train reached on time. Find the original speed of the train

(a) 100 km/h (b) 150 km/h

(c) 125 km/h (d) 200 km/h

93. *A*, *B* and *C* can do a piece of work in 11 days, 20 days and 55 days respectively, working alone. How soon can the work be done, if *A* is assisted by *B* and *C* on alternate days?

(a) 7 days (b) 8 days

(c) 9 days (d) 10 days

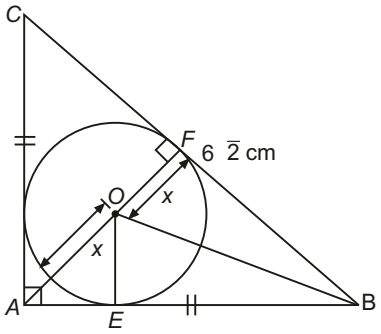
94. Three pipes *A*, *B* and *C* can fill a cistern in 36 min. After working together for 12 min, *C* is closed and *A* and *B* fill the cistern in 48 min. Then, find the time in which the cistern can be filled by pipe *C*

(a) 30 min (b) 48 min

(c) 72 min (d) 45 min

95. If $A : B$ 3:4, $B : C$ 8:9, $C : D$ 15:16. Find $A : B :: C : D$

(a) 15 : 20 : 21 : 28 (b) 30 : 40 : 45 : 48



(c) 9 : 15 : 21 : 28 (d) None of these

96. In *ABC*, *BC* is $6\sqrt{2}$ cm. Then, the value of *x* is

(a) (6 $3\sqrt{2}$) cm
(b) (6 $3\sqrt{2}$) cm
(c) (3 $\sqrt{2}$) cm
(d) (3 $\sqrt{2}$) cm

97. Minimum value of $\frac{b}{a}\ \frac{c}{a}\ \frac{c}{b}\ \frac{a}{b}\ \frac{a}{c}\ \frac{b}{c}$ (for real positive numbers a, b, c) is
(a) 1
(b) 2
(c) 4
(d) 6

98. The total number of 3 digits number which have two or more consecutive digits identical is
(a) 171
(b) 170
(c) 90
(d) 180

99. The number $\log_2 7$ is
(a) an integer
(b) a rational number
(c) an irrational number
(d) a prime number

100. In how many ways can the following prizes be given away to a class of 30 students, first and second in Mathematics, first and second in physics first in chemistry and first in English?
(a) $\frac{30!}{4!}$
(b) $(30)^4\ \ (29)^2$
(c) $(30)^3\ \ 1$
(d) $(30)^4\ \ (29)^4$