BHU – 2017

Objective Type Questions (Only one option is correct)

1. In a certain code, 'PLANT' is written as '$@2*#', 'YIELD' is written as 'β64@%'. How is DELAY written in the code language?
(a) β4*2% (b) β4@2% (c) %42@β (d) %4@2β

2. How many meaningful English code can be formed with letters ARILT using each letter only once in the word?
(a) One (b) Two (c) Three (d) More than three

3. D said, "A is father is the only brother of my sister's son". How is A's father related to D?
(a) Cousin (b) Nephew (c) Aunt (d) Uncle

4. If 'A is coded as 1, B is coded as 3, C is coded as 5 and so on, which of the following is the numerical value of the word FAZED?
(a) 81 (b) 79 (c) 80 (d) 78

5. Which of the following, pairs of words have the same relationship as FAN : HEAT?
(a) WATER : DRINK (b) LIGHT : NIGHT (c) FOOD : HUNGER (d) AIR : BREATHE

6. Q types faster than R but not as fast V. T types faster than R. S types faster than V. Who amongst the five, types fastest?
(a) V (b) T (c) S (d) Data inadequate

7. Select the missing number from the given responses: 0, 7, 26, 63, ?
(a) 124 (b) 98 (c) 148 (d) 188

Directions (Q. No. 8 to 11) : Select the related letter/word/number from the given alternatives.

8. Reasoning : Logic : : Science : ?
(a) Evolution (b) Facts (c) Laboratory (d) Scientists

9. Petal : Flower : : Branch : ?
(a) Bee (b) Office (c) Tree (d) Sprots

10. EJOT : KPUZ : : CHMR : ?
(a) JOTY (b) HMRW (c) INSX (d) LQVA

11. 5 : 625 : : 3 : ?
(a) 27 (b) 81 (c) 243 (d) 28

12. If the 4^{th} day of a month is Monday, what date will will it be 4 days after 3^{rd} Saturday of the month?
(a) 16 (b) 20 (c) 23 (d) 28

13. Abhay moves 60 km West, then he turns left and moves 40 km. Again he turns left and moves 60 km. Finally, he turns right and moves 30 km. How far is he from the starting point?
(a) 70 km (b) 60 km (c) 50 km (d) 40 km

14. Find the odd number from the given alternatives : 93, 86, 79, 72, 65, 59
(a) 93 (b) 79 (c) 72 (d) 59

15. Select the missing number from the given responses:

144	256	150
6	8	5
8	5	9
32	37	?

(a) 25 (b) 34 (c) 39 (d) 40

16. Artist of Painting as Senator is to
(a) Attorney (b) Law (c) Politician (d) Constituents

17. A can do a piece of work in 24 days, while B alone can do it in 16 days. With the help of C, they finish the work in 8 days. C alone can do the work in
(a) 48 day (b) 42 days (c) 36 day (d) 32 days

18. A train 700 m long is running at the speed of 72 km per hour. It is crosses as tunnel in 1 minute, they the length of the tunnel is
(a) 500 m (b) 550 m (c) 600 m (d) 650 m

19. A trader lists his articles 20% above cost price and allows a discount of 10% on cash payment. His gain percent is
(a) 5 (b) 6 (c) 7 (d) 8

20. The sides of a triangle are in the ratio $\frac{1}{3}:\frac{1}{4}:\frac{1}{5}$ and its perimeter is 94 cm, the length of the smallest side is
(a) 18.4 cm (b) 22.5 cm (c) 23.2 cm (d) 24 cm

21. A mixture of 40 litres of milk and water contain 10% water. How much water should be added to this so that water may be 20% in the new mixture?
(a) 5 litres (b) 5.5 litre (c) 6 litres (d) 8 litres

22. The profit of a company is given below:

Year	Profit (in crores of Rs.)
2001	5.2
2002	6.5
2003	7.8
2004	9.9
2005	10.8
2006	9.5
2007	11.4

In how many years, the profit was above the average?

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

23. The loan disbursed by 5 banks for three years are given below

Banks	Years		
	2005	2006	2007
A	23	48	30
B	33	18	41
C	29	22	19
D	16	28	32
E	19	27	34

What was the percentage increase of disbursement of loans of all banks together from 2005 to 2007?

(a) 10 (b) 20 (c) 30 (d) $23\frac{1}{3}$

24. Fare by bus and car are Rs. 5 and 14 per km respectively. A man who travels 220 km spends Rs. 2270 in going a part of distance by bus and the remaining in car. How many km did he travel in Car?

(a) 90 (b) 75 (c) 130 (d) 82

25. The surface area of a sphere is same as the total surface area of cylinder whose height is 4 cm and diameter of the base is 8 cm. Then the radius of the sphere is

(a) 4 cm (b) 4.5 cm (c) 6 cm (d) 8 cm

26. Production of a company in 2012 was 468 tonnes. If it increases by 15% in the first year and decreases by 8% in the second year, then the production of the company after two years will be

(a) 500.76 (b) 495.14 (c) 493.875 (d) 487.14

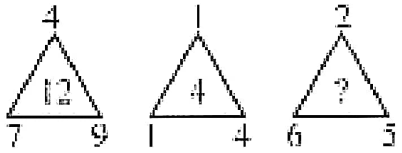
Directions (Q. No. 27 to 29) : Three of the following four are alike in a certain way and so form a group. Which is the one that does not belong to the group?

27. (a) Spain (b) Croatia (c) Italy (d) Brazil

28. (a) Phoenix (b) Miami (c) Nashville (d) Boston

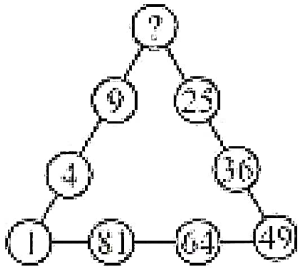
29. (a) Basic (b) Barley (c) Fortran (d) Cobol

30. Which number replaces the quesiton (?) mark?



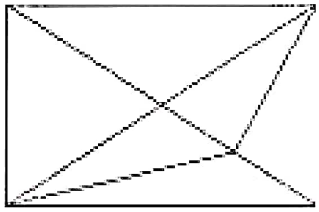
(a) 9 (b) 7 (c) 8 (d) 13

31. Which number replaces the question(?) mark?



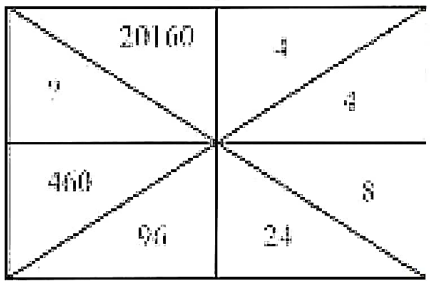
(a) 20 (b) 24 (c) 12 (d) 16

32. Find the number of triangles in the following figure?



(a) 11 (b) 13 (c) 15 (d) 17

33. Find the missing number from the given responses :



(a) 860 (b) 1140 (c) 2880 (d) 3240

34. The missing term in the series $11\frac{1}{9}, 12\frac{1}{2}, 14\frac{2}{7}, 16\frac{2}{3}, ?$ is

(a) $8\frac{1}{3}$ (b) $19\frac{1}{2}$ (c) 20 (d) $22\frac{1}{3}$

35. A cube painted yellow on all faces is cut into 27 small cubes of equal size. How many small cubes are painted on one face only?

(a) 1 (b) 6 (c) 8 (d) 12

36. What number must be added to the numbers 3, 7 and 13 so that they are in the continued proportion?

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

37. The radii of two cylinders are in the ratio of 2 : 3 and their heights are in the ratio 5 : 3. The ratio of their volumes is

(a) 27 : 20 (b) 20 : 27 (c) 4 : 9 (d) 9 : 4

38. If the height of a cone is doubled, then its volume is increased by

(a) 100% (b) 200% (c) 300% (d) 400%

39. The greatest number of four digits which is divisible by each one of the numbers 12, 18, 21 and 28 is

(a) 9484 (b) 9864 (c) 9828 (d) 9636

40. Find the odd one form the following : 253, 136, 352, 460, 324, 631, 244.

(a) 136 (b) 324 (c) 352 (d) 631

41. If log 27 = 1.431 then the value of log 9 is

(a) 0.934 (b) 0.945 (c) 0.954 (d) 0.958

42. The value of $\left(\frac{1}{\log_3 60}+\frac{1}{\log_4 60}+\frac{1}{\log_5 60}\right)$ is

(a) 0 (b) 1 (c) 5 (d) 60

43. If $\log_{10} 5+\log_{10}(5x+1)=\log_{10}(x+5)+1$, then x is equal to

(a) 1 (b) 3 (c) 5 (d) 10

44. Solve for x : -9x + 5x < 17 and 13x + 25 < -1

(a) $x<-2$ and $x>-\frac{4}{3}$ (b) $x<-2$ (c) $x>-\frac{4}{3}$ (d) There are no solutions

45. Choose the correct solution that best describes the following inequality:

$\frac{5x-32}{2}>9$ and $\frac{1}{3}(12x-21)<9$

(a) x < 4 (b) $x \le 4$ or x > 10 (c) x < 4 and x > 10 (d) x > 10

46. If $|3 - x| < 10$, then all values of x which make this inequality true is

(a) $\{x \mid x \in (-7,13)\}$ (b) $\{x \mid x \in (-7,7)\}$ (c) $\{x \mid x \in (-18,13)\}$ (d) $\{x \mid x \in (-13,7)\}$

47. If the matrix $A=\begin{bmatrix}0 & a & 3\\ 2 & b & 1\\ c & 1 & 0\end{bmatrix}$ is a skew-symmetric matrix, then the values of a, b and c are

(a) {2, 0, 3} (b) {–2, 0, –3} (c) {2, 0, –3} (d) {–2, 0, 3}

48. If A is a square matrix such that $A^2 = A$, then the value of $(I+A)^3$, where I is the identity matrix is

(a) 7A + I (b) 3A + 2I (c) 4A + 3I (d) 7A + 2I

49. If $A=\begin{pmatrix}1 & 2\\ 4 & 1\end{pmatrix}$, the the value of $A^2+2A-5I$ is

(a) $\begin{pmatrix}6 & 8\\ 16 & 6\end{pmatrix}$ (b) $\begin{pmatrix}6 & 16\\ 8 & 6\end{pmatrix}$ (c) $\begin{pmatrix}11 & 8\\ 16 & 11\end{pmatrix}$ (d) $\begin{pmatrix}11 & 16\\ 8 & 11\end{pmatrix}$

50. If A is a 3 × 3 non-singular matrix such that $AA'=A'A$ and $B=A^{-1}.A'$, then BB' equals (I is the identity matrix)

(a) I+ (b) I (c) B^{-1} (d) $(B^{-1})'$

51. If $A=\begin{bmatrix}1 & 2 & 2\\ 2 & 1 & -2\\ a & 2 & b\end{bmatrix}$ is a matrix satisfying the equation $AA'=9I$, where I is 3 × 3 Identity matrix, then order pair (a, b) is equal to

(a) (–2, 1) (b) (2, 1) (c) (–2, –1) (d) (2, –1)

52. If $A=\begin{bmatrix}2 & 1 & 3\\ 3 & 1 & 2\\ 1 & 2 & 3\end{bmatrix}$, then (adj A) A is (where adj is adjoint)

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

53. The value of $\begin{vmatrix}a+b & a & b\\ a & a+c & c\\ b & c & b+c\end{vmatrix}$ is

(a) abc (b) 4abc (c) $a^2b^2c^2$ (d) $4a^2b^2c^2$

54. The system given by 2x – y + 3z = 4, x + y – 3z = –1 and 5x – y + 3z = 7 has

(a) no solution (b) one solution (c) two solutions (d) infinite number of solutions

55. If the equations x = ay + z, y = z + ax, z = x + y are consistent (have non-zero solution), then

(a) $a^2+a=1$ (b) $a^3+1=0$ (c) $a^3-1=0$ (d) $a^3=2$

56. If $\begin{vmatrix}0 & c & b\\ c & 0 & a\\ b & a & 0\end{vmatrix}^2 = pa^2b^2c^2$, then the value of p is

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

57. If x, y, z (all are non-zero) are in AP and $\tan^{-1}x, \tan^{-1}y,$ and $\tan^{-1}z$ are also in AP, then

(a) 2x = 3y = 6z (b) 6x = 4y = 3z (c) 6x = 4y = 3z (d) x = y = z

58. If the 2^{nd}, 5^{th} and 9^{th} terms of a non-constant AP are in GP, then the common ratio of this GP is

(a) $\frac{8}{5}$ (b) 1 (c) $\frac{4}{3}$ (d) $\frac{7}{4}$

59. Three positive numbers form an increasing GP. If the middle term in this GP is doubled, the new numbers in AP, then the common ratio of the GP is

(a) $\sqrt{2}+\sqrt{3}$ (b) $3+\sqrt{2}$ (c) $3-\sqrt{3}$ (d) $2+\sqrt{3}$

60. If m is AM of two distinct r eal numbers p and q{p, q > 1} and G_1, G_2 and G_3 are three geometric means between p and q, then $G_1^4 + 2G_2^4 + G_3^4$ equals

(a) $4pm^2q$ (b) $4pmq^2$ (c) $4p^2m^2q^2$ (d) $4p^2mq$

61. The n^{th} term of the following 5 + 55 + 555 + ……. is

(a) $5(10^n - 1)$ (b) $5^n(10^n - 1)$ (c) $\left(\frac{5}{9}\right)(10^n - 1)$ (d) $\left(\frac{5}{9}\right)^n (10^n - 1)$

62. The term independent of x in $\left(x^2 - \frac{1}{x}\right)^{12}$ is

(a) 275 (b) 355 (c) 495 (d) 512

63. The term which is numerically greatest in the expansion pf $(2x-3y)^{12}$, when x = 1, y = 2 is

(a) 9^{th} (b) 10^{th} (c) 11^{th} (d) 12^{th}

64. The sum of the even powers of x in the expansion $(1+x+x^2)^{15}$ is

(a) $\frac{3^{15}+1}{2}$ (b) $\frac{3^{15}-1}{2}$ (c) 8220 (d) 10220

65. If c_0, c_2, c_4.....Are the binomial coefficient in the expansion of $(1+x)^9$, then $c_0 + c_2 + c_4 + c_6 + c_8 =$

(a) 2^7 (b) 256 (c) 2^9 (d) 258

66. If $x = \frac{1}{5} + \frac{1.3}{5.10} + \frac{1.3.5}{5.10.15} + ...$, then $3x^2 + 6x =$

(a) 0 (b) 1 (c) 2 (d) –1

67. The number of ways of distributing 8 identical balls in 3 distinct boxes so that none of the boxes is empty is

(a) 5 (b) 21 (c) 3^8 (d) ${}^8C_3$

68. A polygon has 54 diagonals. The total number of distinct triangles that can be formed using the vertices is

(a) 220 (b) 165 (c) 286 (d) 216

69. Number of divisiors of the form $4n+2 (n \geq 0)$ of the integer 240 is

(a) 4 (b) 8 (c) 10 (d) 3

70. The value of ${}^{50}C_4 + \sum_{r=1}^{6} {}^{56-r}C_3$ is

(a) ${}^{55}C_4$ (b) ${}^{55}C_3$ (c) ${}^{56}C_3$ (d) ${}^{56}C_4$

71. How many ways are there to arrange the letters in the word GARDEN with the vowels in alphabetical order?

(a) 120 (b) 240 (c) 360 (d) 480

72. The number of ways in which 6 men and 4 women can dine at a round table, no two women are to sit together, is given by

(a) 30 (b) $5! \times 5!$ (c) $5! \times 4!$ (d) $7! \times 5!$

73. If repetition of the digits is allowed, then the number of even natural numbers having three digits is

(a) 250 (b) 350 (c) 450 (d) 550

74. If ${}^{n}C_{r-1} = 36, {}^{n}C_{r} = 84$ and ${}^{n}C_{r+1} = 126$, then r is

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

75. A five digit number divisible by 3 is to be formed using the numerals 0, 1, 2, 3, 4 and 5 without repetition. The total number of ways in which this can be done is

(a) 216 (b) 600 (c) 240 (d) 3125

76. The number of integers greater than 6000 that can be formed, using the digits 3, 5, 6, 7, and 8 without repetition is

(a) 192 (b) 120 (c) 72 (d) 216

77. If $x^2 - 7x + a$ has a remainder 1 when divided by x + 1, then

(a) a = -7 (b) a = 7 (c) a = 0 (d) a = 1

78. If a < 0, then function $f(x) = ax^2 + bx + c$ has maximum value at

(a) $x = \frac{a}{2b}$v (b) $x = -\frac{a}{2b}$ (c) $-\frac{b}{2a}$v (d) $\frac{b}{2a}$

79. If α and β are roots of $x^2 - 2x + 3 = 0$ then equation with roots $\frac{1}{\alpha}, \frac{1}{\beta}$ is

(a) $x^2 - 6x + 11 = 0$ (b) $x^2 + 6x - 11 = 0$ (c) $x^2 + 11x + 6 = 0$ (d) $x^2 - 2x + 1 = 0$

80. If $a \in R$ and the equation $-3\{x - [x]\}^2 + 2[x - [x\} + a^2 = 0$ (where [x] denotes the greatest integer $\leq x$) has no integral solution, then all possible values is a lie in the interval

(a) $(-1,0) \cup (0,1)$ (b) (1, 2) (c) (–2, –1) (d) $(-\infty, -2) \cup (2, \infty)$

81. Let α and β be the roots of the equations $x^2 - 6x - 2 = 0$. If $a_n = \alpha^n - \beta^n$, for $n \geq 1$, then the value of $\frac{\alpha_{10} - 2\alpha_8}{2a_9}$ is equal to

(a) –6 (b) 3 (c) –3 (d) 6

82. The value of a for which the sum of the squares of the roots of the equation $x^2-(a-2)x-a-1=0$ assume the least value is

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

83. If the roots of the equation $x^2-bx+c=0$ be two consecutive integers, then b^2-4c equals

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

84. Let R = {(3, 3), (6, 6), (9, 9), (12, 12), (6, 12), (3, 9), (3, 12), (3, 6)} be a relation on the set A = {3, 6, 9, 12}. The relation is

(a) reflexive and transitive (b) reflexive only

(c) an equivalence relation (d) reflexive and symmetric only

85. Let R = {(1, 3), (4, 2), (2, 4), (2, 3), (3, 1)} be a relation on the set A = {1, 2, 3, 4}. The relation R is

(a) a function (b) transitive (c) not symmetric (d) reflexive

86. The range of the function $f(x)={}^{7-x}P_{x-3}$ is

(a) {1, 2, 3} (b) {1, 2, 3,4, 5, 6} (c) {1, 2, 3, 4} (d) {1, 2, 3, 4, 5}

87. If $R \to S$ defined by $f(x)=\sin x-\sqrt{3}\cos x+1$ is onto, then the interval of S is

(a) [0, 3] (b) [–1, 1] (c) [0, 1] (d) [–1, 3]

88. The domain of definition of the function $y=\frac{1}{\log_{10}(1-x)}+\sqrt{x+2}$ is

(a) (-3, -2) excluding -2.5 (b) [0, 1] excluding 0.5

(c) [-2, 1] excluding 0 (d) [1, 2] excluding 1.5

89. If $g\{f(x)\}=|\sin x|$ and $f[g(x)]=(\sin\sqrt{x})^2$ then

(a) $f(x)=\sin^2 x, g(x)=\sqrt{x}$ (b) f(x) = sin x, g(x) = [x]

(c) $f(x)=x^2, g(x)=\sin\sqrt{x}$ (d) f and g cannot be determined

90. If f(x) = 3x – 5, then $f^{-1}(x)$

(a) is given by $\frac{1}{3x-5}$ (b) is given by $\frac{x+5}{3}$

(c) does not exist because f is not one-one (d) does not exist because f is not onto

91. The domain of definition of the function y(x) as given by the equation $2^x+2^y=2$

(a) $0<x\le 1$ (b) $0\le x\le 1$ (c) $-\infty<x\le 0$ (d) $-\infty<x<0$

92. If E = {1, 2, 3, 4} and F = {1, 2} then the number of onto functions from E to F is

(a) 14 (b) 16 (c) 12 (d) 8

93. If z is complex number such that $|x| \geq 2$, then the minimum value of $\left|z+\frac{1}{2}\right|$

(a) is equal to $\frac{5}{2}$ (b) lies in (1, 2) (c) is strictly greater than $\frac{5}{2}$ (d) lies in (0, 1)

94. A value of θ for which $\frac{2+3i\sin\theta}{1-2i\sin g\theta}$ is purely imaginary is

(a) $\frac{\pi}{6}$ (b) $\sin^{-1}\left(\frac{\sqrt{3}}{4}\right)$ (c) $\sin^{-1}\left(\frac{1}{\sqrt{3}}\right)$ (d) $\frac{\pi}{3}$

95. The argument of the complex number $\frac{1+2i}{1-3i}$ is

(a) $\frac{\pi}{4}$ (b) $\frac{3\pi}{4}$ (c) $\frac{5\pi}{9}$ (d) 2π

96. Area of the triangle formed by the three complex numbers 1 + I, 1 – I and 2i in the Argand diagram is

(a) ½ (b) 1 (c) $\sqrt{2}$ (d) 2

97. If $z=\cos\theta+i\sin\theta$, then $\frac{z^{2n}-1}{z^{2n}+1}=$

(a) $\cos n\theta$ (b) $\sin n\theta$ (c) $-I\sin n\theta$ (d) $-I\tan n\theta$

98. If the circles $x^2+y^2=a$ and $x^2+y^2-6x-8y+9=0$ touch externally, the a =

(a) 1 (b) –1 (c) 21 (d) 16

99. The area of an equilateral triangle inscribed in the circle $x^2+y^2-6x-8y-25=0$ is

(a) $\frac{225\sqrt{3}}{6}$ (b) 25π (c) $50\pi-100$ (d) 225

100. A circle S passes through the point (0, 1) and is orthogonal to the circles $(x-1)^2+y^2=16$ and $x^2+y^2=1$. Then

(a) radius of S is 8 (b) radius of S is 7 (c) centre of S is (–8, 1) (d) centre of S is (–1, 1)

101. The length of the latus-rectum of the parabola $4y^2+2x-20y+17=0$ is

(a) 3 (b) 6 (c) 1/2 (d) 1/3

102. The equation of the common tangent of $y^2=2x$ and $x^2=16y$ is

(a) x + 2y – 2 = 0 (b) x + 2y + 2 = 0 (c) x + 2y = 0 (d) 2x + y – 4 = 0

103. The eccentricity of the ellipse $9x^2+25y^2-18x-100y-116=0$ is

(a) $\frac{25}{16}$ (b) $\frac{4}{5}$ (c) $\frac{16}{25}$ (d) $\frac{5}{4}$

104. The minimum area (in sq. units) of triangle formed by the tangent to the ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$ and coordinate axes is

(a) ab (b) $\frac{a^2+b^2}{2}$ (c) $\frac{(a+b)^2}{2}$ (d) $\frac{a^2+ab+b^2}{3}$

105. The eccentricity of the hyperbola $x=\frac{a}{2}\left(t+\frac{1}{t}\right), y=\frac{a}{2}\left(t-\frac{1}{t}\right)$ is

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

106. If the line $2x+\sqrt{6}y=2$ touches the hyperbola $x^2-2y^2=4$, then the point of contact is

(a) $\left(-2,\sqrt{6}\right)$ (b) $\left(-5,2\sqrt{6}\right)$ (c) $\left(\frac{1}{2},\frac{1}{\sqrt{6}}\right)$ (d) $\left(4,-\sqrt{6}\right)$

107. Two dice are thrown simultaneously. What is the probability of getting two numbers whose product is

(a) 3/4 (b) 1/4 (c) 7/4 (d) 1/2

108. A speaks truth in 75% of cases and B in 80% of cases. In what percentage of cases are they likely to contradict each other, narrating the same incident?

(a) 30 (b) 32 (c) 35 (d) 40

109. The probability of a razor blade to be defective is 0.002, the blades are in packet of 10. The number of packets containing no defective blades in a stock of 10000 packets is

(a) 2000 (b) 9802 (c) 9950 (d) 8000

110. The minimum numbers of times a fair coin needs to the tossed, so that the probability of getting at least heads is at least 0.96 is

(a) 4 (b) 6 (c) 8 (d) 10

111. A six faced dice is thrown until 1 comes, then the probability that 1 comes in even no. of trials is

(a) 5/11 (b) 5/6 (c) 6/11 (d) 1/6

112. A determinant is chosen at random from the set of all determinants of matrices of order 2 with elements 0 and 1 only. The probability that the determinant chosen is non-zero is

(a) 3/16 (b) 3/8 (c) 1/4 (d) 2/7

113. For $x \in R$, $f(x) = \{\log 2 - \sin x\}$ and $g(x) = f(f(x))$, then

(a) $g'(0)=\cos(\log 2)$ (b) $g'(0)=-\cos(\log 2)$ (c) $g'(0)=-\sin(\log 2)$ (d) g is not differentiable at x = 0

114. If a curves y = f(x) passes through the point (1, –1) and and satisfies the differential equation $y(1 + xy)dx = xdy$, then $f\left(-\frac{1}{2}\right)$ is equal to

(a) $-\frac{4}{5}$ (b) $\frac{2}{5}$ (c) $\frac{4}{5}$ (d) $-\frac{2}{5}$

115. Let y(x) be the solution of the differential equation $(x\log x)\frac{dy}{dx}+y=2x\log x,(x\geq 1)$, then y(e) is equal to

(a) 0 (b) 2 (c) 2e (d) e

116. $\lim\limits_{x\to 0}\frac{(1-\cos 2x)(3+\cos x)}{x\tan 4x}$ is equal to

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

117. The area (in sq. units) of the region described by $\{(x,y):y^2\leq 2x \text{ and } y\geq 4x-1\}$ is

(a) $\frac{5}{64}$ (b) $\frac{15}{64}$ (c) $\frac{9}{32}$ (d) $\frac{7}{32}$

118. The integral $\int\frac{dx}{x^2(x^4+1)^{3/4}}$ equals

(a) $(x^4+1)^{1/4}+C$ (b) $-(x^4+1)^{1/4}+C$ (c) $-\left(\frac{x^4+1}{x^4}\right)^{1/4}+C$ (d) $\left(\frac{x^4+1}{x^4}\right)^{1/4}+C$

119. The value of integral $\int_0^{\pi/2}\log\tan x$ is

(a) π (b) $\frac{\pi}{2}$ (c) $\frac{\pi}{3}$ (d) 0

120. If $f(x)=\int_0^x t\sin t\,dt$, then $f'(x)$ is

(a) cos x + x tan x (b) x sin x (c) x cos x (d) $\frac{x^2}{2}$

Answer Key

1	2	3	4	5	6	7	8	9	10
d	b	b	b	c	d	a	b	c	c
11	12	13	14	15	16	17	18	19	20
b	b	a	d	c	b	a	a	d	d
21	22	23	24	25	26	27	28	29	30
a	c	c	c	a	b	d	b	b	a
31	32	33	34	35	36	37	38	39	40
d	c	c	c	b	a	b	a	c	b
41	42	43	44	45	46	47	48	49	50
c	b	b	d	Wrong	a	b	a	a	b
51	52	53	54	55	56	57	58	59	60
c	c	b	d	Wrong	a	d	c	d	a
61	62	63	64	65	66	67	68	69	70
c	c	b	a	b	c	b	a	a	d
71	72	73	74	75	76	77	78	79	80

c	Wrong	c	c	a	a	a	c	d	a
81	82	83	84	85	86	87	88	89	90
b	a	d	a	c	a	d	Wrong	a	b
91	92	93	94	95	96	97	98	99	100
d	a	b	c	b	b	Wrong	a	a	b
101	102	103	104	105	106	107	108	109	110
c	b	b	a	a	d	Wrong	c	b	c
111	112	113	114	115	116	117	118	119	120
a	b	a	c	b	b	Wrong	c	d	b