1. If \( n(A) = 4 \), \( n(B) = 2 \), then the number of mappings from \( A \) to \( B \) is
\[
n(A) = 4, \ n(B) = 2 \quad \Rightarrow \quad 2^4 = 16
\]
a) 25  
b) 16  
c) 32  
d) None

2. If \( n(A) = 20 \), \( n(B) = 44 \), \( n(A \cap B) = 13 \), then \( n(A \cup B) = \)
\[
n(A) = 20, \ n(B) = 44, \ n(A \cap B) = 13, \quad \Rightarrow \quad 20 + 44 - 13 = 51
\]
a) 22  
b) 39  
c) 24  
d) 51

3. If in a class of 30 students, 10 take tea but not coffee and 14 take tea, then the number of students who take coffee but not tea is
\[
30 \quad \Rightarrow \quad 10 \quad \Rightarrow \quad 14 \quad \Rightarrow \quad \text{No. of students who take coffee but not tea}
\]
a) 20  
b) 10  
c) 6  
d) 16

4. The Venn diagram represents
\[
\text{A} \setminus \text{B}  \quad \text{B} \setminus \text{A}  \quad \text{A} \Delta \text{B}  \quad \text{None}
\]
a) A  
b) B  
c) A \Delta B  
d) None

5. Which is the LCM of greatest 2 digit number and the greatest 3 digit number?
\[
99 \times 999  \quad \text{or} \quad \text{999}  \quad \text{or} \quad 99 \times 9 \times 111  \quad \text{or} \quad 9 \times 11 \times 111
\]
a) 99 \times 999  
b) 999  
c) 99 \times 9 \times 111  
d) 9 \times 11 \times 111

6. \[
\sqrt{2} + \sqrt{2} + \sqrt{2} + \ldots \infty = \]
a) 2  
b) 3  
c) 4  
d) 5

7. \[
4 \log 3 + 2 \log 5 = \]
a) \log 2005  
b) \log 2052  
c) \log 2025  
d) \log 2250

8. \[
\log_{0.01} 0.0001 = \]
a) 2  
b) 3  
c) 4  
d) 5

9. Value of \( m \) in order that
\[
x^4 - 2x^3 + 3x^2 - mx + 6 \text{ may be exactly divisible by } (x - 3) \text{ is}
\]
a) 20  
b) 10  
c) -20  
d) -10

10. Given that \((x-3)^2\) is a factor of \( x^3 - 4x^2 - 3x + 18 \), its another factor is
\[
x^3 - 4x^2 - 3x + 18 \quad \Rightarrow \quad (x-3)^2 \quad \Rightarrow \quad \text{another factor}
\]
a) \(x + 2\)  
b) \(x + 3\)  
c) \(x - 2\)  
d) \(x + 6\)
11. \(4x - 4a = \)
   a) \(\frac{1}{4}\)  
   b) 4  
   c) \(-\frac{1}{4}\)  
   d) -1

12. Among the following a polynomial is ....
   a) \(2x^2 - 3x - 1 + 5\)  
   b) \(\frac{1}{x + 1}\)  
   c) \(2x + \frac{3}{x} - 5\)  
   d) \(4x^2 + 5x - 2\)

13. The age of a son is one third the age of his father. If the present age of father is 'x' years, then the age of the son after 10 years is ...
   a) \(\frac{x}{3} - 10\)  
   b) \(\frac{x}{3} + 10\)  
   c) \(x + \frac{10}{3}\)  
   d) \(x + 10\)

14. The larger of two supplementary angles exceeds the smaller by 38°. Find them ..... 
   a) 71°, 108°  
   b) 72°, 108°  
   c) 109°, 71°  
   d) 142°, 38°

15. Sum of number and its reciprocal is \(\frac{10}{3}\) then the number is
   a) 3  
   b) 7  
   c) 8  
   d) 12

16. The pair of lines \(x + 2y - 4 = 0\) and \(2x + 4y - 12 = 0\) will represent .......... lines.
   a) Intersecting  
   b) Coincident  
   c) Parallel  
   d) None

17. If \(5x^2 - Kx + 11 = 0\) has root \(x = 3\) then \(K = \)
   a) \(\frac{16}{3}\)  
   b) \(\frac{56}{3}\)  
   c) \(-\frac{17}{3}\)  
   d) 15

18. If the sum of the roots of the Q.E. \(3x^2 + (2K + 1)x - (K + 5) = 0\) is equal to the product of roots, then the value of \(K\) is ..... 
   a) 3  
   b) 4  
   c) 2  
   d) 6

19. \(3x^2 + x + 8 = 0\) then the nature of the roots of given quadratic equation is ..... 
   a) Real and Distinct  
   b) Real and Equal  
   c) Imaginary  
   d) None

20. If \((x - 3) (x + 3) = 16\) then the value of \(x\) is ..... 
   a) \(\pm 4\)  
   b) \(\pm 3\)  
   c) \(\pm 6\)  
   d) \(\pm 5\)
21. In an AP 10th term = 16, 1st term = –2, then 15th term =

AP 10th term = 16, 1st term = –2, 10th term = 16, 15th term = ....

a) 13  
   b) 15  
   c) 14  
   d) 26

22. The AM and GM of two terms are 17 and 8. Find them.

AM, GM = 17, 8 have .......

a) 30, 4  
   b) 32, 2  
   c) 33, 2  
   d) 42, 2

23. 7.2, a, b, 3 are in AP values of a, b are

7.2, a, b, 3 in AP values a, b have ......

a) a = 5, b = 4 
   b) a = 5.2, b = 4.4 
   c) a = 5.8, b = 4.4 
   d) a = 6, b = 5

24. The sum of all integers between 50 and 350 which ends with 1 is .......

50, 350 between 1 and 1 are sum of .......

a) 5880  
   b) 4877  
   c) 5539  
   d) 5208

25. If a = –1 and d = –3 in an AP then 7th term is

AP a = –1, d = –3 7th term = .......

a) –23  
   b) –19  
   c) –34  
   d) 17

26. If (a, 2), (–3, 4), (7, –1) are collinear, then a =

(a, 2), (–3, 4), (7, –1) have a = ....

a) 0  
   b) 1  
   c) 2  
   d) –1

27. Area of the triangle formed by the points (–37, 3), (–12, 28), (4, 44) is .... Sq. Units

(–3, 3), (–12, 28), (4, 44) have area =

a) 289  
   b) 738  
   c) 0  
   d) 1263

28. If (2, 3) is one end of diameter of circle, centre (0, 0) the other end is

(2, 3) one end of diameter circle, centre (0, 0) other end is

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

29. The ratio that (4, 5) divides the line joining (2, 3) and (7, 8) is

(2, 3), (7, 8) divide line joining (4, 5) have ratio .......

a) 2 : 7  
   b) 3 : 8  
   c) 7 : 8  
   d) 2 : 3

30. In a ΔABC the sides are 6, 10 and 8 then ΔABC is

6, 10, 8 have ΔABC is .......

a) Right angled triangle  
   b) Acute angled triangle  
   c) Obtuse angled triangle  
   d) None

31. The area of triangle is 12 cm². If its base is 6 cm, then its corresponding altitude is .... cm

12 cm², base 6 cm have altitude = .... cm

a) 7  
   b) 4  
   c) 9  
   d) 12
32. In the figure, \( x = \)
- a) 7
- b) 9
- c) 6
- d) None

33. The diagonals of a rhombus are 24 cm and 32 cm, then its perimeter is
- a) 80 cm
- b) 45 cm
- c) 38.4 cm
- d) 56 cm

34. From the given figure, \( OP = \)...... units.
- a) 2
- b) 3
- c) 4
- d) 5

35. The length of the tangent drawn from an exterior point is 8 cm away from the centre of a circle of radius 6 cm is
- a) 8 cm
- b) 10 cm
- c) 6 cm
- d) 12 cm

36. In the figure, \( \angle x = \)
- a) 20°
- b) 60°
- c) 80°
- d) 70°

37. In the figure, \( OB = 13 \text{ cm}, \ OP \perp AB, \ OP = 12 \text{ cm}, \) then \( AB = \)
- a) 100 cm
- b) 10 cm
- c) 50 cm
- d) 75 cm

38. The heights of two cylinders are in the ratio of 3 : 1. If the volumes of two cylinders be same, then the ratio of their respective radii is
- a) \( \sqrt{3} : 1 \)
- b) 1 : \( \sqrt{3} \)
- c) 1 : 9
- d) None

39. A school hall has the dimensions 30 m, 12 m by 6 m. The number of children who can be accommodated if each child should get 8 m\(^3\) of space is
- a) 250
- b) 270
- c) 290
- d) 370

40. The volume of a cone is 462 cm\(^3\) and its base radius is 7 cm, then its height is
- a) 10.3
- b) 7
- c) 8
- d) 9
41. In a hollow cuboid box of size 4 m × 3 m × 2 m, the number of solid iron spherical balls of radius 0.5 m that can be packed.

   a) 45  b) 12  c) 38  d) 36

42. The value of \( \frac{\tan \theta}{\sqrt{1 + \tan^2 \theta}} \) is

   a) \( \cos \theta \)  b) \( \sin \theta \)  c) \( \sec \theta \)  d) \( \cot \theta \)

43. If \( 3 \cot \theta = 5 \), then \( \frac{5 \sin \theta - 3 \cos \theta}{5 \sin \theta + 3 \cos \theta} = ..... \)

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

44. What is the value of \( \tan 1^\circ \cdot \tan 2^\circ \cdot \tan 3^\circ \cdots \tan 89^\circ \) is \( \tan 1^\circ \cdot \tan 2^\circ \cdot \tan 3^\circ \cdots \tan 89^\circ \) equals

   a) 1  b) 1  c) 0  d) Infinite

45. \((x - 2)^2 - (y - 3)^2 = 16 \Rightarrow \)

   a) \( x = 2 \sec \theta + 4, y = 2 \tan \theta + 4 \)  b) \( x = 4 \sec \theta + 2, y = 4 \tan \theta + 3 \)

   c) \( x = 2 \sec \theta - 4, y = 2 \tan \theta - 4 \)  d) \( x = 4 \sec \theta - 2, y = 4 \tan \theta - 3 \)

46. \( \sin^2 57^\circ + \sin^2 33^\circ = \)

   a) \( \frac{1}{2} \)  b) \( \frac{\sqrt{3}}{2} \)  c) 1  d) \( \frac{1}{\sqrt{2}} \)

47. A kite is flying in the sky with a thread of 68 m. and making an angle \( \theta \)°, If \( \tan \theta = \frac{15}{8} \), then find the height of the kite above the ground (m).

   a) 50 m  b) 60 m  c) 70 m  d) 80 m

48. If the shadow of a tower is 30 m long when the Sun's elevation is 30°, then the length of the shadow when the Sun's elevation is 60° is

   a) 5 m  b) 10 m  c) 15 m  d) 20 m

49. A girl sitting on the balcony is looking down at a flower pot placed on ground, then the angle formed by her line of sight with the horizontal is called

   a) angle of elevation  b) angle of depression  c) reflex angle  d) complete angle
50. The ratio of the length of a rod and its shadow is $1 : \sqrt{3}$, then the angle of elevation of the Sun is $45^\circ$, $30^\circ$, $75^\circ$, or $90^\circ$. 
   a) $45^\circ$  
   b) $30^\circ$  
   c) $75^\circ$  
   d) $90^\circ$

51. The angle of elevation of the top of a tower at a point 120 m from its base is $45^\circ$. Then the distance to be raised for the tower, when the elevation is to be $60^\circ$ at the same point is $120 \sqrt{3}$ m, $120$ m, $120 (\sqrt{3} - 1)$ m, or $120 (\sqrt{3} + 1)$ m.
   a) $120 \sqrt{3}$ m  
   b) $120$ m  
   c) $120 (\sqrt{3} - 1)$ m  
   d) $120 (\sqrt{3} + 1)$ m

52. The probability of getting 53 Fridays in a leap year is $\frac{2}{7}$, $\frac{1}{7}$, $\frac{3}{7}$, or None.
   a) $\frac{2}{7}$  
   b) $\frac{1}{7}$  
   c) $\frac{3}{7}$  
   d) None

53. From a bag containing 6 red balls, 5 green balls and 3 blue balls, the probability of getting a green ball at random is $\frac{6}{14}$, $\frac{5}{14}$, $\frac{9}{14}$, or $\frac{8}{14}$.
   a) $\frac{6}{14}$  
   b) $\frac{5}{14}$  
   c) $\frac{9}{14}$  
   d) $\frac{8}{14}$

54. A bag contains 12 pencils, 3 sharpeners and 7 pens. If one pencil is drawn at random then the probability of one pencil is $\frac{5}{11}$, $\frac{4}{11}$, $\frac{3}{11}$, or $\frac{6}{11}$.
   a) $\frac{5}{11}$  
   b) $\frac{4}{11}$  
   c) $\frac{3}{11}$  
   d) $\frac{6}{11}$

55. $P(E) = 0.51$, then $P(\overline{E}) = P(E) = 0.51 \Rightarrow P(\overline{E}) = a) 0.49$  
   b) 0.39  
   c) 0.59  
   d) None

56. For what value of 'a' will 7.5 be the Median of 4, 6, a, 9, 10, 19, 20?
   a) 6  
   b) 10  
   c) 7  
   d) 8

57. A.M. = 43, Median = 43.3, then Mode = $\frac{43 + 43 + 43}{3} = 43.3$, $\frac{43}{2} = 43.3$ and 43.3 is the same...
   a) 44.2  
   b) 43.4  
   c) 44.4  
   d) 42.4

58. The arithmetic mean of the following data is

<table>
<thead>
<tr>
<th>Marks</th>
<th>0 – 10</th>
<th>10 – 20</th>
<th>20 – 30</th>
<th>30 – 40</th>
<th>40 – 50</th>
<th>50 – 60</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Students</td>
<td>5</td>
<td>7</td>
<td>15</td>
<td>8</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

   a) 24.5  
   b) 23.5  
   c) 22.5  
   d) 25.75
59. The mean of 21 observations is 12.5. If an observation 12.5 is deleted, the mean of remaining observations is

- 21 observations: 12.5
- 20 observations: __________

a) 12.5  

b) 12.38  

c) 13.125  

d) 12.05

60. A.M. of natural numbers from 11 to 20 is

- 11 to 20 A.M. = __________

a) 10  

b) 20  

c) 15.5  

d) 14.2

PHYSICS

61. Mercury Thermometers can be used to measure temperature upto

- upto __________

a) 273°C  

b) 360°C  

c) 100°C  

d) 573°C

62. Two liquids A and B are at 32°C and 24°C when mixed in equal masses the temperature of the mixtures is found to be 28°C. Their specific heats are in the ratio.

- A : B = __________

a) 2 : 3  

b) 1 : 1  

c) 3 : 2  

d) 4 : 3

63. Which of the following is incorrect?

- __________

a) Evaporation takes place at a definite temperature.  

b) Boiling takes place at any temperature.  

c) Water evaporates on freezing.  

d) All the above

64. The average Kinetic Energy of molecules is directly proportional to

- __________

a) absolute temperature  

b) density  

c) surface area  

d) None

65. A shaving mirror having radius of curvature 64 cm is held at a distance of 16 cm from a user's nose. The magnification produced by the mirror is

- __________

a) +2  

b) +1  

c) −1  

d) −2
66. Which one of the following statements is true?
   a) The virtual image formed in a plane mirror can be photographed.
   b) Concave mirror can give diminished virtual image.
   c) Given a point source of light, a convex mirror can produce a parallel Beam of light.
   d) None

67. A concave mirror of focal length 'f' (in air) is immersed in water \( \mu = \frac{4}{3} \). The focal length of the mirror in water will be
   a) \( \frac{7}{2} f \)  
   b) \( f \)  
   c) \( \frac{f}{2} \)  
   d) \( \frac{3}{4} f \)

68. The rays which are very nearer to the principal axis are
   a) Paraxial rays  
   b) Emergent rays  
   c) Incident rays  
   d) None

69. The rays of wave length of visible light is
   a) \( 4 \times 10^{-7} \text{ km to } 8 \times 10^{-7} \text{ km} \)  
   b) 0.4 \( \mu \text{m} \) to 0.8 \( \mu \text{m} \)  
   c) 0.4 \( \text{m} \) to 0.8 \( \text{m} \)  
   d) None

70. Which of the following is not a correct statement?
   a) The frequency of green light is greater than the frequency of blue light.
   b) The wavelength of red light is greater than the wavelength of green light.
   c) The wavelength of blue light is smaller than the wavelength of orange light.
   d) None

71. Which of the following is a correct relation?
   a) \( a^h r = a^h w \times r^h w \)
   b) \( a^h r \times a^h w = w^h a \)
   c) \( a^h r \times r^h a = 0 \)
   d) \( \frac{a^h r}{w^h r} = a^h w \)
72. The ratio of speed of light in vacuum to speed of light in medium is called
a) Relative permeability  

b) Absolute permeability  

c) Absolute refractive index  

d) Angle of minimum deviation

73. When a glass slab is introduced in the path of a light ray the number of times the light ray undergoes refraction are
a) 2 times  

b) 4 times  

c) 3 times  

d) 1 time

74. The minimum distance between an object and its real image formed by a convex lens is
a) 2 f  

b) 4 f  

c) 2.5 f  

d) 1.5 f

75. A lens behaves as a converging lens in air and as a diverging lens in water. The refractive index of the material is
a) 1.33  

b) 1  

c) > 1.33  

d) between 1, 1.33

76. The wavelength of red light in air is 7890 Å. The wavelength in glass with refractive index 1.5 is
a) 5260 Å  

b) 6890 Å  

c) 6500 Å  

d) 5865 Å

77. The wavelength corresponding to violet, yellow and red lights are \( \lambda_v \), \( \lambda_y \) and \( \lambda_r \) respectively
a) \( \lambda_v > \lambda_y > \lambda_r \)  

b) \( \lambda_v < \lambda_y < \lambda_r \)  

c) \( \lambda_y < \lambda_v < \lambda_r \)  

d) \( \lambda_v < \lambda_r < \lambda_v \)

78. A person wears glasses of \(-2.5\) D. The person is
a) far – sighted  

b) near – sighted  

c) normal  

d) None

79. The inability of a lens to form point image of an axial point object is
a) myopia  

b) distortion  

c) spherical aberration  

d) chromatic aberration
80. An elderly man has to keep a news paper at arm's length from his eyes to read it clearly. Which defect is he most probably suffering from?

- Cataract
- Myopia
- Hypermetropia
- Presbyopia

81. Due to atmospheric refraction of sunlight, the time from sunrise to sunset is lengthened by about

a) 6 min  

82. A wire has length of 100 m and cross sectional area 1 mm². If its resistivity is \(1.7 \times 10^{-8} \Omega \cdot m\) then the resistance of the wire is

a) 0.017 \(\Omega\)  
b) \(1.7 \times 10^{-10}\) \(\Omega\)  
c) 1.7 \(\Omega\)  
d) \(1.7 \times 10^{-6}\) \(\Omega\)

83. From the circuit shown, the resistance between \(x\) and \(y\) is

- 26.75 \(\Omega\)  
- 34.75 \(\Omega\)  
- 24.85 \(\Omega\)  
- 18.85 \(\Omega\)

84. An electric oven rated 300 w operates 6 hours per day. The cost of energy to operate it for a month of 30 days at Rs.2 per unit is

a) Rs.196  
b) Rs.118  
c) Rs.108  
d) Rs.124

85. Kirchhoff's current law is based on

a) Law of conservation of energy  
b) Law of conservation of charge  
c) Law of conservation of momentum  
d) None

86. An electrical component which is not a part of an Ammeter (or) Voltmeter is

a) Shunt  

87. With regard to an electric motor, which of the following is correct?

- It converts electrical energy to kinetic energy  
- It converts mechanical energy to kinetic energy  
- If provides a constant potential difference  
- All the above
88. What would be the most appropriate rating of the fuse you would use for a 2 kw electric geyser working on a 220 v supply?

2 kw 220 v a) 5 A b) 9 A c) 10 A d) 15 A

89. 1 Tesla = ____________

a) $10^{-4}$ gauss b) $10^6$ gauss c) $10^4$ gauss d) $10^{-6}$ gauss

90. Faraday's law of electromagnetic induction is

\[ E = \frac{\text{d} \phi}{\text{d} t} \]

a) $E = \frac{\text{d} \phi}{\text{d} t}$ b) $E = \frac{\text{d} \phi}{\text{d} t}$ c) $E = \frac{\text{d} \phi}{\text{d} t}$ d) $E = \frac{\text{d} \phi}{\text{d} t}$

CHEMISTRY

91. Formation of ammonia

a) Involves in liberation of heat b) Involves in absorption of heat c) Involves neither absorption nor liberation of heat d) None of these

92. Chemical formula of rust is

a) Fe$_4$O$_3 \cdot x$H$_2$O b) FeO. $\frac{1}{2}$H$_2$O c) Fe$_2$O$_3 \cdot x$H$_2$O d) None

93. XCO$_2$ + 6 H$_2$O $\rightarrow$ YC$_6$H$_{12}$O$_6$ + 6 O$_2$ in this Photosynthesis process what is the value of X - Y =

XCO$_2$ + 6 H$_2$O $\rightarrow$ YC$_6$H$_{12}$O$_6$ + 6 O$_2$

a) 6 b) 7 c) 5 d) 12

94. Which of the following is mixed metal

a) Brass b) Bronze c) Steel d) All of these

95. The decomposition of vegetable into compost is an example of

a) Reduction b) Oxidation c) Combustion d) All of these

96. Which of the following gas fill to sending the soldiers food packets

a) N$_2$ b) Cl$_2$ c) O$_2$ d) S

97. Which solutions contain pH value between 0 – 7

0 – 7 a) Acids b) Bases c) Neutral d) None of these
98. Which of the following used milk merchant to keep milk fresh

- a) baking soda
- b) bleaching powder
- c) washing soda
- d) vitamin 'C'

99. What is the pH value of 0.01 M HCl Solution

0.01 M HCl [\(\text{pH}\) = ?]

- a) –2
- b) +2
- c) –3
- d) +3

100. An atom is electrically

- a) Positive
- b) Negative
- c) Neutral
- d) None

101. Number of Nodal planes for 's' orbital is

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

102. \(X^{++}\) electronic configuration is 1s\(^2\) 2s\(^2\) 2p\(^6\) but what is X here

- a) Mg
- b) Mn
- c) C
- d) Cu

103. Which of the following groups consist of chalcogen family

- a) VA group
- b) VIA group
- c) VIIA group
- d) Zero group

104. Which of the following have the most electronegative element is

- a) F
- b) Cl
- c) Br
- d) Cs

105. Which one in each of the following pairs is larger in size

- a) Na, Al
- b) Na, Mg\(^{+2}\)
- c) S\(^{2-}\), Cl\(^{-}\)
- d) Fe\(^{+2}\), Fe\(^{+3}\)

106. Which of the following element have less ionization energy?

- a) Na
- b) K
- c) Cs
- d) Br

107. Metallic nature in periods from left to right

- a) Increasing
- b) Decreasing
- c) Increase to decrease
- d) None of these
108. How many $\pi$ (pi) bonds forms in $N_2$ molecules

$$N_2 \quad \text{forms} \quad \pi \quad \text{bonds}$$

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

109. Which element represented $\text{X}:

$$\text{X} : \quad \text{neither of these}$$

a) Ne  
   b) Ar  
   c) Kr  
   d) All of these

110. Which bond consist of HC here

$$\text{HC} \quad \text{consist of} \quad \text{sp}^3$$

a) Polar bond  
   b) Non-polar bond  
   c) Ionic bond  
   d) All of these

111. What is the bond angle of $H_2O$ molecule

$$\text{bond angle} \quad \text{of} \quad H_2O$$

a) 109° 28'  
   b) 104° 31'  
   c) 120°  
   d) 180°

112. Which of the following not have "sp³" hybridisation

$$\text{sp³} \quad \text{hybridisation}$$

a) NH₃  
   b) H₂O  
   c) CH₄  
   d) BF₃

113. Which metal consist of sea water

$$\text{metal} \quad \text{of} \quad \text{sea water}$$

a) C  
   b) Na  
   c) Mg  
   d) Fe

114. What is the formula of cinnabar

$$\text{formula} \quad \text{of} \quad \text{cinnabar}$$

a) AgS  
   b) HgS  
   c) CuS  
   d) ZnS

115. Which of the following method used for burning bricks

$$\text{method} \quad \text{used} \quad \text{for} \quad \text{burning bricks}$$

a) Pouling  
   b) Roasting  
   c) Calcination  
   d) All of these

116. Which of the following released when heating the ammonium cyanate?

$$\text{released} \quad \text{when} \quad \text{heating} \quad \text{ammonium cyanate}$$

a) Urea  
   b) Methyl amine  
   c) Methyl amino Ketone  
   d) Cyanide

117. Which of the following is a gas?

$$\text{gas}$$

a) C₂H₁₂  
   b) C₃H₆  
   c) C₃H₄  
   d) All of these
118. What is the IUPAC name of the CH₃ – CH – CH₂ – CH – CH₃ compound?

CH₃ – CH – CH₂ – CH – CH₃

Cl / Br

a) 2 – Bromo – 4 – Chloro pentane
b) 2 – Chloro – 4 – Bromo pentane
c) 2, 4 – Bromo chloro pentane
d) None of these

119. What is pKa –
pKa is the ........... unit of acid.

a) Strength of acid
b) Strength of base
c) Strength of salt
d) pH

120. The major constituent of biogas and natural gas are respectively

a) Butane, Propane
b) Propane, Butane
c) Methane, Methane
d) Ethane, Benzene

KEY

1-c; 2-d; 3-c; 4-c; 5-d; 6-a; 7-c; 8-a; 9-a; 10-a; 11-a; 12-d; 13-b; 14-c; 15-a; 16-c; 17-b; 18-b; 19-e; 20-d; 21-d; 22-b; 23-c; 24-a; 25-b; 26-b; 27-a; 28-b; 29-d; 30-a; 31-b; 32-c; 33-a; 34-d; 35-b; 36-d; 37-c; 38-b; 39-b; 40-d; 41-a; 42-b; 43-c; 44-a; 45-d; 46-c; 47-b; 48-b; 49-b; 50-b; 51-c; 52-a; 53-b; 54-d; 55-a; 56-a; 57-a; 58-d; 59-a; 60-c; 61-b; 62-b; 63-d; 64-a; 65-a; 66-a; 67-b; 68-a; 69-b; 70-a; 71-d; 72-c; 73-a; 74-b; 75-d; 76-a; 77-b; 78-b; 79-c; 80-d; 81-c; 82-c; 83-b; 84-c; 85-b; 86-d; 87-a; 88-c; 89-c; 90-b; 91-a; 92-c; 93-c; 94-d; 95-b; 96-a; 97-a; 98-a; 99-b; 100-c; 101-a; 102-a; 103-b; 104-a; 105-d; 106-c; 107-b; 108-b; 109-d; 110-a; 111-b; 112-d; 113-b; 114-b; 115-b; 116-a; 117-d; 118-a; 119-a; 120-c.