GROUP - A

1. The secondary winding of Distribution transformer is always connected in
   (A) Delta connection
   (B) Star connection
   (C) Line to Line connection
   (D) Line to ground connection

2. In thermodynamics, heat and work are :
   (A) Point functions
   (B) Extensive thermodynamic state variables
   (C) Path functions
   (D) Intensive thermodynamic state variables

3. Thermoflask is a _____
   (A) Diathermic system
   (B) Only closed system
   (C) Isolated system
   (D) Only adiabatic system

4. The value of Poisson's ratio depends upon
   (A) Type of material
   (B) Size of the material
   (C) Magnitude of load on material
   (D) Nature of load

5. The size of a gear is usually specified by:
   (A) Pressure angle and Circular pitch
   (B) Diametral pitch
   (C) Pressure angle and diametral pitch
   (D) Pitch circle diameter

6. When 10 mm on a map represents 10 m on the ground, the representative fraction of the scale is
   (A) $\frac{1}{100}$ (B) $\frac{1}{1000}$
   (C) $\frac{1}{10000}$ (D) $\frac{1}{100000}$

7. In order to determine the natural features such as valleys, rivers, lakes, etc. this surveying preferred is –
   (A) City surveying
   (B) Location surveying
   (C) Cadastral surveying
   (D) Topographical surveying

8. Which of the following IS code that gives the ceramic tile classification and characteristics?
   (A) IS 12269 : 1984
   (B) IS 13712 : 1993
   (C) IS 2386 : Part-I
   (D) IS 10262 : 2009

9. The material used for bonding the material of the grinding wheels?
   (A) Silicon carbide (B) Boron carbide
   (C) Sodium silicate (D) Aluminum oxide

10. For measurement of _____, a Dynamometer device is used
    (A) chip thickness ratio
    (B) wear of the cutting tool
    (C) deflection of the cutting tool
    (D) forces during metal cutting

11. Out of the following which one is an example of laminar flow?
    (A) Flow past tiny bodies
    (B) Underground water
    (C) Flow of oil in measuring instruments
    (D) More than one of the above

12. The platform at the end of a series of steps of staircase is known as
    (A) Tread (B) Landing
    (C) Rise (D) Stop

13. Find the mismatch

	Physical Quantity	Units
(A)	Bulk modulus	Nm^{-2}
(B)	Dynamic viscosity	stokes
(C)	Rolling Friction	newtons
(D)	None of the above	

14. Find the mismatch

	Physical Quantity	Dimensions
(A)	kinematic viscosity of a fluid	L^2T^{-1}
(B)	dynamic viscosity	$M^0L^{-1}T^{-1}$
(C)	Young's modulus of elasticity	$ML^{-1}T^{-2}$
(D)	time period	M^0L^0T

15. Water hammer occurs in
(A) Surge tank
(B) Penstock
(C) Turbine casing
(D) Draft tube

16. Hydrograph is similar to
(A) Chronological load curve
(B) Load duration curve
(C) Mass curve
(D) Energy load curve

17. Which of the following methods of generating electric power from the sea water is more advantageous?
(A) Ocean currents
(B) Wave power
(C) Tidal power
(D) None of the above

18. The height of capillary rise is maximum in
(A) Fine gravel
(B) Colloids
(C) Silt
(D) Fine sand

19. Which among the following is an *incorrect* option?
(A) Pith is the inner most part of tree consists of cellular tissue which is used for nourishment of tree in young age.
(B) Sapwood is outer annual rings between heartwood and cambium layers. It is the living, outermost portion of a woody stem or branch.
(C) Cambium, in plants, layer of actively dividing cells between xylem (wood) and phloem (bast) tissues that is responsible for the secondary growth of stems and roots.
(D) Annular/annual ring test/examine is used to determine the timber defects.

20. What is the approx thickness of two and half brick wall made up of standard modular brick?
(A) 20 cm (B) 19.685 inch
(C) 30 cm (D) 23.622 inch

21. The argillaceous rock has their principal constituents as
(A) Lime or Dolomite
(B) Clay or Alumina
(C) Sand (SiO_2) or Dolomite
(D) Dolomite

22. Which of the following will you recommend for painting internal wall ?
(A) Lead oxide (B) Enamel
(C) Emulsion (D) Iron oxide

23. Bakelite is a/an
(A) Insulator
(B) Semiconductor
(C) High Resistance Conductor
(D) Low resistance conductor

24. A hydrograph runoff due to 1 cm effective rainfall over a catchment for unit duration is called
(A) Unit Hydrograph
(B) Runoff Hydrograph
(C) Direct Runoff Hydrograph
(D) Storm Hydrograph

25. The soil moisture useful for the growth of a plant is called
(A) Hygroscopic water
(B) Capillary water
(C) Gravity water
(D) More than one of the above

26. Which among the following is an *incorrect* option?
(A) A clay which contains kaolinite has an activity value 0.4
(B) Loes is a soil type, which falls under *over consolidated* clay
(C) Loes is a soil type, which falls under *Wind born soil*
(D) The activity of clay is defined as the ratio of plasticity index of soil to the percentage of particles in it having a size less than 2μ (clay size).

27. If the depth of critical neutral axis in a beam is less than the depth of actual neutral axis then the beam is called
(A) Equivalent beam
(B) Balanced beam
(C) Over reinforced beam
(D) Under reinforced beam

28. The Reynolds number may be defied as the ratio of
(A) Viscous force to inertia force
(B) Inertia force to viscous force
(C) Viscous force to gravity force
(D) Gravity force to inertia force

29. Navier - strokes equation is useful in the analysis of
(A) Viscous flow
(B) Turbulent flow
(C) Non-viscous flow
(D) Both viscous and turbulent flow

30. When thickness of plate is 36 mm, then diameter of rivet is used in joints is _____
(A) 36 mm
(B) 30 mm
(C) 24 mm
(D) 12 mm

31. A cylinder of height 20.05 m is completely filled with water. The velocity of efflux of water through a small hole on the side wall of the cylinder 5 cm above its bottom, is :
(A) 9.8 m/s (B) 20 m/s
(C) 4.9 m/s (D) none of these

32. If an electron, a neutron and a proton having same momenta enter perpendicularly to a magnetic field, then :
(A) curved path of electron, neutron and proton will be same
(B) they will move undeflected
(C) curved path of electron will be more curved than that of proton
(D) curved path of electron and proton will be same but neutron will move undeflected

33. When the ratio of flow to vertical diameter is ___ the maximum flow occurs in an egg shaped sewer
(A) 1.00 (B) 0.65
(C) 0.35 (D) 0.95

34. If an ammeter is to be used in place of a voltmeter, then we must connect with the ammeter :-
(A) a high value resistance in series
(B) a low value resistance in parallel
(C) either (A) or (D)
(D) a high value resistance in parallel

35. What is the range of Iron oxide present in ordinary Portland cement?
(A) 0.5 – 6 % (B) 8 – 15 %
(C) 17 – 25 % (D) 0.5 – 1.3 %

36. The MKS unit of measurement for removal of colour, paints or varnish of building is -
(A) number (B) cubic meter
(C) litre (D) square meter

37. According to Mohs scale of hardness, the mineral with least hardness is :
(A) Gypsum or apatite
(B) Sand stone or Diamond
(C) Calcite
(D) Talc

38. Which of the following is not a physical property of materials?
(A) Abrasion
(B) Swelling
(C) Water absorption
(D) Bulk density

39. Which of the following is not a tool used for dressing stones?
(A) Face hammer (B) Mallet
(C) Crow chisel (D) Point chisel

40. Which of the following is a Fire tube boiler
(A) Locomotive boiler and Lancashire boiler
(B) La Mont boiler and Benson boiler
(C) Nestler boiler and Loeffler boiler
(D) Babcock and Wilcox boiler

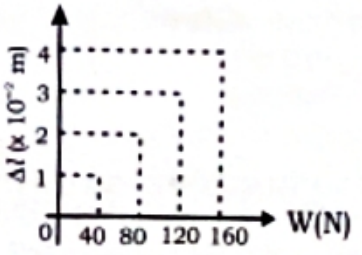
41. In a radial cam, the follower reciprocates or Oscillates
(A) in a direction parallel to the cam axis
(B) in any direction irrespective of the cam axis
(C) at 45 degree to the cam axis
(D) in a direction perpendicular to the cam axis

42. A tap having an internal diameter of 12×10^{-3} m through which the velocity of the discharged water is 1.0 ms^{-1} due to continuous flow of water. The diameter of the water stream at a distance of 4×10^{-1} m below the tap is close to
(A) 8.9×10^{-3} m (B) 4×10^{-3} m
(C) 6.9×10^{-3} m (D) 2.4×10^{-3} m

43. Air refrigeration cycle is used in which of the following
(A) Commercial refrigerators
(B) Deep freezers
(C) Gas liquification
(D) More than one of the above

44. 4 kg ice at –20°C is mixed with 4 kg water at 30°C. Then final amount of water in the mixture would be
(Given, Specific heat of ice = 0.5 cal/g°C,
Specific heat of water = 1 cal/g°C,
Latent heat of fusion of ice = 80 cal/g)
(A) 8 kg (B) 3 kg
(C) 6 kg (D) 5 kg

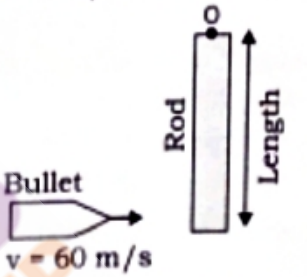
45. The adjacent graph shows the extension ($\Delta\ell$) of a wire of length 2.5 m suspended from the roof at one end and with a load (W) connected to the other end. The cross-sectional area of the wire is 2×10^{-8} m^2. The Young's modulus of the wire is



(A) $2.0 \times 10^{12} N/m^2$
(B) $5.0 \times 10^{11} N/m^2$
(C) $5.0 \times 10^{12} N/m^2$
(D) $0.2 \times 10^{10} N/m^2$

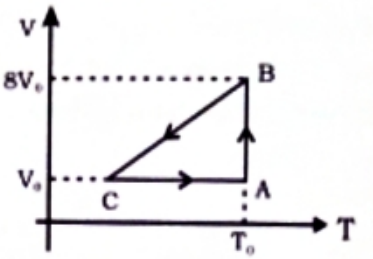
46. A girl is standing with stretched hands at the centre of a platform rotating about its central axis. The kinetic energy of the system is 90 kJ. The girl now folds her arms so that the moment of inertia of the system is one-fourth. The kinetic energy of the system now is
(A) 45 kJ (B) 180 kJ
(C) 360 kJ (D) 90 kJ

47. A rod of length 2 m and mass 29.1 kg is hinged at point O. A small bullet of mass 300 gram hits the rod as shown in the figure. The bullet sets embedded in the rod. Find angular velocity of the system just after impact.



(A) 5.7 rad/sec (B) 3.0 rad/sec
(C) 0.9 rad/sec (D) None of the above

48. One mole of an ideal gas in initial state A undergoes a cyclic process ABCA, as shown in the figure. Its pressure at A is P_0. Choose the correct option(s) from the following



(A) Internal energies at A and B are the same
(B) Pressure at C is $P_0/4$
(C) Work done by the gas in process AB is $P_0V_0(\ell n 8)$
(D) Both (A) and (C)

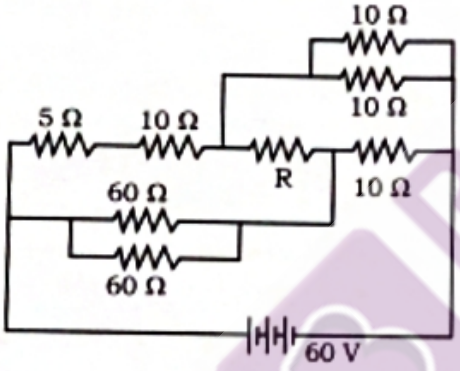
49. A charge of 5 C moving from point X to Y, 140 J of work is done. Find the potential difference between the points X and Y is :
(A) 28 V (B) 70 V
(C) 10 V (D) 280 V

50. At what temperature is the rms velocity of a hydrogen molecule triple to that of an oxygen molecule at 47°C ?
(A) 180 K (B) 60 K
(C) 20 K (D) At any temperature

51. In a transformer, number of turns ratio primary to secondary is 3 : 5. If current in primary winding is 15A, then that in the secondary winding is
(A) 27 A (B) 9 A
(C) 12 A (D) 5 A

52. _____ circuit breaker have high speed of circuit interruption.
(A) Self-blast
(B) Self-Compensated
(C) Plain explosion pot
(D) Forced- blast

53. In the given circuit, the total power dissipation is 270 W, then the value of unknown resistance R is



(A) 60Ω
(B) 5.6Ω
(C) 10Ω
(D) More than one of the above

54. In case of transmission line Voltage Surge first counter by
(A) Step-down transformer
(B) Lightning arresters
(C) Switchgear
(D) Relays

55. In generator reactors there is a constant
(A) Voltage drop and power loss
(B) leakage reactance
(C) corona loss
(D) current and voltage through its operation

56. Which of the following method is used to determine the direction of rotation of DC motor?
(A) Coulomb's Law
(B) Lenz's Law
(C) Fleming's Right-hand Rule
(D) Fleming's Left-hand Rule

57. Best suitable rating for DOL starter
(A) upto 5 H.P. (B) upto 15 H.P.
(C) upto 25 H.P. (D) upto 20 H.P.

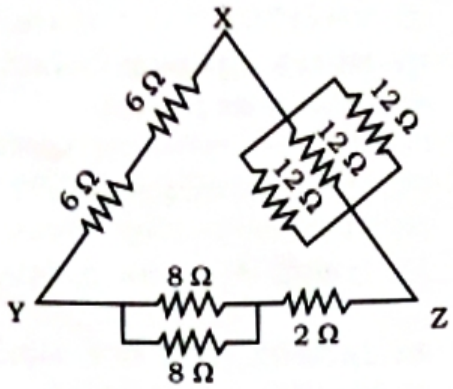
58. When two identical batteries of internal resistance 2Ω each are connected in series across a resistor R, the rate of heat produced in R is J_1. When the same batteries are connected in parallel across R, the rate is J_2. If $J_1 = 2.25\ J_2$ then the value of R in Ω is
(A) 5 (B) 2
(C) 4 (D) 8

59. Pure Si at 300 K has equal electron (n_e) and hole (n_h) concentrations of $1.5 \times 10^{16}\ m^{-3}$. Doping by indium increases n_h to $3 \times 10^{22}\ m^{-3}$. Calculate n_e in the doped Si.
(A) $7.5 \times 10^{9}\ m^{-3}$
(B) $3 \times 10^{22}\ m^{-3}$
(C) $1.5 \times 10^{16}\ m^{-3}$.
(D) $7.5 \times 10^{19}\ m^{-3}$

60. The welding process which is used for making continuous weld while two pieces to be joined are overlapped and placed between two revolving electrodes, is called
(A) Flash welding
(B) Seam welding
(C) Projection welding
(D) Spot welding

61. An 8 pole alternator runs at 750 rpm and supplies power to a 6 pole induction motor which has a full load slip of 3%. Find the full load speed of the induction motor ?
(A) 1000 rpm
(B) 970 rpm
(C) 860 rpm
(D) None of the above

62. Eight resistances are connected between points X, Y and Z as shown in the figure. Then the net resistance will be maximum between

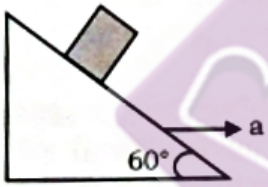


(A) X and Y
(B) Y and Z
(C) X and Z
(D) Equal at any two points

63. The process that involves the removal of Sulphur from the ores is :

(A) Smelting (B) Leaching
(C) Refining (D) Roasting

64. A block is kept on a frictionless inclined surface with angle of inclination 60^0. The incline is given an acceleration 'a' to keep the block stationary. Then 'a' is equal to



(A) $\frac{\sqrt{3}g}{2}$ (B) $\frac{2g}{\sqrt{3}}$
(C) $\sqrt{3}g$ (D) $\frac{g}{\sqrt{3}}$

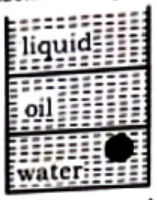
65. If 's' is strain and Y is Young's modulus of material of a wire, the energy stored in the wire per unit volume is

(A) $s^2/2Y$ (B) $s^2Y/2$
(C) $2Y/s^2$ (D) $s/2Y$

66. In which of the following power system equipment minimum faults occur ?

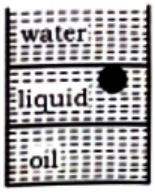
(A) Differential compound motor
(B) Alternator
(C) CT, PT with extra winding
(D) Switch gear

67. A ball is made of a material of density ρ where $\rho_{oil} < \rho_{liquid} = \rho < \rho_{water}$ with ρ_{oil}, ρ_{liquid} and ρ_{water} representing the densities of oil, liquid and water, respectively. The oil, liquid and water are immiscible. If the above ball is in equilibrium in a mixture of this oil, liquid and water, which of the following pictures represents its equilibrium position?

(A) 

(B) 

(C) 

(D) 

68. Find the effective rms value of current $i = 2 \sin 100\pi t + 2 \cos (100\pi t + 30^0)$.

(A) $2\sqrt{2}$ A (B) $3\sqrt{2}$ A
(C) $\sqrt{2}$ A (D) 2 A

69. Select the correct statements :

(A) Viscosity of an oil changes with weight
(B) Pelton-wheel is a Tangential flow turbine
(C) Swelling of bricks is known as Chuffs
(D) Common sand is a variety of Feldspar

70. The constant vertical distance between two adjacent contours is called

(A) Horizontal interval
(B) Horizontal equivalent
(C) Vertical equivalent
(D) Contour interval

71. Main purpose of mean water training for rivers is

(A) Flood control
(B) To provide sufficient depth of water in navigable channels during low water periods
(C) To preserve the channel in good shape by efficient disposal of suspended and bed load
(D) None of the above

72. Voltage at which corona glow occurs is known as
(A) Visual natural voltage
(B) Visual critical voltage
(C) Visual disruptive voltage
(D) None of the above

73. _____ conductor is utilised for reducing Skin effect as well as Corona effect.
(A) Fiber optic cables (B) ACSR
(C) Silver (D) Bronze

74. Which of the following statement is incorrect about Slip ring type induction motor?
(A) Variable speed motors
(B) Power factor is high
(C) Provides low efficiency
(D) Starting current is low

75. Buchholz relay is always connected between
(A) Transformer's main tank & Conservator tank
(B) Conservator tank & Breather
(C) Conservator tank and explosion valve
(D) None of these

76. If the positive terminal of the battery is connected to the anode of the diode, then it is known as
(A) Schottky barrier (B) Reverse biased
(C) Equilibrium (D) Forward biased

77. Koyna Hydroelectric Project is India's largest completed hydroelectric power plant with a capacity of _____
(A) 1955MW (B) 1890MW
(C) 1960MW (D) 2025MW

78. AC welding machine cannot be used for
(A) Resistance welding
(B) Submerged arc welding
(C) MIG welding
(D) Atomic hydrogen welding

79. Which statement/s is/are correct :
(i) Carnot cycle is a reversible one
(ii) All reversible cycles have same efficiency
(iii) Carnot cycle has the maximum efficiency in all cycles
(iv) Reversible cycle has more efficiency than an irreversible one
(A) only (iii) and (iv)
(B) only (i)
(C) (i), (iii) and (iv)
(D) (i), (ii), (iii) and (iv)

80. Select the incorrect statements :
(A) The most harmful constituent of water is Manganese
(B) Natural mineral contaminant in water is iron
(C) Disinfection of water is done by Passing chlorine
(D) All of the above

81. If the sum of nine consecutive integers is S, then the eighth of those integers in terms of S is

(A) $\frac{S+36}{9}$ (B) $\frac{S+27}{8}$

(C) $\frac{S+36}{8}$ (D) $\frac{S+27}{9}$

82. Recently, the train service between India and Nepal has been restored once again, Which has been inaugurated on _____

(A) 3 March 2022
(B) 2 April 2022
(C) 4 May 2022
(D) 4 April 2022

83. The 'doctrine of lapse' was first applied by Lord Dalhousie in the year 1848 to the state of _____

(A) Nagpur (B) Satara
(C) Sambalpur (D) Jhansi

84. Rules for exchanging data between computers are called

(A) Protocols (B) Procedures
(C) Programs (D) Hyperlinks

85. Select the correct statement :

(A) The length of river Ganges is about 45 km in Jharkhand
(B) Ramgarh is the smallest district of Jharkhand in terms of area
(C) Jharkhand does not share its border with Uttar Pradesh
(D) Jharkhand is the tenth state of India in terms of area

86. Which is the first airline in the country to make a successful landing of an aircraft using the indigenous navigation system 'Gagan' ?

(A) Go First (B) IndiGo
(C) SpiceJet (D) Air India

87. How many times President's rule has been imposed in Jharkhand state between 2005 to 2015?

(A) only once
(B) more than twice
(C) twice
(D) not even once

88. Find the wrong number in the given series.
4, 8, 16, 24, 40, 62, 104, 168, 296

(A) 168 (B) 40
(C) 62 (D) 104

89. Match the following :

I.	Paika	1.	Uttarakhand
II.	Mask Dance	2.	Kerala
III.	Kathakali	3.	Jharkhand
IV.	Choliya Dance	4.	Sikkim

(A) I – 3; II – 4; III – 2; IV - 1
(B) I – 4; II – 2; III – 1; IV - 3
(C) I – 2; II – 4; III – 3; IV - 1
(D) None of these

90. Find the mismatch

	Author	Novel
(A)	Arundhati Roy	- The God of Small Things
(B)	Aravind Adiga	- The White Tiger
(C)	Douglas Stuart	- The Promise
(D)	Kiran Desai	- The Inheritance of Loss

91. Sreejesh P. R, who got 'Major Dhyan Chand Khel Ratna Award' in 2021 is a famous

(A) Motor Car Racer
(B) Cricketer
(C) Wrestler
(D) Hocky player

92. Who is the youngest Indian player to reach BWF World Championship 2021 recently, who won bronze medal?

(A) Kidambi Srikanth
(B) Prakash Padukone
(C) B Sai Praneeth
(D) Lakshya Sen

93. Three persons A, B, C whose salaries together amount to ₹144000 spend 75, 85 and 95 percent of their salaries respectively. If their savings are in the ratio 8 : 9 : 20, then C's salary is

(A) ₹ 20,000 (B) ₹ 75,000
(C) ₹ 24,000 (D) ₹ 45,000

94. "Fire-fighting clothes" are made from

(A) Nomex
(B) polybenzimidazole
(C) Kevlar
(D) more than one of the above

95. Which of the answer figures is exactly the mirror image of the question figure. When the mirror is held on the line AB? Question Figure :

Answer Figures :

(A) 

(B) 

(C) 

(D) 

96. Which of the following processes is used for the production of Biodiesel ?
(A) Transamination
(B) Transcription
(C) Transesterification
(D) Translation

97. The colour change in the Chameleon is due to the presence of
(A) Haemoglobin (B) Chromatophore
(C) Chlorophyll (D) Pneumatophore

98. Select the correct properties of ammonia from the following :
(i) It is insoluble in water
(ii) It is a odourless gas
(iii) It is a yellowish gas
(iv) Its aqueous solution turns red litmus blue
(A) only (iv)
(B) (i), (iii) and (iv)
(C) only (ii) and (iv)
(D) (i), (ii), (iii) and (iv)

99. Which among the following pairs of Vitamins is stored in our body relatively for longer duration ?
(A) Thiamine and Vitamin A
(B) Ascorbic acid and Vitamin D
(C) Thiamine and Ascorbic acid
(D) Vitamin A and Vitamin D

100. Sadani waterfall is a beautiful waterfall on which river of Jharkhand.
(A) Damodar (B) Amanat
(C) Subarnarekha (D) Sankh

101. Select the correct statements :
(i) Nargis, the first lady of Indian screen, was nominated to the Rajya Sabha.
(ii) Pratibha Patil, the first President of India who flew 30 minutes in a Sukhoi fighter aircraft of the Indian Air Force.
(iii) Palitana Temple is located near Bhavnagar city.
(iv) The Silicon Valley of India is a nickname of the Indian city of Mangaluru.
(v) The first explosion of an atomic device in India was carried out in the State of Rajasthan.
(A) i, ii, iii (B) i, ii, iii, v
(C) i, ii, iii, iv, v (D) ii, iv, v

102. Ramesh went 15 m to the east, then he turned left and after $5\sqrt{3}$ m turned 120^0 right and went $10\sqrt{3}$ m and then turned 120^0 right and went $20\sqrt{3}$ m. How far was Ramesh from the starting point ?
(A) 60 m (B) $5\sqrt{3}$ m
(C) 40 m (D) $10\sqrt{3}$ m

103. Select the missing number from the given responses.

5	6	3	8
9	6	8	7
7	4	5	6
51	38	29	?

(A) 64 (B) 30
(C) 79 (D) 90

104. The two basic parts of URLs are
(A) TCP and FTP
(B) TCP/IP and ISP
(C) The protocol and the domain name
(D) Destination and device

105. A digital signature is
(A) Encrypting information
(B) Scanned signature
(C) Signature in binary form
(D) Handwritten signature

106. The marked price of an article is 40% above cost price. When marked price is increased by 30% and selling price is increased by 20%, then profit doubles. If original marked price is ₹560, then original selling price is
(A) ₹500 (B) ₹250
(C) ₹540 (D) none of the above

107. The average of x numbers is xy^2z^3, the average of y numbers is x^3yz^2 and the average of z numbers is x^2y^3z. So the average of all the numbers taken together is

(A) $\frac{xyz(x^2+y^2+Z^2)}{x+y+z}$

(B) $\frac{(x^2y^2Z^2)(xy+yz+zx)}{x+y+z}$

(C) $x^2y^2z^2$

(D) xyz

108. Arrange the following words according to the English Dictionary :

1. Appropriate 2. Appreciate
3. Appearance 4. Application
5. Applaud

(A) 3, 4, 5, 1, 2 (B) 3, 5, 4, 1, 2
(C) 3, 4, 5, 2, 1 (D) 3, 5, 4, 2, 1

109. Select the one which is different from the other three responses.

(A) Bassoon (B) Cymbals
(C) Flute (D) Trumpet

110. Which district of Jharkhand organised 'Hathiya Pathar' fair?

(A) Pakur (B) Sahibganj
(C) Bokaro (D) Seraikela-Kharsawan

111. A woman and a man working together can do a certain work in 30 days. Their skills in doing the work are in the ratio 3 : 5. In how many days 5 women and 3 men together can finish the same work ?

(A) 8 (B) 16
(C) 4 (D) 12

112. The curved surface area and the total surface area of a cone are in the ratio of 5 : 9. Then the ratio of height and radius of the cone is

(A) 5 : 9 (B) 3 : 4
(C) 2 : 3 (D) 16 : 9

113. The perimeter of the triangular base of a right prism is 20 cm and radius of the in-circle of the triangular base is 4 cm. If the volume of the prism be 480 cm^3, then the height of the prism is

(A) 9 cm (B) 8.5 cm
(C) 15 cm (D) 12 cm

114. Kauleshwari Temple is a pilgrimage center in Chatra district in Jharkhand which is located at

(A) Tongri Hill (B) Jori Hill
(C) Kolhua Hill (D) None of these

115. A solution of x grams of salt contains 30% salt. Then 100 grams of salt is added to the solution to make the quantity of salt in the solution 80%. Then what is the value of x ?

(A) 25 gm (B) 40 gm
(C) 60 gm (D) 50 gm

116. According to Beaufort scale, which one of the given responses would be a meaningful order of the following words in ascending order ?

1. Storm 2. Winds
3. Hurricane 4. Gale
5. Breeze

(A) 5, 2, 4, 3, 1 (B) 2, 5, 4, 1, 3
(C) 5, 1, 4, 3, 2 (D) 2, 4, 3, 5, 1

117. Seven friends A, B, C, D, E, F and G are sitting in a row facing East. C is between A and E. B is just to the right of E but left of D. F is not at the right end. G sits fourth to B. Who is at the left end ?

(A) G (B) F
(C) A or G (D) D

118. Select the related word from the given alternatives.

Adorer : Disparage : : Astronomer : ?

(A) stargazer (B) Companion
(C) cosmologist (D) None of these

119. The value of
$(\cos^2 1° + \cos^2 5° + \cos^2 9° + \ldots + \cos^2 81° + \cos^2 85° + \cos^2 89°)$ is

(A) $22\frac{1}{2}$ (B) 22
(C) $44\frac{1}{2}$ (D) $11\frac{1}{2}$

120. If $a^2 + b^2 + 2(3a + 2b) + 13 = 0$, then the value of $\frac{a+b}{a-b}$ is

(A) 5 (B) -3
(C) $\frac{1}{5}$ (D) $-\frac{1}{3}$