R.R.B. SECUNDERABAD

MATERIAL SUPERINTENDENT

PREVIOUS PAPER – 2014

HELD ON: 14–12–2014

1. If Arun is Chetna's son, Chetna and Kavitha are sisters, Jyothi is Kavitha's mother, Parth the son of Jyothi, then

1) Parth and Arun are Cousins

2) Parth is maternal uncle of Arun

3) Kavitha is Arun's grandmother

4) Parth is maternal uncle of Kavitha

2. Find the next number in the series:

10, 100, 200, 310, ...

1) 430 2) 510 3) 400 4) 420

3. A man is facing North. He starts walking on a circular path, completes $\frac{3}{4}$th of the circle and takes a right turn. Which direction is he facing now?

1) East 2) West 3) North 4) South

4. In a certain code MONKEY is coded as XDJMNL. How would the TIGER be coded?

1) SDFHS 2) UJHFS 3) QDFHS 4) SHFDQ

5. Find the number that will replace the .....:

1, 2, 3, 5, 8, 13, ...

1) 20 2) 21 3) 22 4) 23

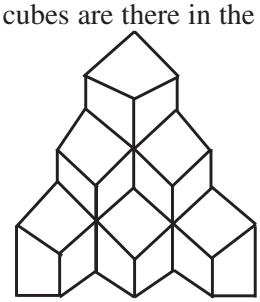
6. How many cubes are there in the figure?

1) 6

2) 8

3) 9

4) 10



7. Ramesh goes 4 km South, then 8 km West, then 6 km North, then 8 km East and then 1 km South. How far is Ramesh from the starting point?

1) 2 km 2) 1 km 3) 0 km 4) 8 km

8. 'Crime' is related to 'Court' in the same way as 'Disease' is related to

1) Doctor 2) Hospital 3) Medicine 4) Punishment

9. Two tangents are drawn to a circle of radius 10 cm. The tangents are parallel to each other. What is the distance between the two tangents?

1) 10 cm 2) 20 cm 3) $10\sqrt{2}$ cm 4) $10\sqrt{3}$ cm

10. Match the following:

1. Cell	a. Animal cell		
	b. Plant		
2. ATP	a. Mitochondria		
	b. Genes		
1) 1–(a), 2–(a)	2) 1–(a), 2–(b)	3) 1–(b), 2–(a)	4) 1–(b), 2–(b)

11. Synapses and Dendrites are associated with

1) Cortex 2) Epithelium 3) Retina 4) Nerve-cells

12. A tissue that connects muscle to bones in humans is called

1) Tendon 2) Fibre 3) Axon 4) Femur

13. The human population of globe is approximately

1) 500 million 2) 600 million 3) 6 billion 4) 7 billion

14. Hematology is the study related to

1) Plant reproduction system 2) Blood

3) Food habits of animals 4) Bones

15. Which of the following is not a food borne disease?

1) Amoebiasis 2) Cholera 3) Influenza 4) Hepatitis A

16. Hadrons and Baryons are

1) Industrial chemicals

2) Types of subatomic particles

3) Alkalies

4) Cyclotrons

17. A pheromone secreted by an animal

1) influences the behaviour of animals of same species

2) protects it from predators

3) attracts these victims for its food

4) None of the above

18. The formula $R = \frac{R_1 R_2}{R_1 + R_2}$ represents

1) series connection 2) parallel connection

3) bridge connection 4) linear connection

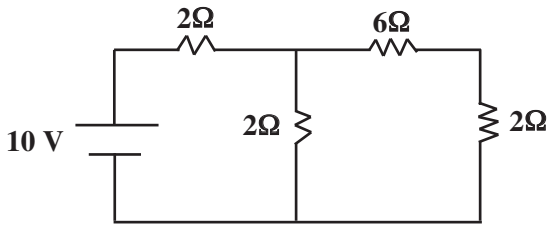
19. In the circuit given below, what is the current flowing in the 6 Ω resistance

1) 0.22 A

2) 0.55 A

3) 2.22 A

4) 2.775 A



20. A transformer core is made of laminations

1) to increase the electrical conductivity of the core

2) to increase the permeability of the core

3) to reduce eddy currents

4) to increase eddy currents and improve efficiency

21. Domestic supply of electricity in India is 220 V AC. 220 V refers to the ..... Voltage.

1) rms value 2) peak value 3) mean value 4) minimum value

22. In a given AC circuit there is a phase difference of $\frac{\pi}{2}$ between current and Voltage. When the current is at its peak Voltage is zero. The circuit is

1) resistive 2) inductive 3) capacitive 4) can't say

23. An unknown DC Voltage is be measured. Which measuring range in the multimeter will you select first?

1) 500 V 2) 50 V 3) 5 V 4) 0.5 V

24. The earth conductor provides a path to ground for

1) circuit current 2) leakage current 3) over current 4) high voltage

25. Distance between two buildings is 100 m. A surveyor is standing at a distance of 10 m from the taller building on a line joining them. If the angle of elevation measured by him for the taller building is 1.5 times the angle of elevation of the smaller building what is the height of smaller building?

1) 45.3 m 2) 45.67m 3) 46.22 m 4) Data insufficient

26. A galvanometer is converted to a voltmeter by

1) adding a high resistance in series with the galvanometer

2) adding a low resistance in parallel with the galvanometer

3) increasing the number of windings of galvanometer coil

4) decreasing the number of windings of the galvanometer coil

27. A dynamometer is an equipment used to measure

1) current and voltage of generator 2) dynamic loads over cyclic times

3) fatigue propagation due to dynamic loads 4) torque and power of an engine

28. Interferometers are used for measurement of

1) changes in life cycle processes due to radiation

2) effect of interference of wearing of one mechanical on the whole machine

3) measurement of very small displacements and surface irregularities

4) chemical analysis of compounds

29. Sclerometer is used by

1) Astronomers 2) Civil Engineering Surveyors

3) Doctors 4) Metallurgists

30. The word **Brinell** is associated with

1) soil testing 2) tensile testing

3) hardness testing 4) testing of seasoning of wood

31. What is carbon footprint?

1) measure of radioactivity from a fossil.

2) environmental impact because of used cells and batteries.

3) total sets of green house gas emissions by organization, individual etc.

4) amount of carbon content in the organic compounds.

32. Ashoka in the 13^{th} year of his coronation, appointed a special type of officer who surveyed the land, kept land records and carried out justice. These officers were called

1) Amatyas 2) Samahartas 3) Rajukas 4) Chalukyas

33. Who built the Jagannatha temple of Puri?

1) Ananavarmana Chodaganga 2) Narsimhavarmana

3) Aadiyavarmana 4) Parameshwaravarmana

34. An individual who is not a member of either house of the Parliament can be appointed as a member of the Council of Minister, but he hand to become the member of the either house in

1) 3 months 2) 6 months 3) one year 4) 2 years

35. The term 'Republic' used in the preamble of the Constitution of India implies

1) That the head of the state is hereditary

2) That the head of the state is a constitutional ruler

3) That the head of the state is an elected representative

4) None of the above

36. The Hindustan Shipyard Limited is located at

1) Goa 2) Cochin 3) Mumbai 4) Visakhapatnam

37. In India, what is the minimum permissible age for employment in a factory?

1) 14 years 2) 16 years 3) 18 years 4) 21 years

38. Lunar Eclipse occurs only on a

1) First quarter day 2) New moon day 3) Full moon day 4) Last quarter day

39. Mirages generally occur in

1) Mountains 2) forests 3) deserts 4) sea

40. Which states is known for its sandalwood carvings?

1) Maharashtra 2) Madhya Pradesh 3) Kerala 4) Karnataka

41. If circumference of a circle is increased by 10%, the area of the circle will increase by

1) 5% 2) 10% 3) 20% 4) 21%

42. A cylindrical shaped metal piece is converted into a wire. Out of the following, which parameter can be assumed to remain the same

1) volume 2) cross-selection area

3) length 4) diameter

43. What is the probability of getting 3 aces three cards are drawn from a set of 52 playing cards?

1) 52^3 2) $\frac{1}{52^3}$ 3) $\frac{1}{52!}$ 4) $\frac{4 \times 3 \times 2}{52 \times 51 \times 50}$

44. In a class of 40 students, 25 are sports persons and 25 are mathematicians. What is the probability that the monitor of the class is both a sports person and a mathematician?

1) $\frac{1}{40}$ 2) $\frac{1}{25}$ 3) $\frac{1}{4}$ 4) $\frac{1}{50}$

45. Sum of two numbers is 15 and sum of their reciprocals $\frac{15}{56}$. The two numbers are

1) 4, 11 2) 5, 10 3) 6, 9 4) 7, 8

46. If α, β are the roots of quadratic equation $x^2 + x + 1 = 0$, then $\frac{1}{\alpha} + \frac{1}{\beta}$ is

1) -1 2) 1 3) 0 4) None of these

47. Value of $\sqrt{6 + \sqrt{6 + \sqrt{6 + ...}}}$ is

1) $\frac{5}{2}$ 2) -2 3) 3 4) 4

48. If a, b, c, d, e and f are in arithmetic progression, then e$-$c is equal to

1) 2(b$-$a) 2) c$-$b 3) 2(f$-$d) 4) 2(d$-$b)

49. In coordinate geometry, distance of the point (-4, 3) from origin is

1) 3 2) 4 3) 5 4) 25

50. A class of compounds which are used in increases when molecular weight is low and are naturally occurring fats when molecular weight is high in the series, is called

1) amino 2) aromatic compounds

3) esters 4) organic acids

51. If the mass of Sun, earth and distance between them is respectively M, m and r; work done by the Sun's gravity on earth for one revolution round the sum is

1) zero 2) $\frac{G\,Mm}{r^2}$ 3) $\frac{G\,M.m}{r}.2\Pi$ 4) $\frac{G\,Mm}{r^2}.2\Pi$

52. The choke of a tube light works on the principle of

1) bi-metallic 2) capacitance 3) inductance 4) ionization

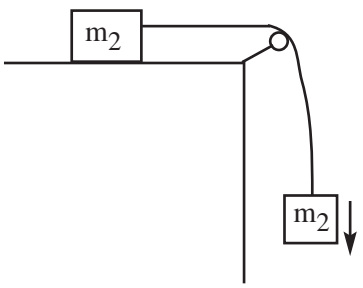
53. In the figure below, what is the acceleration of body with mass M_2, given g is the acceleration due to gravity (assume pulley and surfaces are smooth)

1) g

2) $\frac{m_1 + m_2}{m_1}$ g

3) $\frac{m_1 + m_2}{m_2}$ g

4) $\frac{m_2}{m_1 + m_2}$ .g



54. Which of the following statements is correct?

1) Speed of light in vacuum is 3×10^8 m/s

2) Speed of light is different for different colours

3) Speed of light is different in different media

4) All of the above

55. In Heisenberg's Uncertainity principle, the uncertainity of momentum and position of a particle can be

1) reduced using smaller wavelength of probing light

2) reduced using larger wavelength of probing light

3) reduced using high energy probe particles accelerated by cyclotron

4) can't be reduced as it is fundamentally

56. A fuse should be connected in ..... in the ..... conductor.

1) series, neutral 2) series, live 3) parallel, neutral 4) parallel, live

57. Equipment earthing gives protection against

1) voltage fluctuation 2) overloading

3) electric shocks 4) high temperature of conductors

58. A generator is related 2 KW 200 V.D.C. It can supply load current of

1) 4000 A 2) 100 A 3) 10 A 4) 4 A

59. The term PCB stands for

1) Polyethylene Card Board 2) Printed Circuit Board

3) Printed Card Board 4) Polythene Circuit Board

60. Color bands for 1.5 Ohms resistor will be

1) Brown, Green, Brown 2) Brown, Green, Golden

3) Brown, Golden, Green 4) Brown, Golden, Golden

61. A frequency tuning electronic circuit would consist of

1) an inductor and a capacitor 2) an inductor and a resistor

3) two inductors 4) two capacitors

62. Main element of a filter that reduces the A.C. component of the output is

1) resistor 2) inductor 3) transformer 4) capacitor

63. For stabilizing the gain of an amplifier

1) positive feedback is used 2) no feedback is used

3) negative feedback is used 4) input voltage is varied

64. A stereophonic system requires

1) two separate microphones 2) two separate amplifiers

3) two separate speakers 4) all of the above

65. Which of the following statements in incorrect

1) Microsoft windows is GUI

2) Linux is GUI

3) More than 5000 KB data can be stored in a DVD

4) A 1 TB flash drive can store 2 million files each of size 1 MB

66. How many lines can be said to exist or be drawn in a three dimensional space, which are mutually perpendicular to each other?

1) 2 2) 3 3) 4 4) 8

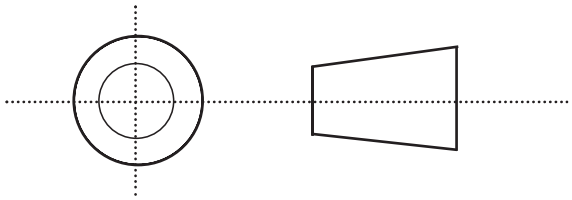
67. A third angle orthographic projection of an object is given below. What is this object?

1) Triangle

2) Trapezium

3) Cone

4) Frustrum of a cone



68. In an engineering drawing it is written scale 1 cm = 100 m. Which ratio does it correspond to?

1) 1 : 100 2) 1 : 1000 3) 1 : 10,000 4) 1 : 1,00,000

69. In machine drawing, a 'sectional view' cut portion is shown by

1) diagonal hatching 2) dots 3) cross marks 4) red colour

70. For complete description of a component, a machine drawing would require minimum how many orthographic projections?

1) 1 2) 2 3) 3 4) 4

71. Hirakud dam has been built on the river

1) Cauvery 2) Mahanadi 3) Krishna 4) Yamuna

72. Who received the first Nobel Prize in Physics in India?

1) Dr. C.V. Raman 2) Dr. Hargobind Khurana

3) Prof. C.N.R. Rao 4) Prof. Narlikar

73. Which of the following books was banned by all Muslim countries and India?

1) The Shame Within 2) Discovery of India

3) Satanic Verses 4) Beyond Expanse

74. IGMDP, in Indian context, is a

1) Management Development Programme 2) Monetary Policy

3) Missile Programme 4) Marketing Policy in Management Studies

75. Who is the Secretary General of United Nations?

1) David Camaron 2) Stephen Harper 3) Jung–Hong–Won 4) Bank Ki–Moon

76. With reference to water pollution, BOD means

1) Biochemical Oxygen Dilution 2) Biochemical Oxygen Demand

3) Bio Organic Dissolutes 4) Basic Organic Dissolutes

77. Approx, percentage of oxygen in Earth's atmosphere is

1) 17% 2) 21% 3) 25% 4) 33%

78. In the context of genetics, DNA stands for

1) Di–Neuro Acid 2) Daily News Analysis

3) Detoxic Neuro Acid 4) Deoxyribo Nucleic Acid

79. In the context of Information Technology, OCR means

1) Optical Character Recognition 2) Octagonal Cyclic Recharge

3) Octadecimal Cyclic Regeneration 4) Optical Character Regeneration

80. Number of points on x−axis which are 2 units away from the point (4, 1) are

1) 0 2) 1 3) 2 4) infinite

81. If the ratio of height of tower to its shadow is $1 : \sqrt{3}$ the angle of elevation of Sun is

1) 30° 2) 45° 3) 60° 4) $87\frac{1}{2}°$

82. The value of (1 + 0.1 + 0.11 + 0.111) is

1) 1.321 2) 1.211 3) 1.111 4) 1.0321

83. When a number is divided by 5, it gives remainder 3. What is the remainder when square of that number is divided by 5?

1) 9 2) 3 3) 4 4) 1

84. Find the value of $67^2 - 33^2$

1) 3200 2) 3400 3) 3146 4) 3143

85. If two sides of a triangle are given and by the two sides is also given, how many triangles can be drawn at the area?

1) 0 2) 1 3) 2 4) 3

86. 4 men can complete a pieces of work in 5 days. How many are required to complete 3 times the work in 4 days

1) 5 2) 15 3) 80 4) 20

87. Given that *l*og2 = 0.3 approx, one billion would be apex

1) 2^9 2) 2^{10} 3) 2^{20} 4) 2^{30}

88. In how many different ways can 3 identical white balls and 2 identical red balls he arranged besides each other, in straight line?

1) 6 2) 10 3) 12 4) 120

89. The value of $\sin^2 30^2 + \sin^2 60^2$ is

1) 1 2) $\frac{3}{2}$ 3) 2 4) $\frac{3}{4}$

90. As the speed of charged particle increase in a cyclotron, (choose True (T) for False (F))

a. The particle moves to a larger circle

b. There is relativistic change in the mass of the particle

c. Frequency of the cyclotron has to be adjusted

1) F, F, F 2) T, T, T 3) T, F, T 4) T, T, F

91. In a thermodynamic system, a process in which volume remains constant is called ..... process.

1) isobaric 2) isometric 3) adiabatic 4) isentropic

92. Coefficient of performance of a commercially used refrigerator would be close to

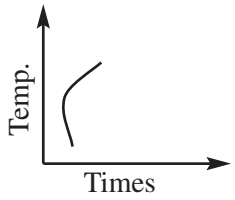
1) 40% 2) 85% 3) 1.5 4) 3.5

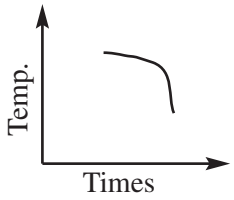
93. In a thermodynamic system, thermal equilibrium is achieved when two bodies reach

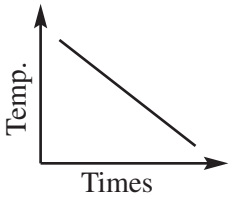
1) same thermal energy 2) same entropy

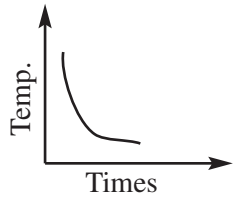
3) same temperature 4) same molecular energy

94. A hot body Follows Newton's law of cooling. Typical temperature-time graph of the cooling body would be

1) 

2) 

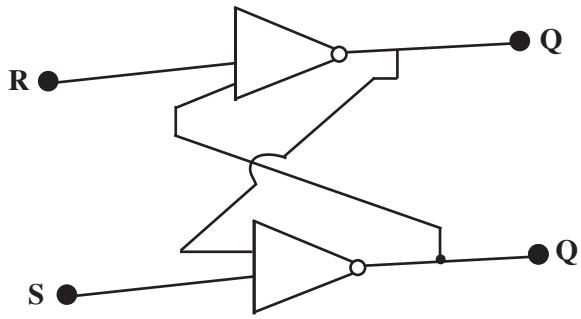
3) 

4) 

95. In a multicylinder diesel engine, the cylinders are fired in a particular sequence

1) to reduce fuel consumption
2) to reduce knocking
3) to reduce engine vibrations
4) all of the above

96. Consider the circuit below:



This circuit is called a

1) Half adder
2) Latch
3) Bit counter
4) PIPO device

97. De Morgain's theorem states that

1) $(X + Y)' = Y' + X'$
2) $(X.Y)' = X' + Y'$
3) $(X.Y)' = Y'.X'$
4) $(X + Y)' = X' + Y'$

98. In Boolean algebra $(1 \overline{+ 1}).\ (0 + 0) = ?$

1) 0
2) 1
3) 2
4) -1

99. Which of the following is not an I/O device of the computer?

1) keyboard
2) Joy stick
3) ALU
4) Printer

100. A bond in a brick work when headers and stretchers are placed in alternate layers is called

1) Header bond
2) English bond
3) Flemish bond
4) Herring bone bond

101. Excess silica in cement

1) increases the setting time
2) decreases the setting time
3) weakens the strength of the cement
4) does not affect the setting time

102. The outer protective layer of a tree is

1) cambium layer
2) pitch
3) bark
4) sap

103. Which lime is most suitable white washing?

1) quick lime 2) stone lime 3) kankar lime 4) shell lime

104. What is floating point with

1) It is a software subroutine around which other sub-routines are built

2) It is a representation of real numbers to facilitate computing

3) It is the main algebraic formula of the software

4) It is the voltage point given to various operating units of the computer

105. A system of digital rules for exchange and processing of data between various devices is called

1) software programme 2) algorithm

3) protocol 4) information processing

106. A theoretical computer with infinite type and memory used in analysis of problems of computation, is called

1) Tape calculator 2) Babbage machine

3) Turning machine 4) Theoretical machine

107. ASCII coding allocated binary codes to English alphabets and symbols for computer use. More recently a new standard has been adopted which allocates code to almost all the languages of the world and also to symbols covering more than a lakh characters. The new standard is called

1) CCS 2) Unicode

3) Standard CCS code 4) Universal CCS code

108. For using passwords on the Internet a software is used so that the password is not intercepted easily. It is called

1) Coding 2) Malware 3) Virus 4) Encryption

109. A software, coding of which is available freely on Internet and is open for users for users for further use and improvement and which is generally developed in a collaborative manner is called

1) open source software 2) unlicensed software

3) free software 4) community software

110. Which of the following are machine level languages?

1) C++ 2) Java 3) Python 4) Community software

111. Section 66 A has been in media controversy recently. The section pertains to

1) Communal Harmony 2) Sexual Aggression

3) Company's Act 4) Information Technology

112. IPC stands for

1) International Peace Code 2) Indian Peace Code

3) Indian Penal Code 4) International Punishment Code

113. Who among the following can accept the deposits of money from the public, as a business in financial transactions?

1) Individuals 2) Firms

3) Unincorporated Associations 4) None of the above

114. NEFT and RTGS are the means for

1) Money transfer 2) Fiscal control policy

3) Monitoring tax collection 4) Implementing GST

115. In September 2014 ISRO achieved success in which project?

1) Launched Heavy payload vehicle 2) Launched geo-stationary satellite

3) Launched rocket to mars 4) Mars Orbiter successfully entered Mars orbit

116. In October 2014 a cyclone hit Visakhapatnam. The name of the cyclone was

1) Katrina 2) Hudhud 3) Laila 4) Halen

117. SAARC countries are form which part of the world?

1) South America 2) South Asia 3) South Africa 4) None of the above

118. How many pairs of letters are there in the word CRAB which has as many letters between them in the word as there are between them in the English alphabet?

1) 3 2) 2 3) 1 4) 0

119. Which month is different from other months in the group?

1) April 2) June 3) July 4) November

120. Find the median of the following numbers

14, 23, 20, 12, 11, 15, 24, 17, 9, 21, 25

1) 15 2) 20 3) 17 4) 11

121. tan 90° is underfined. As θ is increased from 89° towards 90° value of tan θ tends to

1) 0 2) $+\alpha$ 3) 1 4) undefined

122. A man sells his two cars at the same price. In one car he makes a profit of 10%. In other car he losses 10% over the cost price. his total gainor loss per cent is

1) 1% loss 2) 1% gain 3) 2% loss 4) No loss no gain

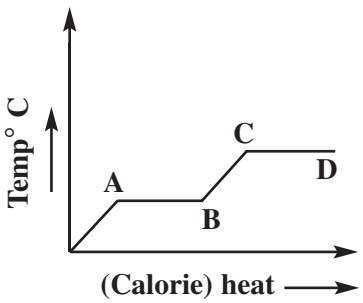
123. $\sqrt{10}$ = 3.1623 (approx). What is the approx value of $\frac{1}{\sqrt{10}}$?

1) 0.333 2) 0.3162 3) 0.3221 4) 0.3437

124. A student was asked to multiply a number by 12. By mistake he multiplied the number by 21 and got the answer 63 more than the correct answer. What is the correct answer?

1) 9 2) 8 3) 7 4) 84

125. Consider the following graph



Which portion represents the 'Latent heat of fusion'?

1) OA 2) AB 3) BC 4) CD

126. Which of the following does not sublimate?

1) Ice
2) Ammonium chloride
3) Naphthalene
4) Camphor

127. Which of the following is a heterogeneous mixture?

1) Brass
2) Sugar solution in water
3) Air
4) Milk

128. In a scooter, in which part is the petrol atomized and mixed in correct proportion with the

1) Carburettor
2) Cylinder
3) Inlet port
4) Fuel pump

129. Which alloy steel would be used for making leaf and coil springs?

1) Nickel-Chrome
2) Vanadium
3) Silicon-Manganese
4) Chrome-molybdenum

130. In aluminium casting bubbles of argon or nitrogen are passed through the molten

1) to improve surface finish of the casting
2) to remove hydrogen gas porosity
3) to precipitate the inclusions
4) to mix the alloy elements

131. Clearance between the mating parts is measured using

1) Dial gauge
2) Go-gauge
3) No-go gauge
4) Feeler gauge

132. In a milling process, for milling mild steel, what will be a typical rate angle for the cutter?

1) 12°
2) 20°
3) 28°
4) -12°

133. State True (T) or False (F) respectively:

A. For better tensile strength, cast component is preferred over forged component

B. Quenching of hot component in water improves its malleability

1) T, T
2) F, F
3) T, F
4) F, T

134. Channel, Angles and I-section, which are used in fabricating a shed structure frame, are manufactured from blooms using the process of

1) casting
2) drawing
3) swaging
4) rolling

135. Output of welding transformer, compared with its input is

1) high voltage high current
2) high voltage low current
3) low voltage high current
4) low voltage low current

136. Thermochemical decomposition of organic materials at high temperatures, in the absence of oxygen is called

1) Pyrolysis
2) Thermolysis
3) Caramelization
4) Catagenesis

137. Acid rain is caused by presence of which of the following gases in the atmosphere

1) Nitrogen and oxygen
2) Sulphur dioxide and Nitrogen oxide
3) Carbon dioxide and Carbon–mono–oxide
4) Ozone and argon

138. One of the main reason for depletion of ozone layer in the Earth's atmosphere is

1) Green house gases
2) Colloidal impuries
3) CFC and halons
4) Rockets and satellite launching vehicles

139. What is the value of total hardness acceptable in potable water as per Indian Standards?

1) 0.3
2) 3
3) 30
4) 300

140. Preventing rain water to run-off and its accumulation and deposition for re-use on site is called

1) rain water collection
2) micro-dams
3) micro-accumulation
4) rain water harvesting

141. The terms ALU, CPU, I/O devices pertain to

1) Computers
2) environmental engineering
3) diesel engine
4) engineering drawing and orthogonal projections

142. In a computing device 'MHz' is mentioned in the specifications. It refers to

1) size of memory
2) speed of computation
3) clock speed
4) None of the above

143. For plasting walls, cement mortar would be typically used in which ratio?

1) 1 : 2
2) 1 : 4
3) 1 : 6
4) 1 : 8

144. The grade M25 of concrete would approx. refer to the mix

1) 1 : 3 : 6
2) 1 : 2 : 4
3) 1 : 1 : 2
4) 1 : 4 : 8

145. Brass is an alloy of

1) copper and zinc
2) copper and tin
3) copper and aluminium
4) aluminium and tin

146. A pigment generally used to impart white colour in a paint is

1) graphite
2) lead
3) copper sulphate
4) zinc

147. The main purpose of providing foundations to a building is

1) to provide a level base over which masonry may be laid
2) to fix the super structure to the ground
3) to distribute the weight of the structure of a sufficiently large area of the substratum
4) to prevent uneven distribution of load beams on the substratum

148. The branch of surveying in which only linear measurements are directly made in the field is

1) land surveying
2) chain surveying
3) engineering survey
4) topographical survey

149. A theodolite is used for measuring

1) distances
2) strength of materials
3) surface hardness
4) angles

150. Contour lines drawn on a map, are the lines which pass through

1) hills and depressions
2) same elevation
3) same latitude
4) None of the above

ANSWERS

1-2; 2-1; 3-3; 4-3; 5-2; 6-4; 7-2; 8-2; 9-2; 10-3; 11-4; 12-1; 13-4; 14-2; 15-3; 16-2; 17-1; 18-2; 19-2; 20-3; 21-1; 22-3; 23-1; 24-2; 25-4; 26-1; 27-3; 28-3; 29-4; 30-3; 31-3; 32-2; 33-1; 34-2; 35-3; 36-4; 37-1; 38-3; 39-3; 40-4; 41-4; 42-1; 43-4; 44-3; 45-4; 46-1; 47-3; 48-1; 49-3; 50-3; 51-1; 52-3; 53-4; 54-4; 55-4; 56-2; 57-3; 58-3; 59-2; 60-2; 61-1; 62-4; 63-3; 64-4; 65-4; 66-2; 67-4; 68-3; 69-1; 70-2; 71-2; 72-1; 73-3; 74-3; 75-4; 76-2; 77-2; 78-4; 79-1; 80-3; 81-1; 82-1; 83-3; 84-2; 85-3; 86-2; 87-4; 88-2; 89-1; 90-2; 91-2; 92-4; 93-3; 94-4; 95-3; 96-2; 97-2; 98-1; 99-3; 100-2; 101-1; 102-3; 103-4; 104-2; 105-3; 106-3; 107-2; 108-4; 109-1; 110-4; 111-4; 112-3; 113-4; 114-1; 115-4; 116-2; 117-2; 118-2; 119-3; 120-3; 121-2; 122-1; 123-2; 124-4; 125-2; 126-2; 127-4; 128-1; 129-3; 130-2; 131-4; 132-1; 133-2; 134-4; 135-3; 136-1; 137-2; 138-3; 139-4; 140-4; 141-1; 142-3; 143-2; 144-3; 145-1; 146-4; 147-3; 148-2; 149-4; 150-2.