

INSTRUCTIONS

(Please read carefully and comply)

1. Kindly read the complete set of instructions carefully and also see the instructions on the back side of the OMR Answer Sheet and fill the details in the OMR Answer Sheet and Question Booklet.
2. One paragraph each in Hindi and English is given in page 1. Copying of the paragraph in the space provided in the OMR Answer Sheet (in the language as filled in the application form either in Hindi or English) in your running hand is **compulsory**. **DO NOT USE BLOCK LETTERS**.
3. (a) Question Booklet Serial No. must clearly be written and marked in the bubbles in the space provided in the OMR Answer Sheet.
(b) OMR Sheet No. should be written in the space provided in the Question Booklet.
4. After being instructed to open the Booklet, the candidates will open the seals. It is the responsibility of the candidate to check and ensure that the booklet contains 150 questions and start the paper from page no. 14.
5. The question paper comprises 150 questions and are available in congruent versions of English, Hindi, Urdu, Gujarati, Punjabi, Kannada, Konkani, Marathi, Tamil, Telugu and Malayalam languages. **In case of any doubt or confusion, English version shall prevail.**
6. All questions are of Objective type. There is only one correct answer to each question carrying one mark. There will be negative marking for wrong answers. **For every wrong answer, 1/3 mark will be deducted.**
7. In the event of any mistake in any question/s, candidates will not be penalized. However no corrections will be made in question/s during the examination.
8. You must use **Blue or Black** ball-point pen only for answering. Altering of answers once entered is not permissible. Enter the answers in the Answer Sheet carefully.
9. Rough work, if any may be done in the Question Booklet only in the space provided at the end of the Booklet. No additional paper shall be provided.
10. Use of Log tables, Calculator, Slide rule, Mobile phone, Pager, Digital diary or any other electronic item/instrument, etc. is not allowed. Their use will result in disqualification.
11. No candidate should leave the examination hall before the final bell. The Answer Sheet as well as the Top Sheet of the Question Booklet should be handed over together to the invigilator before leaving the Examination Hall.

SECTION - I
ENGLISH

1. The hyperbolic process is governed by :
(A) Boyle's law (B) Charles' law
(C) Gay-Lussac law (D) Avogadro's law
2. The greatest problem faced in water conservation is to reduce the amount of :
(A) precipitation (B) run-off water (C) groundwater (D) evaporation
3. Normally which animal's skin gives us Morocco leather ?
(A) Cow (B) Camel (C) Goat (D) Pig
4. The Sun shines vertically on the Equator :
(A) Four times a year (B) Once a year
(C) Throughout the year (D) Twice a year
5. Which of the following drawings represents the details of the machine in pictorial forms as it is assembled ?
(A) Production drawing (B) Exploded assembly drawing
(C) Schematic assembly drawing (D) None of these
6. Insects that can transmit diseases to humans are referred to as :
(A) Vectors (B) Carriers (C) Reservoirs (D) Incubators
7. Dead organs are generally stored in formalin. Formalin is :
(A) aqueous formaldehyde (B) aqueous ferrous sulphate
(C) aqueous formic acid (D) aqueous ferric alum
8. Which one is an organic acid ?
(A) Citric (B) Sulphuric (C) Nitric (D) Phosphoric
9. Measurements from the scale to the drawing are transferred with the aid of a :
(A) Scale (B) Compass (C) Divider (D) Bow compass
10. The main job of a voltage regulator is to provide a nearly _____ output voltage.
(A) sinusoidal (B) constant (C) smooth (D) fluctuating
11. Electric current in a metal wire is due to the flow of :
(A) Protons (B) Electrons (C) Ions (D) None of these
12. Find the missing numbers in the series : 1, 3, 6, 8, 16, 18, _____, 76, 78.
(A) 26, 67 (B) 36, 38 (C) 32, 45 (D) 52, 104

13. IC chips used in computers are usually made of :
 (A) Lead (B) Silicon (C) ~~Chromium~~ (D) Gold
14. Dimensions of cylindrical parts should as far as possible be shown in the views in which they are seen as _____.
 (A) Cones (B) Ellipses (C) ~~Rectangles~~ (D) ~~Triangles~~
15. An area legally reserved for wild life in its natural surroundings is a :
 (A) Social Forest (B) Biosphere Reserve
 (C) ~~National Park~~ (D) Sanctuary
16. Find the next three numbers in the series : 3, 4, 9, 10, 15, _____, _____, _____.
 (A) 16, 21, 22 (B) 16, 22, 23 (C) ~~16, 23, 24~~ (D) None of these
17. The atomic mass of an element indicates :
 (A) the number of times one atom of the element is heavier than $\frac{1}{12}$ th of the C^{12} isotope.
 (B) the volume of the atom.
 (C) ~~the number of times one atom of the element is heavier than $\frac{1}{16}$ th of the O^{18} isotope.~~
 (D) none of these
18. The sum of two numbers is 45. Their difference is $\frac{1}{9}$ th of their sum. Their LCM is :
 (A) 100 (B) ~~150~~ (C) 200 (D) 250
19. What is the angle between two vectors, if their sum is to be maximum ?
 (A) 90° (B) 45° (C) 0° (D) ~~180°~~
20. Which is the only country crossed by a tropic circle/line and the equator ?
 (A) Brazil (B) ~~Congo~~ (C) Indonesia (D) Australia
21. Which of the following temperature measuring instruments need not touch the object whose temperature is being measured ?
 (A) Radiation/Infrared pyrometer (B) ~~Filled system thermometer~~
 (C) Mercury in glass thermometer (D) ~~Thermo-electric pyrometer~~
22. Normal human blood is :
 (A) ~~neutral~~ (B) slightly acidic
 (C) ~~variable in its acidity or alkalinity~~ (D) ~~slightly alkaline~~

11
 1111
 16
 11
 27

23. Three equal glasses are filled with mixtures of milk and water. The proportion of milk and water in each glass is as follows : In the first glass 3 : 1, in the second glass 5 : 3 and in the third glass 9 : 7. The contents of the three glasses are emptied into a single vessel. What is the proportion of milk and water in it ?
(A) 21 : 17 (B) 17 : 21 (C) 31 : 17 (D) 17 : 31
24. Glass is attacked by which of the following ?
(A) hydrogen chloride (B) hydrogen bromide
(C) hydrogen iodide (D) hydrogen fluoride
25. Which of the following is **not** a basic element of a transformer ?
(A) core (B) primary winding
(C) secondary winding (D) mutual flux
26. A charge q_1 , exerts some force on a second charge q_2 . Now, if a third charge q_3 is brought near, then the force exerted by q_1 on q_2 :
(A) will increase in magnitude
(B) will decrease in magnitude
(C) will remain unaffected
(D) will increase if q_3 is of the same sign as q_1 and will decrease if q_3 is of opposite charge to q_1
27. Junction breakdown occurs :
(A) under high temperature conditions
(B) with forward bias
(C) under reverse bias
(D) because of manufacturing defect
28. Global agreement in specific control strategies to reduce the release of ozone depleting substances was adopted by :
(A) Rio de Janeiro Conference (B) Montreal Protocol
(C) Kyoto Protocol (D) Vienna Convention
29. The ratio of the number of boys and girls in a college is 7 : 8. If the percentage increase in the number of boys and girls be 20% and 10% respectively, what will be the new ratio ?
(A) 8 : 9 (B) 17 : 18
(C) 21 : 22 (D) Cannot be determined
30. Which part of the potato plant do we eat ?
(A) Root (B) Seed (C) Flower (D) Stem
31. A pixel is :
(A) A computer program that draws picture
(B) A picture stored in secondary memory
(C) The smallest resolvable part of a picture
(D) None of these

32. What is Dry Ice ?
 (A) Solid Carbon dioxide (B) NaCl Crystal
 (C) Ice at minus 50 degrees C (D) Solid H₂O
33. The property of sand due to which it evolves a great amount of steam and other gases is called :
 (A) collapsibility (B) permeability (C) cohesiveness (D) adhesiveness
34. Which one of the following is the youngest folded mountain range in India ?
 (A) Aravalli Hills (B) Eastern Ghats
 (C) Himalayas (D) Western Ghats
35. The Representative Fraction used in the case of drawings of buildings is always :
 (A) equal to 1 (B) less than 1 (C) greater than 1 (D) none of these
36. The hottest planet in our solar system is :
 (A) Venus (B) Earth (C) Mars (D) Moon
37. Increase in atmospheric temperature due to carbon dioxide, is called :
 (A) Pasteur effect (B) Greenhouse effect
 (C) Blackman effect (D) Emerson effect
38. If $\left(\frac{a}{b}\right)^{(x-1)} = \left(\frac{b}{a}\right)^{(x-3)}$, then the value of 'x' is :
 (A) $\frac{1}{2}$ (B) 1 (C) 2 (D) $\frac{7}{2}$
39. Corona (discharge/sparking) takes place between two power transmission wires when they :
 (A) are closely spaced (B) are widely spaced
 (C) have high potential difference (D) carry only d.c. power
40. Find the missing term : ADVENTURE, DVENTURE, DVENTUR, _____, VENTU
 (A) DVENT (B) VENTURE (C) VENTUR (D) DVENTU
41. Which of the following may be treated as a "rotating transformer" ?
 (A) d.c. series motor (B) d.c. shunt motor
 (C) induction motor (D) none of these
42. What comes next : AZ, CX, FU, _____ ?
 (A) IR (B) IV (C) JQ (D) KP

43. The sum of internal energy (U) and the product of pressure and volume ($p.v$) is known as :
(A) work done (B) entropy (C) enthalpy (D) none of these
44. If the length of a simple pendulum is increased, then its time period will :
(A) increase (B) decrease
(C) go on changing (D) remain the same
45. The difference of $1\frac{3}{16}$ and its reciprocal is :
(A) $1\frac{1}{8}$ (B) $1\frac{1}{3}$ (C) $\frac{15}{16}$ (D) $\frac{105}{304}$
46. A tiny piggy bank contains, ₹ 1, 50 paise and 25 paise coins in the ratio 1 : 2 : 3. If their total value is ₹ 154, then what is number of 25 paise coins ?
(A) 168 (B) 112 (C) 56 (D) 156
47. Find the ratio in which rice at ₹ 7.20 a kg be mixed with rice at ₹ 5.70 a kg to produce a mixture worth ₹ 6.30 a kg.
(A) 1 : 3 (B) 2 : 3 (C) 3 : 4 (D) 4 : 5
48. Khyber Pass connects Pakistan with :
(A) India (B) Afghanistan (C) Iran (D) Uzbekistan
49. The computer code for interchange of information between terminals is :
(A) ASCII (B) BCD (C) BCDIC (D) Hollerith
50. The algebraic sum of the IR (I =current, R =resistance) drop is primarily dependent upon the :
(A) amount of current flowing through it
(B) value of R
(C) direction of current flow
(D) battery connection
51. Biological Oxygen Demand (BOD) in a river water :
(A) remains unchanged when algal bloom occurs
(B) has no relationship with concentration of oxygen in water
(C) gives a measure of Salmonella in the water
(D) increases when sewage gets mixed with river water
52. Reinforced concrete is advantageous because of its :
(A) fire resistance and durability (B) less maintenance cost
(C) monolithic character (D) all of these

53. Which of the following produces highest amount of energy upon oxidation ?
 (A) ~~Glucose~~ (B) ~~Fat~~ (C) an Alkane (D) Protein
54. The process of transferring files from the Internet to your computer is called :
 (A) Downloading (B) Uploading (C) FTP (D) JPEG
55. Multi-stage centrifugal pumps are used to :
 (A) give high discharge (B) ~~produce high heads~~
 (C) pump viscous fluids (D) all of these
56. If $(17)^{3.5} \times (17)^x = 17^8$, what is the value of 'x' ?
 (A) 2.29 (B) 2.75 (C) 4.25 (D) 4.5
57. Which of the following is a zinc diffusion process ?
 (A) zincation (B) anoding (C) parkerising (D) sherardizing
58. For a silicon diode, the value of the forward bias voltage typically :
 (A) must be greater than 0.3 V
 (B) ~~must be greater than 0.7 V~~
 (C) depends on the width of the depletion region
 (D) depends on the concentration of the majority carriers
59. The hill station Halflong is in which Indian state ?
 (A) Sikkim (B) ~~Himachal Pradesh~~
 (C) Uttaranchal (D) Assam
60. In a mixture of 60 litres, the ratio of milk and water is 2 : 1. If this ratio is to be 1 : 2, then the quantity of water to be further added is :
 (A) 20 litres (B) 30 litres (C) 40 litres (D) 60 litres
61. The most efficient form of damping employed in electrical instruments, is :
 (A) air friction (B) fluid friction (C) eddy currents (D) ~~none of these~~
62. What is the SI unit of absolute permittivity of a medium ?
 (A) $\frac{J}{C}$ (B) $\frac{C^2}{(Nm^2)}$ (C) ~~$\frac{C^2}{(Nm)}$~~ (D) $\frac{(Nm)}{C^2}$
63. A train can travel 50% faster than a car. Both start from point A at the same time and reach point B, 75 km away from A at the same time. On the way, however, the train lost about 12.5 minutes while stopping at the stations. The speed of the car is :
 (A) 100 kmph (B) 110 kmph (C) 120 kmph (D) 130 kmph

64. If a person walks at 14 km/hr instead of 10 km/hr, he would have walked 20 km more in the same time. The usual distance travelled by him is :
 (A) 50 km (B) 56 km (C) 70 km (D) 80 km
65. In negative logic, the logic state 1 corresponds to :
 (A) negative voltage (B) zero voltage
 (C) more negative voltage (D) lower voltage
66. $\sqrt{\left(\frac{0.49}{0.25}\right)} + \sqrt{\left(\frac{0.81}{0.36}\right)} = ?$
 (A) $\frac{9}{10}$ (B) $2\frac{9}{10}$ (C) $7\frac{9}{10}$ (D) $9\frac{9}{10}$
67. If $\left(\frac{5}{8}\right)$ of 24 = $\left(\frac{15}{7}\right) \times a$, then the value of 'a' is :
 (A) $\frac{7}{225}$ (B) 7 (C) 8 (D) 15
68. What is the address given to a computer connected to a network, called ?
 (A) System Address (B) SYSID
 (C) Process ID (D) IP Address
69. Find the next two numbers in the series : 1, 2, 4, 7, 11, 16, ____, ____.
 (A) 21, 24 (B) 22, 29 (C) 31, 39 (D) 32, 39
70. Which of the following is **not** a renewable energy of natural resources ?
 (A) Tidal energy (B) Wind energy (C) Fossil fuels (D) Solar energy
71. Which of the following sequences is different from the rest ?
 (A) 1, 1, 2, 3, 5, 8, 13, ... (B) 0, 2, 2, 4, 6, 10, 16, ...
 (C) 1, 3, 4, 7, 11, 18, 29, ... (D) 1, 2, 3, 6, 11, 20, 37, ...
72. In low heat cement, the constituent that is kept at minimum, is :
 (A) dicalcium silicate (B) tricalcium silicate
 (C) tricalcium aluminate (D) tetracalcium aluminate
73. Find the missing term : AYD, BVF, DRH, ____, KGL
 (A) FMI (B) GMJ (C) GLJ (D) HLK

74. In plants, water is absorbed by the root hairs, by a process called :
(A) Respiration (B) Transpiration (C) Osmosis (D) Perspiration
75. Port Blair is situated in :
(A) North Andaman (B) South Andaman
(C) Middle Andaman (D) Little Andaman
76. The rock having calcium carbonate as main mineral constituent, is called :
(A) calcareous rock (B) argillaceous rock
(C) siliceous rock (D) sandy rock
77. Who was sworn in as the Governor of Kerala in September 2014 ?
(A) P. Sathasivam (B) K. Narayanan
(C) V. Namboodari pad (D) Mohanan Kutty
78. Alcohol contains :
(A) nitrogen, hydrogen, oxygen (B) carbon, hydrogen, oxygen
(C) oxygen, carbon, nitrogen (D) hydrogen, chlorine, oxygen
79. A d.c. shunt motor is found suitable to drive fans because they require :
(A) small torque at start up
(B) large torque at high speeds
(C) practically constant voltage
(D) small torque at start up as well as practically constant voltage
80. The largest producer of Coffee in India is :
(A) Kerala (B) Tamil Nadu
(C) Karnataka (D) Unified Andhra Pradesh
81. Where were the 2014 Asian Games also known as the XVII Asiad held ?
(A) Sochi, Russia (B) Banzai, Chile
(C) Copernicus, Argentina (D) Incheon, South Korea
82. Of the following, identify the dimensionless entities.
(A) Pressure coefficient (B) Froude number
(C) Darcy Weisbach friction factor (D) All of these
83. If $3\sqrt{5} + \sqrt{125} = 17.88$, then what will be the value of $\sqrt{80} + 6\sqrt{5}$?
(A) 13.41 (B) 20.46 (C) 21.66 (D) 22.35
84. The Halley's Comet will most probably be visible again in the year :
(A) 2066 A.D. (B) 2064 A.D. (C) 2062 A.D. (D) 2060 A.D.

85. Which of the following countries became the first to have made a space craft enter the orbit of Mars in the first attempt itself ?
(A) USA (B) UK (C) Germany (D) India
86. The banana is the good source of which vitamin ?
(A) A (B) C (C) D (D) B
87. _____ is the process of finding errors in software code.
(A) Compiling (B) Assembling (C) Interpreting (D) Debugging
88. Rare Gases are generally chemically inert because they :
(A) are monostomic
(B) have low ionization energy
(C) have stable electronic configuration
(D) have a high electron affinity
89. The emitter of a transistor is generally doped the heaviest because it :
(A) has to dissipate maximum power
(B) has to supply the majority charge carriers to the base
(C) is the first region of the transistor
(D) must possess low resistance
90. The desirable property of a refrigerant is :
(A) low boiling point (B) high critical temperature
(C) high latent heat of vaporization (D) all of these
91. The only drawback of using negative feedback in amplifiers is that it involves :
(A) gain sacrifice (B) gain stability
(C) temperature sensitivity (D) frequency dependence
92. What comes next : GH, JL, NQ, SW, YD, ___ ?
(A) EJ (B) FJ (C) EL (D) FL
93. The curve traced by a point moving on a plane in one direction, towards a fixed point while also moving around that point, is called ?
(A) Trochoid (B) Spiral (C) Parabola (D) Catenary
94. Eutrophication results in reduction of :
(A) mineral salts (B) dissolved oxygen
(C) parasitic protozoa (D) dissolved nitrate
95. A vertical column has two moments of inertia (i.e. I_{xx} and I_{yy}). The column will tend to buckle in the direction of the :
(A) axis of load (B) perpendicular to the axis of load
(C) maximum moment of inertia (D) minimum moment of inertia

96. Humidity is most commonly measured by :
- (A) partial vapour pressure determination
 - (B) dry and wet bulb temperature measurement
 - (C) physical expansion
 - (D) evaporation
97. A, B and C can complete a piece of work in 24, 6 and 12 days respectively. Working together, they will complete the same work in :
- (A) $\frac{1}{24}$ day (B) $\frac{7}{24}$ day (C) $3\frac{3}{7}$ days (D) 4 days
98. Which of the following is a storage device that uses rigid, permanently installed magnetic disks to store data/information ?
- (A) Floppy diskette (B) Hard disk (C) Permanent disk (D) None of these
99. Find the missing number in the blank in the series :
1, 4, 9, 16, 25, ____, 49, 64.
- (A) 21 (B) 31 (C) 26 (D) 36
100. If $20.4 \times a = 12.24$, then $a = ?$
- (A) 0.6 (B) 0.06 (C) 6.60 (D) 0.66
101. Find the missing letter : A, D, H, M, ____, Z
- (A) T (B) G (C) N (D) S
102. The coaxial cylinder viscometer makes use of which of the following laws ?
- (A) Newton's law of viscosity (B) Hagen-Poiseuille equation
- (C) Stoke's law (D) None of these
103. What is the name of the software that allows us to browse through web pages called ?
- (A) Browser (B) Mail Client (C) FTP Client (D) Messenger
104. A man rows to a place 48 km distant and comes back in 14 hours. He finds that he can row 4 km with the stream in the same time as 3 km against the stream. The rate of the stream is :
- (A) 1 kmph (B) 1.5 kmph (C) 2 kmph (D) 2.5 kmph
105. The velocity at which the flow changes from laminar to turbulent for the case of a given liquid at a given temperature and in a given pipe, is known as :
- (A) Turbulence velocity (B) Critical velocity
- (C) Reynolds velocity (D) Froude velocity

106. Two trains of equal length are running on parallel lines in the same direction at 46 km/hr and 36 km/hr. The faster train passes the slower train in 36 seconds. The length of each train is :
(A) 50 m (B) 72 m (C) 80 m (D) 82 m
107. Bricks used for lining furnaces are :
(A) under burnt bricks (B) over burnt bricks
(C) refractory bricks (D) all of these
108. Sakshi can do a piece of work in 20 days. Tanya is 25% more efficient than Sakshi. The number of days taken by Tanya to do the same piece of work is :
(A) 15 (B) 16 (C) 18 (D) 25
109. Which one of the following is responsible for converting milk into curd ?
(A) Virus (B) Insects (C) Fungi (D) Bacteria
110. International Date Line Passes through :
(A) 0° Greenwich (B) 180° Greenwich
(C) 90° Greenwich (D) 270° Greenwich
111. The deepest trenches of the ocean are found in the :
(A) Indian Ocean (B) Pacific Ocean
(C) Arctic Ocean (D) Atlantic Ocean
112. The useful part of livable area of a building is also known as :
(A) Carpet area (B) Circulation area
(C) Horizontal circulation area (D) Plinth area
113. Which of the following is a non-metallic mineral ?
(A) Bauxite (B) Magnesium (C) Manganese (D) Gypsum
114. Cape Canaveral, the site from which space shuttles, are launched, is located on the coast of :
(A) North Carolina (B) South Carolina (C) Florida (D) Virginia
115. In what ratio must a grocer mix two varieties of tea worth ₹ 60 a kg and ₹ 65 a kg so that by selling the mixture at ₹ 68.20 a kg he may gain 10% ?
(A) 3 : 2 (B) 3 : 4 (C) 3 : 5 (D) 4 : 5
116. High levels of uric acid in the blood is characteristic of :
(A) Arthritis (B) Gout
(C) Rheumatism (D) Rheumatic heart

117. Which of the following is a cycle consisting of one constant pressure, one constant volume and two isentropic processes ?
(A) Carnot cycle (B) Stirling cycle (C) Otto cycle (D) Diesel cycle
118. In amplitude modulation :
(A) carrier frequency is changed (B) carrier amplitude is changed
(C) three sidebands are produced (D) fidelity is improved
119. A Tachometer measures the :
(A) composition of an alloy (B) flow rate of a liquid
(C) temperature (D) rotational speed of a flywheel
120. If a trolley starts from rest with an acceleration of 2 m/s^2 , what would its velocity be after 4 seconds ?
(A) 8 m/s (B) 2 m/s (C) 8 m/s^2 (D) 2 m/s^2
121. Who was appointed as the Chief Justice of India on 28th September, 2014 ?
(A) Justice Hardayal Singh Randhawa
(B) Justice Oberoi
(C) Justice Durga Banerjee
(D) Justice Handiyala Lakshminarayanawamy Dattu
122. A car travels 70 km in one hour before some fault happens, then it travels for 120 km at 30 kmph. For the entire trip, what was the average speed ?
(A) 33 kmph (B) 36 kmph (C) 38 kmph (D) 40 kmph
123. An electronic oscillator is :
(A) just like an alternator (B) nothing but an amplifier
(C) an amplifier with feedback (D) a converter of a.c. to d.c. energy
124. Which of the following is an intensive property of a thermodynamic system ?
(A) Volume (B) Temperature (C) Mass (D) Energy
125. "Under the same conditions of temperature and pressure, equal volumes of all gases contain the same number of molecules". This law was propounded by :
(A) Gay-Lussac (B) Isaac Newton
(C) Amadeo Avogadro (D) Kelvin
126. The expression $(11.98 \times 11.98 + 11.98 \times a + 0.02 \times 0.02)$ will be a perfect square for 'a' equal to :
(A) 0.02 (B) 0.2 (C) 0.04 (D) 0.4

127. The absolute zero pressure will be obtained :
- (A) when molecular momentum of the system becomes zero
 - (B) at sea level
 - (C) at the temperature of -273 K
 - (D) at the centre of the earth
128. In a centrifugal casting method :
- (A) core is made of sand
 - (B) core is made of ferrous metal
 - (C) core is made of nonferrous metal
 - (D) no core is used
129. Fullers are used :
- (A) for finishing flat surfaces
 - (B) for necking down a piece of work
 - (C) for punching a hole
 - (D) to finish the punched hole
130. A man takes twice as long to row a distance against the stream as to row the same distance in favour of the stream. The ratio of the speed of the boat (in still water) and the stream is :
- (A) 2 : 1
 - (B) 3 : 1
 - (C) 3 : 2
 - (D) 4 : 3
131. The sole purpose of a commutator in a d.c. generator is to :
- (A) increase output voltage
 - (B) reduce sparking at the brushes
 - (C) provide smoother output
 - (D) convert the induced a.c. into d.c.
132. The maximum stress produced in a bar of tapering section is at :
- (A) smaller end
 - (B) larger end
 - (C) middle
 - (D) anywhere
133. Which of the following meters/instruments is suitable for measuring only direct current ?
- (A) moving-iron type
 - (B) permanent-magnet type
 - (C) electrodynamic type
 - (D) hot-wire type
134. Vendor-created program modifications are called :
- (A) Patches
 - (B) Fixes
 - (C) Holes
 - (D) Overlaps
135. The electron beam welding can be carried out in :
- (A) open air
 - (B) a shielded gas environment
 - (C) vacuum
 - (D) none of these

136. A flow, for which the resistance to shearing deformation is zero, is :
- (A) laminar flow (B) turbulent flow
(C) supersonic flow (D) ideal flow
137. Two sinusoidal currents are given by the equations: $i_1 = 10 \sin(\omega t + [\pi/3])$ and $i_2 = 15 \sin(\omega t - [\pi/4])$. What is the phase difference between them in degrees ?
- (A) 105 (B) 75 (C) 15 (D) 60
138. Who was the first Indian women to swim across the English Channel ?
- (A) Nafisa Ali (B) Arati Saha
(C) Bula Choudhury (D) J. Sikder
139. In an ideal transformer :
- (A) windings have no resistance (B) core has no losses
(C) core has infinite permeability (D) all of these
140. What is the resistance of a wire of length 100 m having an area of cross section of 0.1 mm^2 and a resistivity of $50 \times 10^{-8} \Omega - \text{m}$?
- (A) 500 Ω (B) 5000 Ω (C) 250 Ω (D) 50 k Ω
141. A natural region has the similarity of :
- (A) Climate and occupation (B) Soil and drainage
(C) Climate and natural vegetation (D) Economic base and races
142. An aeroplane covers a certain distance at a speed of 240 kmph in 5 hours. To cover the same distance in $1\frac{2}{3}$ hours, it must travel at a speed of :
- (A) 300 kmph (B) 360 kmph (C) 600 kmph (D) 720 kmph
143. Principal plane is a plane on which the shear stress is :
- (A) zero (B) minimum (C) maximum (D) none of these
144. What are .bas, .doc, and .html examples of ?
- (A) Extensions (B) Domains (C) Database (D) Protocols

145. The basic reason why a full-wave rectifier has twice the efficiency of a half-wave rectifier is, that :
- (A) it makes use of a transformer
 - (B) its ripple factor is much less
 - (C) it utilizes both half-cycles of the input
 - (D) its frequency output is double the line frequency
146. A train 360 m long is running at a speed of 45 km/hr. In what time will it pass a bridge 140 m long ?
- (A) 40 sec (B) 42 sec (C) 45 sec (D) 48 sec
147. The Common Emitter Amplifier is characterized by :
- (A) low voltage gain (B) moderate power gain
 - (C) signal phase reversal (D) very high output impedance
148. A bullet of mass A and velocity B is fired into a block of wood of mass C. If loss of any mass and friction be neglected, what is the end velocity of the system ?
- (A) $\frac{(AB)}{(A + C)}$ (B) $\frac{(AC)}{(B + C)}$ (C) $\frac{(A + C)}{(BC)}$ (D) $\frac{(A + B)}{AC}$
149. Who won the Men's singles Tennis Championship at the 2014 US Open ?
- (A) John Wayne (B) Roger Federer
 - (C) Marin Cilic (D) Wilfried Tsonga
150. In a steady flow process, the value of :
- (A) heat transfer is constant
 - (B) work transfer is constant
 - (C) mass flow at inlet and outlet is same
 - (D) all of these

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