THIS SHEET TO BE DETACHED / TORN OFF AND RETAINED BY INVIGILATOR ON COMPLETION OF EXAM / परीक्षा की पूर्ति पर इस पन्ने को अलग करके / काटके निरीक्षक द्वारा रखा जाए

Duration : (2 Hours / 120 Minutes) समय : (2 घंटे / 120 मिनट)	Exam Code : परीक्षा कोड :	**TSD001**
No. of Pages / पृष्ठों की संख्या : **228**	Total Marks / कुल अंक :	**150**
Roll No. : अनुक्रमांक :	Question Booklet No. प्रश्न पुस्तिका संख्या :	**4100776**
Date of Examination : परीक्षा तिथि :	OMR Answer sheet No. OMR उत्तर शीट क्र.	

Candidate's Name / परीक्षार्थी नाम	Candidate's Signature / परीक्षार्थी हस्ताक्षर
*** As given in application form / आवेदन पत्र में दिये गये ***	

CANDIDATE SHOULD OPEN THE SEALS ONLY AFTER THEY ARE ASKED TO DO SO.
परीक्षार्थी निर्देश मिलने पर ही सील खोलें।

The question paper is made up of the following sections as tabulated below :
निम्न तालिका में दर्शाये अनुसार, इस प्रश्न पत्र को निम्नलिखित भागों में विभाजित किया गया है :

Section/भाग	Language/भाषा	No. of questions/प्रश्नों की संख्या	Pages/पृष्ठ From/से	To/तक
Section-I	English	150	14	32
Section-II	Hindi / हिन्दी	150	33	51
Section-III	Urdu / उर्दू	150	52	70
Section-IV	Assamese / असमीस	150	71	89
Section-V	Bengali / बेंगाली	150	90	108
Section-VI	Manipuri / मणिपूरी	150	109	127
Section-VII	Odia / ओड़िया	150	128	146
Section-VIII	Telugu / तेलुगू	150	147	165
Section-IX	Marathi / मराठी	150	166	184
Section-X	Gujarati / गुजराती	150	185	203
Section-XI	Kannada / कन्नडा	150	204	222

English Paragraph : "All the details given by me in the Application Form are true and complete to the best of my knowledge. I understand that I may be issued with Call letter for the exam on the basis of above information and mere issue of Call letter will not confer on me any right to be eligible for the post. I also understand that in case any of my statements are found to be untrue at any stage of recruitment or thereafter, I shall be disqualified forthwith for the post applied for and I shall be liable for any other penal action under the extant rules".

हिन्दी पैराग्राफ : "आवेदन पत्र में मेरे द्वारा दिया गया सभी विवरण मेरी अधिकतम जानकारी के अनुसार सत्य और पूर्ण है । मैं समझता/समझती हूं कि मुझे परीक्षा के लिए उपर्युक्त सूचना के आधार पर बुलावा पत्र जारी किया जाएगा और केवल बुलावा पत्र जारी करना पद के लिए पात्र होने का मुझे कोई अधिकार नहीं देता है । मैं यह भी समझता/ समझती हूं कि यदि मेरा विवरण भर्ती के किसी चरण पर या तत्पश्चात् असत्य पाया जाता है, तो मैं आवेदित पद के लिए तत्काल निरर्हक हो जाऊंगा/जाऊंगी और मुझ पर लागू नियमों के तहत कोई अन्य दंडात्मक कार्रवाई की जाएगी"

Signature of the Invigilator / निरीक्षक के हस्ताक्षर

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, Assamese, Bengali, Manipuri, Odia, Telugu, Marathi, Gujarati, and Kannada 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 top sheet of the Question Booklet as well as the Answer Sheets, both original and duplicate should be handed over together to the invigilator before leaving the Examination Hall. Candidate may however take the Question Booklet with him after the invigilator has torn and taken the top sheet of the Question Booklet.

1. Distance between two buildings is 100 m. A surveyor is standing at a distance of 40 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?
   (A) 45.3 m
   (B) 45.67 m
   (C) 46.22 m
   (D) Data insufficient

2. A galvanometer is converted to a voltmeter by
   (A) adding a high resistance in series with the galvanometer
   (B) adding a low resistance in parallel with the galvanometer
   (C) increasing the number of windings of galvanometer coil
   (D) decreasing the number of windings of the galvanometer coil

3. A dynamometer is an equipment used to measure
   (A) current and voltage of generator
   (B) dynamic loads over cyclic times
   (C) fatigue propagation due to dynamic loads
   (D) torque and power of an engine

4. Interferometers are used for measurement of
   (A) changes in life cycle processes due to radiation
   (B) effect of interference of wearing of one mechanical component, on the whole machine
   (C) measurement of very small displacements and surface irregularities
   (D) chemical analysis of compounds

5. Sclerometer is used by
   (A) Astronomers
   (B) Civil Engineering Surveyors
   (C) Doctors
   (D) Metallurgists

6. The word 'Brinell' is associated with
   (A) soil testing
   (B) tensile testing
   (C) hardness testing
   (D) testing of seasoning of wood

7. What is carbon footprint?
   (A) measure of radioactivity from a fossil
   (B) environmental impact because of used cells and batteries
   (C) total sets of green house gas emissions by organization, individual etc.
   (D) amount of carbon content in the organic compounds

8. A fuse should be connected in ——————— in the ——————— conductor.

   (A) series, neutral   (B) series, live

   (C) parallel, neutral   (D) parallel, live

9. Equipment earthing gives protection against

   (A) voltage fluctuation   (B) overloading

   (C) electric shocks   (D) high temperature of conductors

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

    (A) 4000 A   (B) 100 A   (C) 10 A   (D) 4 A

11. The term PCB stands for

    (A) Polyethylene Card Board   (B) Printed Circuit Board

    (C) Printed Card Board   (D) Polythene Circuit Board

12. Color bands for 1.5 ohms resistor will be

    (A) Brown, Green, Brown   (B) Brown, Green, Golden

    (C) Brown, Golden, Green   (D) Brown, Golden, Golden

13. A frequency tuning electronic circuit would consist of

    (A) an inductor and a capacitor   (B) an inductor and a resistor

    (C) two inductors   (D) two capacitors

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

    (A) resistor   (B) inductor

    (C) transformer   (D) capacitor

15. For stabilizing the gain of an amplifier

    (A) positive feedback is used   (B) no feedback is used

    (C) negative feedback is used   (D) input voltage is varied

16. A stereophonic system requires

    (A) two separate microphones   (B) two separate amplifiers

    (C) two separate speakers   (D) all of the above

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17. As the speed of charged particle increases in a cyclotron, (choose True (T) or 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

   (A)   F, F, F   (B)   T, T, T   (C)   T, F, T   (D)   T, T, F

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

   (A)   isobaric   (B)   isometric
   (C)   adiabatic   (D)   isentropic

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

   (A)   40%   (B)   85%   (C)   1.5   (D)   3.5

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

   (A)   same thermal energy   (B)   same entropy
   (C)   same temperature   (D)   same molecular energy

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

   (A)

   (B)

   (C)

   (D)
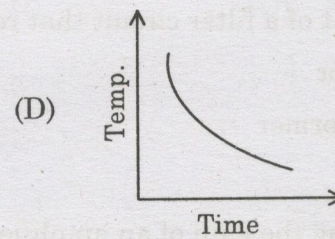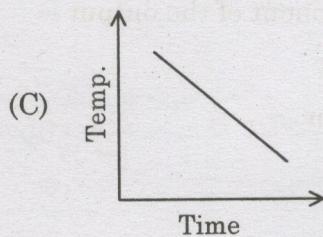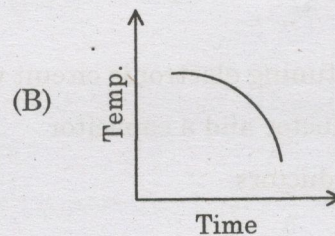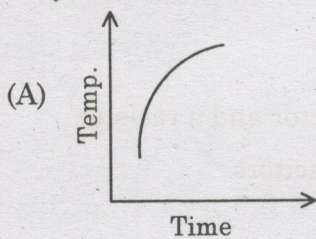
22. In a multicylinder diesel engine, the cylinders are fired in a particular sequence

   (A)   to reduce fuel consumption
   (B)   to reduce knocking
   (C)   to reduce engine vibrations
   (D)   all of the above

23. Find the median of the following numbers :

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

(A)   15   (B)   20   (C)   17   (D)   14

24. tan 90° is undefined. As θ is increased from 89° towards 90°, value of tan θ tends to

(A)   0   (B) $+\infty$ (C)   1   (D)   undefined

25. A man sells his two cars at the same price. In one car he makes a profit of 10%. In other car he loses 10% over the cost price. His total gain or loss percent is

(A)   1% loss   (B)   1% gain

(C)   2% loss   (D)   No loss no gain

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

(A)   0.333   (B)   0.3162   (C)   0.3221   (D)   0.3437

27. 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?

(A)   9   (B)   8   (C)   7   (D)   84

28. Consider the following graph :
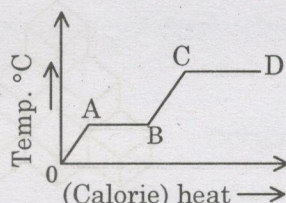
Which portion represents the 'Latent heat of fusion'?

(A)   OA   (B)   AB   (C)   BC   (D)   CD

29. Which of the following does not sublimate?

(A)   Ice   (B)   Ammonium chloride

(C)   Naphthalene   (D)   Camphor

30. Which of the following is a heterogeneous mixture?

(A)   Brass   (B)   Sugar solution in water

(C)   Air   (D)   Milk

31. If Arun is Chetna's son, Chetna and Kavita are sisters, Jyoti is Kavita's mother, Parth is the son of Jyoti, then
    (A) Parth and Arun are cousins   (B) Parth is maternal uncle of Arun
    (C) Kavita is Arun's grandmother (D) Parth is maternal uncle of Kavita

32. Find the next number in the series :
    10, 100, 200, 310, ____.
    (A) 430   (B) 510   (C) 400   (D) 420

33. A man is facing North. He starts walking on a circular path, completes 3/4ᵗʰ of the circle and takes a right turn. Which direction is he facing now?
    (A) East   (B) West   (C) North   (D) South

34. In a certain code MONKEY is coded as XDJMNL. How would the TIGER be coded?
    (A) SDFHS   (B) UJHFS   (C) QDFHS   (D) SHFDQ

35. Find the number that will replace the —— :
    1, 2, 3, 5, 8, 13, ____
    (A) 20   (B) 21   (C) 22   (D) 23

36. How many cubes are there in the figure?
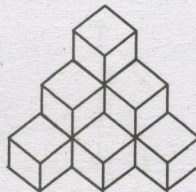
    (A) 6   (B) 8   (C) 9   (D) 10

37. 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?
    (A) 2 km   (B) 1 km   (C) 0 km   (D) 8 km

38. 'Crime' is related to 'Court' in the same way as 'Disease' is related to
    (A) Doctor   (B) Hospital   (C) Medicine   (D) Punishment

39. 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?
    (A) 10 cm   (B) 20 cm   (C) $10\sqrt{2}$ cm   (D) $10\sqrt{3}$ cm

40. Ashoka in the 13th 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
   (A) Amatyas
   (B) Samahartas
   (C) Rajukas
   (D) Chalukyas

41. Who built the Jagannatha temple of Puri?
   (A) Anantavarmana Chodaganga
   (B) Narsimahavarmana
   (C) Aadiyavarmana
   (D) Parmeshwaravarmana

42. An individual who is not a member of either house of the parliament can be appointed as a member of the Council of Ministers, but he has to become the member of the either house in
   (A) 3 months
   (B) 6 months
   (C) one year
   (D) 2 years

43. The term 'Republic' used in the preamble of the Constitution of India implies
   (A) That the head of the state is hereditary
   (B) That the head of the state is a constitutional ruler
   (C) That the head of the state is an elected representative
   (D) None of the above

44. The Hindustan Shipyard Limited is located at
   (A) Goa
   (B) Cochin
   (C) Mumbai
   (D) Visakhapatnam

45. In India, what is the minimum permissible age for employment in a factory?
   (A) 14 years   (B) 16 years   (C) 18 years   (D) 21 years

46. Lunar Eclipse occurs only on a
   (A) First quarter day
   (B) New moon day
   (C) Full moon day
   (D) Last quarter day

47. Mirages generally occur in
   (A) mountains
   (B) forests
   (C) deserts
   (D) sea

48. Which state is known for its sandalwood carvings?
   (A) Maharashtra
   (B) Madhya Pradesh
   (C) Kerala
   (D) Karnataka

49. Which of the following statements is incorrect?

   (A)   Microsoft windows is GUI

   (B)   Linux is GUI

   (C)   More than 5000 kB data can be stored in a DVD

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

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

   (A)   2   (B)   3

   (C)   4   (D)   8

51. A third angle orthographic projection of an object is given below. What is this object?
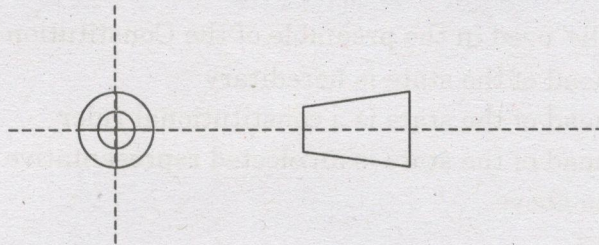
   (A)   Triangle   (B)   Trapezium

   (C)   Cone   (D)   Frustrum of a cone

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

   (A)   1 : 100   (B)   1 : 1000

   (C)   1 : 10,000   (D)   1 : 1,00,000

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

   (A)   diagonal hatching   (B)   dots

   (C)   cross marks   (D)   red colour

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

   (A)   1   (B)   2

   (C)   3   (D)   4

55. Consider the circuit below :
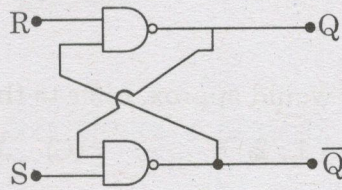
This circuit is called a

(A) Half adder   (B) Latch
(C) Bit counter   (D) PIPO device

56. De Morgan's theorem states that

(A) $(X+Y)' = Y' + X'$ (B) $(X \cdot Y)' = X' + Y'$
(C) $(X \cdot Y)' = Y' \cdot X'$ (D) $(X+Y)' = X' + Y'$

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

(A) 0   (B) 1   (C) 2   (D) −1

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

(A) Keyboard   (B) Joy stick
(C) ALU   (D) Printer

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

(A) Header bond   (B) English bond
(C) Flemish bond   (D) Herring bone bond

60. Excess silica in cement

(A) increases the setting time   (B) decreases the setting time
(C) weakens the strength of the cement   (D) does not affect the setting time

61. The outer protective layer of a tree is

(A) cambium layer (B) pitch   (C) bark   (D) sap

62. Which lime is most suitable for white washing?

(A) quick lime   (B) stone lime
(C) kankar lime   (D) shell lime

63. For plastering walls, cement mortar would be typically used in which ratio?
   (A)   1 : 2   (B)   1 : 4   (C)   1 : 6   (D)   1 : 8

64. The grade M25 of concrete would approx. refer to the mix
   (A)   1 : 3 : 6   (B)   1 : 2 : 4   (C)   1 : 1 : 2   (D)   1 : 4 : 8

65. Brass is an alloy of
   (A)   copper and zinc   (B)   copper and tin
   (C)   copper and aluminium   (D)   aluminium and tin

66. A pigment generally used to impart white colour in a paint is
   (A)   graphite   (B)   lead
   (C)   copper sulphate   (D)   zinc

67. The main purpose of providing foundation to a building is
   (A)   to provide a level base over which masonry may be laid
   (B)   to fix the super structure to the ground
   (C)   to distribute the weight of the structure on a sufficiently large area of the substratum
   (D)   to prevent uneven distribution of load of beams on the substratum

68. The branch of surveying in which only linear measurements are directly made in the field is
   (A)   land surveying   (B)   chain surveying
   (C)   engineering survey   (D)   topographical survey

69. A theodolite is used for measuring
   (A)   distances   (B)   strength of materials
   (C)   surface hardness   (D)   angles

70. Contour lines drawn on a map, are the lines which pass through
   (A)   hills and depressions   (B)   same elevation
   (C)   same latitude   (D)   none of the above

71. Match the following :

1.	Cell wall	(a) Animal cell
		(b) Plant cell
2.	ATP	(a) Mitochondria
		(b) Genes

(A) 1–(a), 2–(a)   (B) 1–(a), 2–(b)   (C) 1–(b), 2–(a)   (D) 1–(b), 2–(b)

72. Synapses and Dendrites are associated with
   (A) cortex   (B) epithelium
   (C) retina   (D) nerve-cells

73. A tissue that connects muscle to bones in humans is called
   (A) Tendon   (B) Fibre   (C) Axon   (D) Femur

74. The human population of globe is approximately
   (A) 500 million   (B) 600 million
   (C) 6 billion   (D) 7 billion

75. Hematology is the study related to
   (A) Plant reproduction system   (B) Blood
   (C) Food habits of animals   (D) Bones

76. Which of the following is not a food borne disease?
   (A) Amoebiasis   (B) Cholera
   (C) Influenza   (D) Hepatitis A

77. Hadrons and Baryons are
   (A) Industrial chemicals   (B) Types of subatomic particles
   (C) Alkalies   (D) Cyclotrons

78. A pheromone secreted by an animal
   (A) influences the behaviour of animals of same species
   (B) protects it from predators
   (C) attracts the victims for its food
   (D) none of the above

79. If circumference of a circle is increased by 10%, the area of the circle will increase by
    (A) 5%   (B) 10%   (C) 20%   (D) 21%

80. A cylindrical shaped metal piece is converted into a wire. Out of the following, which parameter can be assumed to remain the same?
    (A) volume   (B) cross-section area
    (C) length   (D) diameter

81. What is the probability of getting 3 aces if three cards are drawn from a set of 52 playing cards?
    (A) 52^3 (B) $\dfrac{1}{52^3}$ (C) $\dfrac{1}{52!}$ (D) $\dfrac{4 \times 3 \times 2}{52 \times 51 \times 50}$

82. 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?
    (A) $\dfrac{1}{40}$ (B) $\dfrac{1}{25}$ (C) $\dfrac{1}{4}$ (D) $\dfrac{1}{50}$

83. Sum of two numbers is 15 and sum of their reciprocals is $\dfrac{15}{56}$. The two numbers are
    (A) 4, 11   (B) 5, 10   (C) 6, 9   (D) 7, 8

84. If α, β are the roots of quadratic equation $x^2 + x + 1 = 0$, then $\dfrac{1}{\alpha} + \dfrac{1}{\beta}$ is
    (A) −1   (B) 1
    (C) 0   (D) None of these

85. Value of $\sqrt{6 + \sqrt{6 + \sqrt{6 + \ldots}}}$ is
    (A) $\dfrac{5}{2}$ (B) −2   (C) 3   (D) 4

86. If a, b, c, d, e and f are in arithmetic progression, then $e - c$ is equal to
    (A) $2(b-a)$ (B) $c-b$ (C) $2(f-d)$ (D) $2(d-b)$

87. In coordinate geometry, distance of the point $(-4, 3)$ from origin is
    (A) 3   (B) 4   (C) 5   (D) 25

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88. Hirakud dam has been built on the river
   (A) Cauvery
   (B) Mahanadi
   (C) Krishna
   (D) Yamuna

89. Who received the first Nobel prize in Physics in India?
   (A) Dr. C.V. Raman
   (B) Dr. Hargobind Khurana
   (C) Prof. C.N.R. Rao
   (D) Prof. Narlikar

90. Which of the following books was banned by all Muslim countries and India?
   (A) The Shame Within
   (B) Discovery of India
   (C) Satanic Verses
   (D) Beyond Expanse

91. IGMDP, in Indian context, is a
   (A) Management Development Programme
   (B) Monetary Policy
   (C) Missile Programme
   (D) Marketing Policy in Management Studies

92. Who is the Secretary General of United Nations?
   (A) David Cameron
   (B) Stephen Harper
   (C) Jung Hong-Won
   (D) Ban Ki-Moon

93. With reference to water pollution, BOD means
   (A) Biochemical Oxygen Dilution
   (B) Biochemical Oxygen Demand
   (C) Bio Organic Dissolutes
   (D) Basic Organic Dissolutes

94. Approx. percentage of oxygen in Earth's atmosphere is
   (A) 17%   (B) 21%   (C) 25%   (D) 33%

95. In the context of genetics, DNA stands for
   (A) Di-Neuro Acid
   (B) Daily News Analysis
   (C) Detoxic Neuro Acid
   (D) Deoxyribo Nucleic Acid

96. In the context of Information Technology, OCR means
   (A) Optical Character Recognition
   (B) Octagonal Cyclic Recharge
   (C) Octadecimal Cyclic Regeneration
   (D) Optical Character Regeneration

97. What is floating point with reference to computers?

    (A)   It is a software subroutine around which other subroutines are built

    (B)   It is a representation of real numbers to facilitate computing

    (C)   It is the main algebraic formula of the software

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

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

    (A)   software programme   (B)   algorithm

    (C)   protocol   (D)   information processing

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

    (A)   Tape calculator   (B)   Babbage machine

    (C)   Turing machine   (D)   Theoretical machine

100. 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

    (A)   CCS   (B)   Unicode

    (C)   Standard CCS code   (D)   Universal CCS code

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

    (A)   Coding   (B)   Malware

    (C)   Virus   (D)   Encryption

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

    (A)   open source software   (B)   unlicensed software

    (C)   free software   (D)   community software

103. Which of the following are machine level languages?

    (A)   C++   (B)   Java

    (C)   Python   (D)   None of these

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

(A) Pyrolysis   (B) Thermolysis

(C) Caramelization   (D) Catagenesis

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

(A) Nitrogen and oxygen

(B) Sulfur dioxide and Nitrogen oxide

(C) Carbon dioxide and Carbon-mono-oxide

(D) Ozone and argon

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

(A) Green house gases

(B) Colloidal impurities

(C) CFC and halons

(D) Rockets and satellite launching vehicles

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

(A) 0.3   (B) 3   (C) 30   (D) 300

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

(A) rain water collection   (B) micro-dams

(C) micro-accumulation   (D) rain water harvesting

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

(A) computers

(B) environmental engineering

(C) diesel engine

(D) engineering drawing and orthogonal projections

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

(A) size of memory   (B) speed of computation

(C) clock speed   (D) none of the above

111. The formula $R = \dfrac{R_1 R_2}{R_1 + R_2}$ represents

    (A)   series connection

    (B)   parallel connection

    (C)   bridge connection

    (D)   linear connection

112. In the circuit given below, what is the current flowing in the 6 Ω resistance?
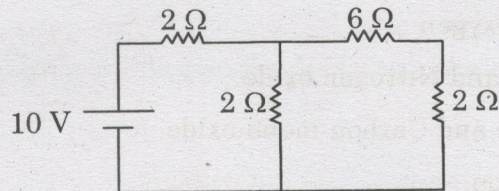
    (A)   0.22 A

    (B)   0.55 A

    (C)   2.22 A

    (D)   2.775 A

113. A transformer core is made of laminations

    (A)   to increase the electrical conductivity of the core

    (B)   to increase the permeability of the core

    (C)   to reduce eddy currents

    (D)   to increase eddy currents and improve efficiency

114. Domestic supply of electricity in India is 220 V AC. 220 V refers to the ——————— of the voltage.

    (A)   rms value

    (B)   peak value

    (C)   mean value

    (D)   minimum value

115. In a given AC circuit there is a phase difference of $\pi/2$ between current and voltage. When the current is at its peak voltage is zero. The circuit is

    (A)   resistive

    (B)   inductive

    (C)   capacitive

    (D)   can't say

116. An unknown DC voltage is to be measured. Which measuring range in the multimeter will you select first?

    (A)   500 V

    (B)   50 V

    (C)   5 V

    (D)   0.5 V

117. The earth conductor provides a path to ground for

    (A)   circuit current

    (B)   leakage current

    (C)   over current

    (D)   high voltage

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

(A) amino acids   (B) aromatic compounds

(C) esters   (D) organic acids

119. 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 sun is

(A) zero   (B) $\dfrac{GMm}{r^2}$ (C) $\dfrac{GM.m}{r} \cdot 2\pi$ (D) $\dfrac{GMm}{r^2} \cdot 2\pi$

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

(A) bi-metallic   (B) capacitance

(C) inductance   (D) ionization

121. 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)
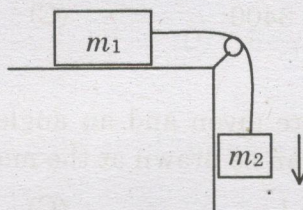
(A) g (B) $\dfrac{m_1 + m_2}{m_1} g$ (C) $\dfrac{m_1 + m_2}{m_2} g$ (D) $\dfrac{m_2}{m_1 + m_2} \cdot g$

122. Which of the following statements is correct?

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

(B) Speed of light is different for different colours

(C) Speed of light is different in different media

(D) All of the above

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

(A) reduced using smaller wavelength of probing light

(B) reduced using larger wavelength of probing light

(C) reduced using high energy probe particles accelerated by cyclotron

(D) can't be reduced as it is fundamentally inherent

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

(A) 0   (B) 1   (C) 2   (D) infinite

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

(A) 30°   (B) 45°   (C) 60°   (D) $87\frac{1}{2}°$

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

(A) 1.321   (B) 1.211   (C) 1.111   (D) 1.331

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

(A) 9   (B) 3   (C) 4   (D) 1

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

(A) 3200   (B) 3400   (C) 3146   (D) 3143

129. If two sides of a triangle are given and an angle not included by the two sides is also given, how many triangles can be drawn at the most? .

(A) 0   (B) 1   (C) 2   (D) 3

130. 4 men can complete a piece of work in 5 days. How many men are required to complete 3 times the work in 4 days?

(A) 5   (B) 15   (C) 80   (D) 20

131. Given that $\log 2 = 0.3$ approx., one billion would be approx.

(A) 2^9 (B) 2^{10} (C) 2^{20} (D) 2^{30}

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

(A) 6   (B) 10   (C) 12   (D) 120

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

(A) 1   (B) $\frac{3}{2}$ (C) 2   (D) $\frac{3}{4}$

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

    (A)   Carburettor   (B)   Cylinder

    (C)   Inlet port   (D)   Fuel pump

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

    (A)   Nickel-Chrome   (B)   Vanadium

    (C)   Silicon-Manganese   (D)   Chrome-molybdenum

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

    (A)   to improve surface finish of the casting

    (B)   to remove hydrogen gas porosity

    (C)   to precipitate the inclusions

    (D)   to mix the alloy elements

137. Clearance between the mating parts is measured using

    (A)   Dial gauge   (B)   Go-gauge

    (C)   No-go gauge   (D)   Feeler gauge

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

    (A)   12°   (B)   20°   (C)   28°   (D)   −12°

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

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

    2.   Quenching of hot iron component in water improves its malleability

    (A)   T, T   (B)   F, F   (C)   T, F   (D)   F, T

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

    (A)   casting   (B)   drawing

    (C)   swaging   (D)   rolling

141. Output of a welding transformer, compared with its input is

    (A)   high voltage high current   (B)   high voltage low current

    (C)   low voltage high current   (D)   low voltage low current

142. Section 66 A has been in media controversy recently. The section pertains to
   (A)   Communal Harmony   (B)   Sexual Aggression
   (C)   Company's Act   (D)   Information Technology

143. IPC stands for
   (A)   International Peace Code   (B)   Indian Peace Code
   (C)   Indian Penal Code   (D)   International Punishment Code

144. Who among the following can accept the deposits of money from the public, as a business in financial transactions?
   (A)   Individuals   (B)   Firms
   (C)   Unincorporated Associations (D)   None of the above

145. NEFT and RTGS are the means for
   (A)   Money transfer   (B)   Fiscal control policy
   (C)   Monitoring tax collection   (D)   Implementing GST

146. In Sept. 2014 ISRO achieved success in which project?
   (A)   Launched Heavy payload vehicle
   (B)   Launched geo-stationery satellite
   (C)   Launched rocket to mars
   (D)   Mars Orbiter successfully entered mars orbit

147. In October 2014 a cyclone hit Vishakapatnam. The name of the cyclone was
   (A)   Katrina   (B)   Hudhud   (C)   Laila   (D)   Helen

148. SAARC countries are from which part of the world?
   (A)   South America   (B)   South Asia
   (C)   South Africa   (D)   None of the above

149. 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?
   (A)   3   (B)   2   (C)   1   (D)   0

150. Which month is different from other months in the group?
   (A)   April   (B)   June   (C)   July   (D)   November