रेलवे भर्ती बोर्ड / RAILWAY RECRUITMENT BOARD
सीईएन ०२/२०२६ - तकनीशियन ग्रेड। सिगनल और तकनीशियन ग्रेड III
CEN 02/2026 - Technician Grade I Signal and Technician Grade III

सत्यमेव जयते

Test Date	09/10/2026
Test Time	12:45 PM - 2:15 PM
Subject	RRB Technician Grade I Signal

*** Note**
Correct Answer will carry 1 mark per Question.
Incorrect Answer will carry 1/3 Negative mark per Question.

1. Options shown in green color with a tick icon are correct.
2. Chosen option on the right of the question indicates the option selected by the candidate.

Section : **General Awareness**

Q.1 Who earned the distinction of becoming India's 96th Chess Grandmaster in June 2026?

Ans A). Raunak Sadhwani B). Leon Luke Mendonca C). Pranav Venkatesh D). Ethan Vaz

Correct Answer: D

Q.2 Which term was used by tribal communities during the colonial period to describe the exploitative outsiders who collaborated with the British administration and oppressed the tribal population?

Ans A). Sardars B). Dikus C). Ryots D). Jagirdars

Correct Answer: B

Q.3 The Montagu-Chelmsford Reforms also known as _____.

Ans A). Government of India Act, 1935 B). Government of India Act, 1919 C). Indian Councils Act, 1909 D). Charter Act, 1853

Correct Answer: B

Q.4 The contribution of Rukmini Devi Arundale to Indian classical dance is correctly described as which of the following?

Ans A). Reviving Odissi through archaeological reconstruction and temple sculpture interpretation
B). Promoting Sattriya by introducing it into university-level performing arts education
C). Codifying Kathak performance traditions through the establishment of regional dance academies
D). Institutionalising Bharatanatyam through systematic training while restoring its cultural prestige

Correct Answer: D

Q.5 Which of the following animals is found in the arid areas of the Rann of Kachchh and the Thar Desert?

Ans A). Rhesus macaque B). Elephants C). Indian wild ass D). Indian bison

Correct Answer: C

Q.6 Who was elected as the first President of the Indian National Congress during its inaugural session in 1885?

Ans A). Dadabhai Naoroji B). Bal Gangadhar Tilak C). Womesh Chandra Banerjee D). Allan Octavian Hume

Correct Answer: C

Q.7 India's persistent gap in the Logistics Performance Index (LPI), notwithstanding the PM GatiShakti National Master Plan, is structurally linked to:

Ans A). Exchange rate misalignment B). Fragmented multimodal coordination C). Elevated import tariff structure
D). Agricultural subsidy expansion

Correct Answer: B

Q.8 **Which Act abolished the Board of Control and the Court of Directors of East India Company?**

Ans A). Charter Act, 1833 B). Indian Councils Act, 1861 C). Government of India Act, 1858 D). Regulating Act, 1773

Correct Answer: C

Q.9 **In January 2026, India observed National Youth Day with the theme "Ignite the Self, Impact the World" to commemorate the birth anniversary of Swami Vivekananda. The day is celebrated annually on:**

Ans A). 14 January B). 12 January C). 13 January D). 15 January

Correct Answer: B

Q.10 **In April 2026, for how long did the Union Minister of Commerce and Industry announce a fee waiver on intellectual property registrations related to the sports sector?**

Ans A). One year B). Five years C). Three years D). Two years

Correct Answer: C

Section : **General Intelligence and Reasoning**

Q.11 **23 is related to 117 following a certain logic. Following the same logic, 31 is related to 157. To which of the following is 42 related, following the same logic?**
(NOTE: Operations should be performed on the whole numbers, without breaking down the numbers into their constituent digits. E.g. 13 – Operations on 13 such as adding/subtracting/multiplying etc. to 13, can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)

Ans A). 216 B). 204 C). 207 D). 212

Correct Answer: D

Q.12 **Based on the English alphabetical order, three of the following four letter-cluster pairs are alike in a certain way and thus form a group. Which is the one that does not belong to that group? (Note: The odd man out is not based on the number of consonants/vowels or their position in the letter-cluster.)**

Ans A). DF – KM B). BC – KL C). MO – TV D). GI – NP

Correct Answer: B

Q.13 **Gor starts from Point A and drives 10 km towards north. He then takes a left turn and drives 12 km, and again turns left and drives 13 km. He then takes a left turn and drives 15 km. He takes a final left turn, drives 3 km and stops at Point P. How far (shortest distance) and towards which direction should he drive in order to reach Point A again? (All turns are 90-degree turns only unless specified.)**

Ans A). 3 km to the west B). 7 km to the north C). 4 km to the east D). 6 km to the south

Correct Answer: A

Q.14 **In this question, a question is followed by two statements numbered (I) and (II). You have to decide whether the data provided in the statements are sufficient to answer the question. Read both the statements and decide the appropriate answer.**
Among 5 poles, S,L,I,G and T each having a different height, which pole is the shortest?
(I)G is shorter than T but taller than L. S is taller than L
(II)I is taller than only one pole

Ans A). Data in Statement I alone is sufficient to answer the question while data in statement II is not

B). Data in Statement II alone is sufficient to answer the question while data in statement I is not

C). Both statements I and II together are NOT sufficient to answer the question

D). Both statements I and II together (and not statement 1 alone or statement II alone) are sufficient to answer the question.

Correct Answer: D

Q.15 **In a certain code,**
'same old habits' is coded as 'tk dh fx',
'same house beautiful' is coded as 'wj ts tk' and
'old village house' is coded as 'dh tm ts'.
(All the codes are two-letter codes only.)

What is the possible code for 'beautiful old'?

Ans A). fx tm B). wj dh C). fx ts D). wj tk

Correct Answer: B

Q.16 **Which of the following letter-clusters should replace # and % so that the pattern and relationship followed between the letter-cluster pair on the left side of :: is the same as that on the right side of :: ?**
 # : QXG :: VCL : %

Ans A). # = HIX; % = ELU B). # = HOX; % = ELO C). # = HOX; % = ELU D). # = KOX; % = ELU

Correct Answer: C

Q.17 **What should come in place of the question mark (?) in the given series?**

54 68 88 114 146 184 ?

Ans A). 223 B). 228 C). 119 D). 231

Correct Answer: B

Q.18 **Each of G, H, I, J, K, L and M play a game on different days of a week, starting from Monday and ending on Sunday of the same week. M plays on the last day. Only three persons play between M and J. G plays immediately before H, and H plays immediately before J. L plays immediately before K, but L does not play on Thursday. On which day does I play the game?**

Ans A). Friday B). Tuesday C). Thursday D). Monday

Correct Answer: C

Q.19 **This question is based on the following words.**
APE BAT SUN ANT
How many letters are there in the English alphabetical order between the third letter of the third word from the right and the first letter of the first word from the left?

Ans A). 16 B). 18 C). 12 D). 14

Correct Answer: B

Q.20 **In a certain code language,**
A + B means 'A is the sister of B'
A - B means 'A is the brother of B'
A × B means 'A is the husband of B'
A ÷ B means 'A is the mother of B'
Based on the above, how is P related to T if 'P - Q × R ÷ S + T'?

Ans A). Father's father B). Mother's brother C). Father's brother D). Mother's father

Correct Answer: C

Q.21 **Refer to the following letter, symbol series and answer the question. Counting to be done from left to right only.**
(Left) & Q € G @ £ Y & T N T # Z L * % * K P @ M S (Right)
How many such letters are there each of which is immediately preceded by a symbol and also immediately followed by a symbol?

Ans A). 3 B). 5 C). 6 D). 4

Correct Answer: A

Q.22 **Which of the following letter-number clusters will replace the question mark (?) in the given series to make it logically complete?**

YBZ 68 XAY 79 WZX 90 VYW 101 ?

Ans A). UYV 112 B). UYV 111 C). UXV 111 D). UXV 112

Correct Answer: D

Q.23 **If 'A' stands for '÷' , 'B' stands for '×', 'C' stands for '+' and 'D' stands for '-' , what will come in place of question mark '?' in the following equation?**
22 D 14 A 2 C 7 B 3 = ?

Ans A). 33 B). 36 C). 35 D). 34

Correct Answer: B

Q.24 **Which of the following letter-clusters should replace # and % so that the pattern and relationship followed between the letter-cluster pair on the left side of :: is the same as that on the right side of :: ?**

 # : BDJ :: KMS : %

Ans A). # = IUN % = GIN B). # = FHR % = FDO C). # = FRE % = ASO D). # = FHN % = GIO

Correct Answer: D

Q.25 **In a certain code language, 'song card flash' is coded as ' ng nr ic' and 'card king tent' is coded as 'tf ma nr'. How is 'card' coded in the given language?**

Ans A). nr B). tf C). ng D). ic

Correct Answer: A

Section : **Basics of Computers and Application**

Q.26 **Which set of actions is least likely to compromise your smartphone's security when downloading apps?**

Ans A). Downloading only from the official app store and checking app permissions B). Using third-party app stores and ignoring permissions
C). Granting all permissions requested by apps D). Disabling app security settings before installation

Correct Answer: A

Q.27 Which option is primarily used for viewing speaker notes while giving a presentation in MS PowerPoint?

Ans A). Reading View B). Slide Show View C). Outline View D). Notes Page View

Correct Answer: D

Q.28 When connecting to the Internet at home, which hardware device typically acts as the gateway between your local network and the Internet Service Provider?

Ans A). Hub B). Router C). Switch D). Modem

Correct Answer: B

Q.29 An editor is preparing a technical manual in MS Word where each section must begin with a unique header and certain paragraphs require precise alignment adjustments. Midway, she notices that some headers are misaligned and a few paragraphs exhibit inconsistent spacing after pasting from various sources. Which action sequence best ensures all headers and body text follow a uniform format while preserving unique header attributes?

Ans A). Manually adjust alignment for each header and paragraph, leaving styles unchanged

B). Apply Normal style to all content, then reapply header formatting individually

C). Apply a custom style to headers, use Format Painter on headers only, then clear formatting and apply a consistent style to the affected paragraphs

D). Copy formatting from body text to headers and paragraphs, then adjust headers manually

Correct Answer: C

Q.30 A research botanist plans to analyze thousands of plant DNA sequences using computer software. In this scenario, which aspect best illustrates why computers are essential for modern biological research?

Ans A). They organize digital files for long-term archives B). They ensure error-free data collection during experiments

C). They enable rapid processing of extensive genetic datasets D). They automate basic lab equipment control for researchers

Correct Answer: C

Q.31 In an encrypted financial spreadsheet, Miranda wants to reference the total from a quarterly sales table in another sheet, but the table's cells are dynamically sorted every time she opens the file. Which cell referencing method will guarantee her formula consistently returns the current total, regardless of how the table is sorted or moved within the sheet?

Ans A). Linking to the total cell using Sheet1!C10 as the reference B). Using an absolute reference such as C10 in the formula

C). Referencing the total with a relative cell address like C10 D). Defining a named range for the total cell and using the name in the formula

Correct Answer: D

Q.32 After starting PowerPoint, which option must be selected to begin with a completely blank presentation?

Ans A). Open Existing B). Content Layout C). Blank Presentation D). Picture Album

Correct Answer: C

Q.33 In a newly designed operating system, an application called 'QuickSwitch' claims to instantly relocate minimized icons from the right end of the task bar to a contextual group within the start menu when a user activates 'focus mode'. After enabling 'focus mode', a user notices that all minimized icons have disappeared from the task bar, but only a subset of them appear within the start menu's group. Which explanation most accurately accounts for this selective relocation?

Ans A). The task bar was already full, so only some minimized icons could be transferred to the start menu group.

B). Minimized windows are not allowed in focus mode, so all should have been removed from the start menu group.

C). User permission settings prevent some minimized windows from being relocated to the start menu group.

D). Minimized icons representing background services are not moved into the start menu group by 'QuickSwitch'.

Correct Answer: D

Q.34 A logistics company is designing a custom device to track real-time vehicle data, where rapid analysis and decision-making are critical. Which component's architectural selection will most fundamentally determine the device's ability to process raw sensor inputs, execute route optimization algorithms, and coordinate output to other subsystems?

Ans A). Power Supply B). Central Processing Unit C). Storage Device D). Memory

Correct Answer: B

Q.35 How does data encryption contribute to maintaining data integrity during communication?

Ans A). It compresses data for faster transmission across networks. B). It allows only certain users to access the data files.

C). It makes unauthorized alteration of data more difficult to detect and correct. D). It enables easy copying of files to multiple locations.

Correct Answer: A

Q.36 What is the main reason for implementing computer security measures in organizations?

Ans A). To make software updates easier to manage B). To protect sensitive information from unauthorized access
C). To reduce power consumption in devices D). To improve computer speed and performance

Correct Answer: B

Q.37 Imagine a new productivity suite is installed on a desktop computer with multiple user profiles. If a user wants to launch the spreadsheet tool so that it opens in a session that does not interfere with other users' settings, which action would best accomplish this?

Ans A). Set the application to open in safe mode from the start menu. B). Launch the application from the desktop shortcut as usual.
C). Adjust the application's compatibility mode before opening.
D). Use the operating system's 'Run as different user' function to start the application.

Correct Answer: D

Q.38 What is the main advantage of a fiber-optic internet connection compared to a cable internet connection?

Ans A). Higher data transmission speeds B). Lower cost for home users C). Greater reliability for gaming D). Better energy efficiency

Correct Answer: A

Q.39 In a company newsletter, how can an editor subtly emphasize the main message within a lengthy paragraph without breaking the flow or inserting extra symbols?

Ans A). Changing the font to uppercase for the entire paragraph B). Adjusting the line spacing to create gentle separation for emphasis
C). Shifting the paragraph to the left margin for attention D). Adding an extra tab at the beginning of the paragraph

Correct Answer: B

Q.40 A research team is designing a custom computing device for analyzing genetic patterns. During prototype testing, the device frequently produces inconsistent results when performing identical analysis sequences. Given that the main storage and peripheral hardware have been independently validated, which specific aspect of the central processing unit's design is most likely responsible for these inconsistencies?

Ans A). The buffering process within the main storage interface circuitry
B). The scheduling of instruction prefetching relative to bus arbitration logic
C). The timing alignment between cache memory and main storage interfaces
D). The coordination between the control unit and arithmetic logic unit during simultaneous instruction execution

Correct Answer: C

Q.41 While preparing a digital inventory sheet in a spreadsheet, Priya wants to record both the shipment date (as 08-06-2024) and the quantity (as 0075) in adjacent cells. Which approach best avoids unintended auto-formatting issues in MS Excel for both entries?

Ans A). Formatting both cells as 'General' before entry B). Typing the date as 08-06-2024 and the number as 0075 directly
C). Entering an apostrophe before each entry to retain original format D). Inserting both values using formulas referencing another sheet

Correct Answer: C

Q.42 A team is creating a bilingual newsletter in MS Word, requiring both English and Japanese text blocks. While adjusting the document's appearance, they notice that the page numbers on some pages shift position and overlap with the main content after switching from portrait to landscape orientation mid-document. Which page formatting feature should they prioritize to resolve this specific issue efficiently?

Ans A). Insert section breaks but keep default margin settings B). Adjust the header and footer margins for the affected sections
C). Adjust the main text margins for all pages D). Switch the entire document to a single page orientation

Correct Answer: B

Q.43 A user wants to insert a PDF document into a slide, allowing viewers to open the file during the presentation. Which option best accomplishes this?

Ans A). Add a hyperlink to the PDF using 'Insert Hyperlink' B). Insert the PDF through 'Insert Media'
C). Insert the PDF as an object using 'Insert Object' and choose 'Create from File' D). Insert the PDF as a picture using 'Insert Picture'

Correct Answer: C

Q.44 Which of the following is an example of a symmetric encryption algorithm commonly used in modern systems?

Ans A). RSA algorithm B). SHA-256 function C). ElGamal encryption D). Advanced Encryption Standard (AES)

Correct Answer: D

Q.45 On a museum's digital interactive kiosk, visitors select a painting to display more information. Which device most likely allows them to make their selection?

Ans A). Wireless keyboard input B). Thermal receipt printer C). Barcode scanner device D). Touch-enabled screen panel

Correct Answer: D

Section : **Mathematics**

Q.46 If $x^2 + ax + b = 0$ and $x^2 + bx + a = 0$ have exactly one root in common, what is the relationship between a and b?

Ans A). a - b = 0 B). a + b = 1 C). a + b = 0 D). a + b = -1

Correct Answer: D

Q.47 The variance of data set I, of 14 readings is 6.76. Data set II, is formed by multiplying each of the readings of data set I by 9 and data set III is formed by adding 7 to all the readings of data set I. Find the average of the standard deviations of data sets II and III.

Ans A). 10.4 B). 13 C). 8.7 D). 16.5

Correct Answer: B

Q.48 A number is chosen randomly from 1 to 100. What is the probability that the number is neither divisible by 2 nor by 5?

Ans A). $\frac{2}{5}$ B). $\frac{1}{3}$ C). $\frac{3}{5}$ D). $\frac{3}{4}$

Correct Answer: A

Q.49 The 5th term of an arithmetic progression is 20, and the sum of the first 10 terms is 290. Find the first term and the common difference of the arithmetic progression.

Ans A). -29 and 9 B). 52 and 18 C). -52 and 18 D). 58 and 10

Correct Answer: C

Q.50 The HCF and LCM of two numbers are 14 and 420, respectively. If one of the numbers is 84, find the other number.

Ans A). 70 B). 98 C). 56 D). 60

Correct Answer: A

Q.51 A(2,3), B(4,7)and C(6,11) are three points in a plane. Choose the correct statement.

Ans A). A, B and C are collinear B). A,B and C are vertices of a triangle C). AB=CA D). AB is perpendicular to BC

Correct Answer: A

Q.52 The point P(4,5) divides AB internally in the ratio 1:1, where A(2,3) and B(x,y). What are the coordinates (x,y)?

Ans A). (2,5) B). (3,4) C). (5,6) D). (6,7)

Correct Answer: D

Q.53 The number of proper non-empty subsets of a set with 10 elements are _____.

Ans A). 1022 B). 1021 C). 1020 D). 1023

Correct Answer: A

Q.54 A manufacturing unit produces widgets with lengths measured in millimeters over five different shifts. The lengths recorded during each shift are:
Shift 1: 45 mm, 48 mm, 43 mm
Shift 2: 50 mm, 52 mm, 49 mm
Shift 3: 47 mm, 45 mm, 51 mm
Shift 4: 46 mm, 50 mm, 48 mm
Shift 5: 49 mm, 47 mm, 44 mm
Find the range of the entire data set.

Ans A). 10 mm B). 8 mm C). 9 mm D). 7 mm

Correct Answer: C

Q.55 Find the quadratic equation whose roots are $5 + 2\sqrt{3}$ and $5 - 2\sqrt{3}$.

Ans A). $x^2 + 10x + 13 = 0$ B). $x^2 - 10x + 13 = 0$ C). $x^2 + 12x + 13 = 0$ D). $x^2 - 12x + 13 = 0$

Correct Answer: B

Q.56 The sides of two similar triangles are in the ratio 4 : 7. If the area of the smaller triangle is 144 cm^2, find the area of the larger triangle.

Ans A). 454 cm^2 B). 484 cm^2 C). 441 cm^2 D). 480 cm^2

Correct Answer: C

Q.57 A product is made by assembling two parts, A and B. Out of 105 Part A units, 15 are defective, and out of 104 Part B units, 8 are defective. What is the probability that a product assembled using one Part A and one Part B has no defective parts?

Ans A). $\frac{78}{91}$ B). $\frac{72}{91}$ C). $\frac{65}{91}$ D). $\frac{84}{91}$

Correct Answer: B

Q.58 In a right circular cone, the base has a radius of 4.2 cm and the height is 30 cm. A cross-section is made at the midpoint of the height, parallel to the base. Find the volume of the smaller cone between the cross-section and the vertex. (Use $\pi = 22/7$)

Ans A). 138.6 cm^3 B). 69.3 cm^3 C). 277.2 cm^3 D). 207.9 cm^3

Correct Answer: B

Q.59 **In a school, there are 68 teachers who teach Mathematics or Physics. Of these, 55 teach Mathematics and 45 teach both Physics and Mathematics. How many teach Physics?**

Ans A). 58 B). 50 C). 57 D). 64

Correct Answer: A

Q.60 Simplify: $\frac{(\cos\theta - \sin\theta)(1 + \tan\theta + \cot\theta)}{1 + \sin\theta\cos\theta}$

Ans A). cosec θ − sec θ B). sec θ − cosec θ C). cos θ + sin θ D). cosec θ + sec θ

Correct Answer: A

Q.61 **The LCM of the numbers 5, 15.5 and 0.83 is:**

Ans A). 12555 B). 12780 C). 12695 D). 12865

Correct Answer: D

Q.62 Let $A = \{2, 4, 6, \ldots, 20\}$, $B = \{3, 6, 9, \ldots, 30\}$, then the number of elements in $A - B$ are ____.

Ans A). 8 B). 7 C). 6 D). 9

Correct Answer: B

Q.63 **The volume of a closed rectangular box is 7500 cm^3, and its dimensions are in the ratio 3:4:5. The box is to be painted on all outer surfaces at a rate of ₹4/cm^2. If an 18% GST is applied on the painting cost, what is the total amount to be paid?**

Ans A). ₹10,250 B). ₹11,092 C). ₹12,100 D). ₹11,540

Correct Answer: B

Q.64 **If the 10th term of an arithmetic progression is 20 and the common difference is 2, find the 15th term of the arithmetic progression.**

Ans A). 40 B). 35 C). 32 D). 30

Correct Answer: D

Q.65 If $\cot(A - B) = \sqrt{3}$, then find the value of $\frac{\cot B - \cot A}{\cot A \cot B + 1} + \frac{\tan A - \tan B}{1 + \tan A \tan B}$.

Ans A). $\frac{2 - \sqrt{3}}{3}$ B). $\frac{3\sqrt{3} + 2}{2}$ C). $\frac{1}{\sqrt{3}}$ D). $\frac{2\sqrt{3}}{3}$

Correct Answer: D

Section : **Basic Science and Engineering**

Q.66 **If an ideal voltmeter is connected in parallel across a resistor in a simple series circuit, what effect does it have on the circuit's total current?**

Ans A). The total current remains unchanged because the voltmeter draws no current

B). The total current increases because the voltmeter provides a new path

C). The total current drops to zero because the voltmeter blocks current D). The total current decreases because the voltmeter adds resistance

Correct Answer: A

Q.67 **The SI unit of resistivity is:**

Ans A). Ω B). Ω/m C). S/m D). Ω m

Correct Answer: D

Q.68 **A charged particle moves in a uniform magnetic field with constant speed. What is the work done by the magnetic force after one complete circular revolution?**

Ans A). Zero B). Positive C). Equal to the kinetic energy D). Negative

Correct Answer: A

Q.69 **Which effect would you observe if one branch in a parallel resistor circuit is disconnected?**

Ans A). Current through other branches becomes zero B). Current through other branches remains unchanged

C). Current through other branches decreases D). Current through other branches increases

Correct Answer: B

Q.70 **A voltmeter is connected across a battery in a simple circuit. What does it measure?**

Ans A). It measures the total power consumed by the circuit. B). It measures the potential difference across the battery terminals.

C). It measures the resistance of the entire circuit. D). It measures the current flowing through the battery.

Correct Answer: B

Q.71 **A homogeneous material is altered so that its mass becomes three times its original value while its volume becomes twice its original value. What is the new density compared to the original density?**

Ans A). Twice the original density B). Three times the original density C). 2/3 times the original density D). 3/2 times the original density

Correct Answer: D

Q.72 **Which scenario will result in the maximum power dissipation in a copper conductor, assuming the same applied voltage?**

Ans A). A short, thick copper conductor will dissipate more power under the same voltage.

B). All copper conductors will dissipate the same power under the same voltage.

C). A medium-length, medium-thick copper conductor will dissipate more power under the same voltage.

D). A long, thin copper conductor will dissipate more power under the same voltage.

Correct Answer: A

Q.73 **The masses of atoms and subatomic particles are extremely small, so scientists use the atomic mass unit (u) instead of the kilogram. What is the approximate value of 1 u in SI units?**

Ans A). 1.66×10^{-24} kg B). 1.66×10^{-21} kg C). 1.66×10^{-30} kg D). 1.66×10^{-27} kg

Correct Answer: D

Q.74 **What is the binary equivalent of the decimal number 45?**

Ans A). 110101 B). 100111 C). 101101 D). 101011

Correct Answer: C

Q.75 **A laboratory compares measurements obtained by three teams using identical instruments and procedures. If the results differ significantly, what does this indicate?**

Ans A). The measurements have high accuracy. B). The repeatability of the measurements is high. C). The instruments are malfunctioning.

D). The reproducibility of the measurements is low.

Correct Answer: D

Q.76 **A resistor is connected to an ideal DC voltage source. The applied voltage is doubled while the resistor remains at a constant temperature. Which of the following statements is correct?**

Ans A). The current becomes four times the original value while the power doubles.

B). The current remains unchanged while the power doubles. C). The current doubles and the power doubles.

D). The current doubles and the power dissipated becomes four times the original value.

Correct Answer: D

Q.77 **A digital voltmeter is required to measure a DC signal with superimposed AC noise. Which type of DVM is most likely to produce the most accurate reading?**

Ans A). Voltage-to-frequency conversion DVM because it requires long counting intervals for high accuracy

B). Integrating type DVM because it averages the input over the conversion period

C). Ramp type DVM because its conversion time varies with input voltage

D). Successive approximation DVM because it completes conversion in a fixed and relatively short time

Correct Answer: B

Q.78 **When a cylindrical wire made of a new alloy is stretched to double its original length, its resistance increases by a factor of four. If a second wire of the same alloy is shaped into a flat ribbon of identical length but half the original cross-sectional area, which property stays constant between the two wires?**

Ans A). The resistance remains constant regardless of shape change B). The current-carrying capacity is identical for both wires

C). The specific resistance remains unchanged for both wires D). The voltage drop for a given current is the same in both wires

Correct Answer: C

Q.79 **A body is moved to a planet where the acceleration due to gravity is reduced by 30% compared with Earth. Assuming its mass remains unchanged, which statement is correct?**

Ans A). Its weight becomes 10/7 times its Earth weight. B). The body's mass decreases by 30%.

C). Its weight becomes 70% of its weight on Earth. D). Both its mass and weight decrease by 30%.

Correct Answer: C

Q.80 **For a rectifier circuit, the form factor (K_f) is reduced while all other operating conditions remain unchanged. What is the effect on the ripple factor?**

Ans A). It remains unchanged because ripple factor is independent of form factor. B). It increases because the DC component decreases.

C). It decreases because the ripple factor depends directly on the form factor. D). It first decreases and then increases.

Correct Answer: C

Q.81 **A charge of 5 C is moved through a potential difference of 12 V. What is the work done by the electric field?**

Ans A). 60 J B). 50 J C). 17 J D). 120 J

Correct Answer: A

Q.82 **A wire is stretched uniformly at a constant temperature without changing its material. Which of the following physical quantities remains unchanged?**

Ans A). Resistance B). Cross-sectional area C). Length D). Resistivity

Correct Answer: D

Q.83 **Which hexadecimal digit is equivalent to the decimal number 12?**

Ans A). B B). C C). D D). A

Correct Answer: B

Q.84 **A body weighs W_1 at a place where the acceleration due to gravity is g_1. At another place, its weight becomes 5/3 W_1. Assuming the mass of the body remains constant, what is the ratio g_2:g_1?**

Ans A). 2 : 5 B). 5 : 2 C). 3 : 5 D). 5 : 3

Correct Answer: D

Q.85 **Which of the following is NOT a characteristic of a good conductor?**

Ans A). Many free electrons available B). Low electrical resistance C). High electrical resistance D). Metallic bonding structure

Correct Answer: C

Q.86 **If a JFET is operating in the ohmic region, how does its behavior compare to its operation in the saturation region?**

Ans A). It amplifies signals in the ohmic region B). It acts as a voltage-controlled resistor in the ohmic region

C). It behaves as a constant-current source. D). It is completely off in the ohmic region

Correct Answer: B

Q.87 **If the forward voltage drop of each conducting diode is V_f, which expression gives the peak output voltage of a full-wave bridge rectifier in terms of the input peak voltage of the transformer *secondary* $V_{p(in)}$?**

Ans A). $V_{p(out)} = V_{p(in)} - 2V_f$ B). $V_{p(out)} = V_{p(in)} - V_f$ C). $V_{p(out)} = V_{p(in)} + 2V_f$ D). $V_{p(out)} = 2V_{p(in)} - 2V_f$

Correct Answer: A

Q.88 **Which electrical bias is required for an LED to emit light?**

Ans A). Zero bias B). Open circuit condition C). Reverse bias D). Forward bias

Correct Answer: D

Q.89 **A negative charge is moved from a point at +5 V to another point at +15 V. What happens to its electric potential energy?**

Ans A). It remains unchanged. B). It decreases. C). It becomes zero. D). It increases.

Correct Answer: B

Q.90 **A circuit has three branches with resistors: 2 ohms, 4 ohms, and 8 ohms in parallel. Which statement correctly describes the current through the 2 ohm resistor compared to the 8 ohm resistor?**

Ans A). The current through the 2 ohm resistor is zero compared to the 8 ohm resistor

B). The current through the 2 ohm resistor is equal to that through the 8 ohm resistor

C). The current through the 2 ohm resistor is greater than that through the 8 ohm resistor

D). The current through the 2 ohm resistor is less than that through the 8 ohm resistor

Correct Answer: C

Q.91 **A container holds a fixed mass of gas. The gas is compressed until its volume is reduced in the ratio 5 : 2. Compared to its initial value, the density of the gas becomes _____.**

Ans A). 0.4ρ B). 5ρ C). 2.5ρ D). 2ρ

Correct Answer: C

Q.92 **A designer is developing an 8051-based embedded system that requires storage of a large amount of frequently changing data exceeding the internal RAM capacity, while keeping the program code unchanged. Which memory configuration is most suitable?**

Ans A). Code in ROM, data in external RAM B). Code in external RAM, data in internal RAM C). Code in internal RAM, data in ROM

D). Code and data both in ROM

Correct Answer: A

Q.93 **A charge moves from 30 V to 10 V, losing 40 J of electric potential energy. What is the magnitude of the charge?**

Ans A). 4 C B). 3 C C). 2 C D). 1 C

Correct Answer: C

Q.94 **Scientists around the world use a common standard unit so that measurements of mass are consistent and comparable. Which SI unit serves this purpose?**

Ans A). Pound B). Tonne C). Kilogram D). Gram

Correct Answer: C

Q.95 **An Amperian loop encloses three conductors carrying currents of 4 A, 3 A, and 1 A. Two currents are directed into the page and one is directed out of the page. Which additional information is required to determine the enclosed current?**

Ans A). The direction of each current B). The resistance of the conductors C). The radius of the loop D). The material of the conductors

Correct Answer: A

Q.96 **Which of the following statements is correct, if three resistors of equal value are connected in parallel across a constant voltage source?**

Ans A). Each resistor carries an equal current B). The resistor nearest the source carries the most current C). Current depends on the resistor's position D). The total current is the same as for one resistor

Correct Answer: A

Q.97 **A long solenoid carries a steady current. An Amperian loop is chosen completely outside the solenoid. What is the magnetic field along this loop according to the ideal solenoid model?**

Ans A). Zero B). Maximum C). Equal to the field inside the solenoid D). Uniform and non-zero

Correct Answer: A

Q.98 **Which addressing mode in the 8051 microcontroller allows data to be accessed through an address stored in a register (such as R0, R1, or DPTR)?**

Ans A). Immediate Addressing B). Register Indirect Addressing C). Direct Addressing D). Indexed Addressing

Correct Answer: B

Q.99 **A solid metal block and a gas enclosed in a flexible balloon are subjected to the same increase in external pressure. Which one experiences the greater increase in density?**

Ans A). Neither undergoes any change in density. B). The solid metal block C). Both experience the same increase in density. D). The gas inside the balloon

Correct Answer: D

Q.100 **If a conductor carries a current of 3 A for 20 seconds, how much charge passes through a cross-section of the conductor?**

Ans A). 60 coulombs B). 17 coulombs C). 6 coulombs D). 23 coulombs

Correct Answer: A

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