INTELLIGENCE BUREAU

(Ministry of Home Affairs)

Government of India

Test Date	15/10/2025
Test Time	9:00 AM - 11:00 AM
Post Name	Junior Intelligence Officer Grade-II/Tech

Section : **General Mental Ability**

Q.1 7 is related to 54 following a certain logic. Following the same logic, 5 is related to 30. To which of the following is 3 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 to/subtracting from/multiplying with 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)

Ans
✗ 1. 15
✗ 2. 16
✓ 3. 14
✗ 4. 12

Q.2 In a certain code language, 'FEAR' is coded as '3157' and 'AIDS' is coded as '2416'. How is 'A' coded in that language?

Ans
✗ 1. 2
✗ 2. 6
✗ 3. 5
✓ 4. 1

Q.3 In a certain code language,

A + B means 'A is the son of B',
A – B means 'A is the brother of B',
A @ B means 'A is the wife of B', and
A % B means 'A is the father of B'.

Based on the above, how is T related to K if 'T + Y – B @ G % K'?

Ans
✗ 1. Son
✓ 2. Mother's brother's son
✗ 3. Brother's son
✗ 4. Mother's brother

Q.4 This question consists of a statement followed by two arguments I and II. Read the statement and the arguments carefully and select the most appropriate answer from the given options.
Statement:
Plastic bags should be completely banned.
Arguments:
I. Plastic bags are non-biodegradable and cause pollution.
II. Plastic bags are cheaper and more convenient for shopkeepers.

Ans
✓ 1. II weakens while I strengthens the statement.
✗ 2. I weakens while II strengthens the statement.
✗ 3. Both I and II strengthen the statement.
✗ 4. Both I and II weaken the statement.

Q.5 If 'A' stands for '÷', 'B' stands for '×', 'C' stands for '+' and 'D' stands for '–', then what will come in place of the question mark (?) in the following equation?

9 B 3 D 24 A 6 C 3 = ? D 5

Ans
✗ 1. 38
✗ 2. 41
✗ 3. 35
✓ 4. 31

Q.6 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 letter-cluster pair DOES NOT belong to that group?
(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster.)

Ans
✗ 1. FJ - EI
✗ 2. PT - OS
✓ 3. IM - HK
✗ 4. NR - MQ

Q.7 Refer to the given number series and answer the question that follows. Counting to be done from left to right only. All numbers are single-digit numbers.

(Left) 6 6 7 8 5 4 1 6 3 6 5 8 3 3 6 8 8 3 9 1 9 (Right)

How many such odd numbers are there, each of which is immediately preceded by an odd number and also immediately followed by an even number?

Ans
✓ 1. One
✗ 2. Four
✗ 3. Three
✗ 4. Two

Q.8 In this question, a statement is given followed by two courses of action, numbered I and II. You must assume everything in the statement to be true, and on the basis of the information given in the statement, decide which of the given courses of action logically follow(s) for pursuing.

Statement:
Many consumers have complained about adulteration in milk supplied by local vendors.

Courses of Action:
I. Regular quality checks should be conducted on milk samples from vendors.
II. All local milk vendors should be banned from selling milk.

Ans
✗ 1. Both I and II follow.
✗ 2. Only II follows.
✓ 3. Only I follows.
✗ 4. Neither I nor II follows.

Q.9 In a certain code language, 'DIVE' is coded as '9815' and 'WIDE' is coded as '5108'. What is the code for 'W' in that language?

Ans
1. 8
2. 0
3. 1
4. 9

Q.10 Each of F, G, H, I, U, V and W has an exam on a different day of a week starting from Monday and ending on Sunday of the same week.
F has an exam on Thursday. I has an exam on one of the days after G and on one of the days before H. U has an exam on one of the days after V but on one of the days before W. V has an exam on one of the days after F.
How many people have exams between U and I?

Ans
1. Four
2. Three
3. Two
4. One

Q.11 What should come in place of the question mark (?) in the given series?

70 71 73 77 85 ?

Ans
1. 103
2. 102
3. 100
4. 101

Q.12 If 'A' stands for '÷', 'B' stands for '×', 'C' stands for '+' and 'D' stands for '–', what will come in place of the question mark (?) in the following equation?

34 D 50 B 39 A 39 C 22 = ?

Ans
1. 8
2. 7
3. 6
4. 4

Q.13 PAID is related to BMUP in a certain way based on the English alphabetical order. In the same way, LWEZ is related to XIQL. To which of the given options is VGOJ related, following the same logic?

Ans
1. SAVD
2. HAVS
3. HSAV
4. SAVH

Q.14 Refer to the given letter series and answer the question that follows. Counting to be done from left to right only.

(Left) T Y H G U K S D B F C X I M R E Q Z O W A (Right)

How many such consonants are there, each of which is immediately preceded by a vowel and also immediately followed by a vowel?

Ans
1. None
2. Two
3. Three
4. One

Q.15 A, B, C, D, E and F live on six different floors of the same building. The lowermost floor in the building is numbered 1, the floor above it, number 2 and so on till the topmost floor is numbered 6. C lives on a floor which is a prime number. The product of floors on which C and A live is 8. D lives immediately above E. The sum of floors on which A and B lives is 7.
How many people live above E?

Ans
1. 4
2. 3
3. 2
4. 1

Q.16 Select the triad which follows the same pattern as that followed by the two triads given below. Both triads follow the same pattern.

GQ-JS-MO

IS-LU-OQ

Ans
1. BL-EN-HI
2. BL-EN-HJ
3. CL-EN-HI
4. CL-EM-HI

Q.17 What will come in the place of the question mark (?) in the following equation, if '+' and '–' are interchanged and '×' and '÷' are interchanged?

41 × 42 ÷ 42 – 47 + 3 = ?

Ans
1. 85
2. 83
3. 86
4. 87

Q.18 In this question, a statement is given followed by two courses of action, numbered I and II. You must assume everything in the statement to be true, and on the basis of the information given in the statement, decide which of the given courses of action logically follow(s) for pursuing.

Statement:
A large number of people in City Y is being diagnosed with respiratory problems due to increasing levels of air pollution.

Courses of Action:
I. The government should introduce stricter emission norms for vehicles and industries in City Y.
II. All residents should be advised to move out of City Y immediately.

Ans
1. Neither I nor II follows.
2. Only II follows.
3. Only I follows.
4. Both I and II follow.

Q.19 Select the set in which the numbers are related in the same way as are the numbers of the following sets.
(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 to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)

(1, 26, 8)
(29, 106, 16)

Ans
✔ 1. (4, 68, 20)
✘ 2. (48, 104, 4)
✘ 3. (15, 38, 4)
✘ 4. (50, 132, 12)

Q.20 What should come in place of the question mark (?) in the given series?

94 104 119 139 164 ?

Ans
✘ 1. 195
✘ 2. 196
✔ 3. 194
✘ 4. 193

Q.21 Based on the English alphabetical order, three of the following four letter-clusters are alike in a certain way and thus form a group. Which letter-cluster DOES NOT belong to that group?
(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster.)

Ans
✗ 1. OWE
✗ 2. LTB
✗ 3. DLT
✓ 4. GLP

Q.22 HUNT is related to VIBH in a certain way based on the English alphabetical order. In the same way, LYRX is related to ZMFL. To which of the following options is BOHN related, following the same logic?

Ans
✗ 1. POIL
✓ 2. PCVB
✗ 3. PCVF
✗ 4. PBVF

Q.23 A, B, C, D, E, F and G are sitting in a straight line facing North. Only 2 people sit to the left of D. Only 3 people sit between F and B, neither of whom sits on the extreme ends. A sits immediately to the right of C. G sits immediately to the left of F. How many people sit to the right of A?

Ans
✗ 1. 3
✓ 2. 2
✗ 3. 4
✗ 4. 1

Q.24 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 wife of B' and

A $ B means ' A is the father of B'.

How is R related to D if 'R-A$S+E&D '?

Ans
✗ 1. Wife's father's father

✓ 2. Wife's father's brother

✗ 3. Brother

✗ 4. Father

Q.25 Which of the given letter-number clusters will replace the question mark (?) in the following series to make it logically complete?

DGK33 EHL42 FIM51 GJN60 ?

Ans
✗ 1. HKO68

✗ 2. HKP68

✓ 3. HKO69

✗ 4. HKP69

Section : Questions based on combinations of subject as per essential qualification

Q.1 What is the basic principle of operation of a solenoid valve?

Ans
✓ 1. Electromagnetic actuation of a plunger

✗ 2. Pneumatic diaphragm displacement

✗ 3. Mechanical gear rotation

✗ 4. Thermal expansion of a bimetallic strip

Q.2 Which mechanism is most effective for enforcing protection domains?

Ans
✗ 1. User training programs

✓ 2. Network segmentation

✗ 3. CAPTCHAs

✗ 4. Password complexity policies

Q.3 What is the purpose of a subnet mask?

Ans
✔ 1. To differentiate the network and host portions of an IP address
✘ 2. To encrypt IP packets
✘ 3. To convert private IPs to public IPs
✘ 4. To identify multicast groups

Q.4 Which XML Schema (XSD) data type represents a date in "YYYY-MM-DD" format?

Ans
✘ 1. xs:time
✔ 2. xs:date
✘ 3. xs:datetime
✘ 4. xs:string

Q.5 In a control system block diagram, two blocks $G_1(s)$ and $G_2(s)$ are connected in cascade. What is the equivalent transfer function of their combination?

Ans
✔ 1. G1(s)⊠G2(s)
✘ 2. G1(s)/G2(s)
✘ 3. G1(s) − G2(s)
✘ 4. G1(s) + G2(s)

Q.6 In the OSI model, routing is the primary responsibility of which layer?

Ans
✘ 1. Session Layer
✘ 2. Transport Layer
✘ 3. Data Link Layer
✔ 4. Network Layer

Q.7 What is the purpose of pooling layers in CNNs?

Ans
✘ 1. To normalise pixel values
✔ 2. To reduce spatial dimensions
✘ 3. To add more trainable parameters
✘ 4. To introduce non-linearity

Q.8 Standardisation of a DC potentiometer involves:

Ans
✘ 1. replacing the slide wire
✔ 2. adjusting the slide wire current to match a reference voltage
✘ 3. calibrating the galvanometer
✘ 4. varying the power supply frequency

Q.9 In AM demodulation, the _____ signal frequency is converted into _____ signal frequency with the help of a mixer circuit.

Ans
✓ 1. radio, intermediate
✗ 2. audio, radio
✗ 3. audio, intermediate
✗ 4. radio, image

Q.10 _____ step size techniques help to _____ granular noise and improve Delta modulation performance.

Ans
✗ 1. Adaptive, increase
✗ 2. Constant, decrease
✗ 3. Constant, increase
✓ 4. Adaptive, decrease

Q.11 Which of the following is NOT a function of IMAP (Internet Mail Access Protocol)?

Ans
✗ 1. Organising emails into server-side folders
✗ 2. Searching emails on the server
✗ 3. Flagging emails as read/unread
✓ 4. Sending emails to recipients

Q.12 The primary method to reduce ratio error in a current transformer is by:

Ans
✓ 1. using a high-permeability core material
✗ 2. reducing the number of secondary turns
✗ 3. increasing the burden impedance
✗ 4. operating above rated current

Q.13 What is the minimum number of 1-to-2 DEMUX units required to implement a 1-to-8 DEMUX?

Ans
✗ 1. Three
✗ 2. Four
✗ 3. Two
✓ 4. Seven

Q.14 In a dual-slope ADC (analog-to-digital converter), the output of the integrator is connected to a _____.

Ans
✔ 1. comparator
✘ 2. flip-flop
✘ 3. counter
✘ 4. clock circuit

Q.15 What does a thermocouple use to measure temperature?

Ans
✘ 1. Direct measurement
✘ 2. It does not measure temperature.
✘ 3. Null measurement
✔ 4. Differential measurement

Q.16 Which combination of gates is used to implement A + B' (' indicates complement)?

Ans
✔ 1. OR and NOT
✘ 2. OR and AND
✘ 3. XOR and NOT
✘ 4. AND and NOT

Q.17 What does the bias-variance tradeoff describe?

Ans
✘ 1. The size of the training set
✔ 2. The balance between model simplicity and complexity
✘ 3. The number of features in a dataset
✘ 4. The speed of gradient descent convergence

Q.18 Which operator is used for strict equality (value and type) in JavaScript?

Ans
✔ 1. ===
✘ 2. ==
✘ 3. =
✘ 4. !=

Q.19 What is the main disadvantage of using microwave communication in wireless networks?

Ans
✓ 1. Susceptibility to physical obstructions and weather conditions
✗ 2. High latency
✗ 3. Lack of modulation techniques
✗ 4. Low data rate

Q.20 What is the primary reason for using a Real-Time Control System (RTCS) in industrial automation?

Ans
✗ 1. To allow manual operation of all field devices
✓ 2. To respond to inputs and produce outputs within strict timing constraints
✗ 3. To execute control tasks independent of time constraints
✗ 4. To reduce power consumption in electronic devices

Q.21 The damping torque in a PMMC instrument is provided by:

Ans
✗ 1. fluid damping
✗ 2. spring tension
✓ 3. eddy currents induced in the metal frame
✗ 4. air friction

Q.22 Which design issue is specific to the Transport Layer?

Ans
✗ 1. Framing
✓ 2. Flow control
✗ 3. Medium access control
✗ 4. Signal modulation

Q.23 Which of the following is an example of embedding JavaScript in HTML?

Ans
✗ 1. <embed>JavaScript goes here</embed>
✗ 2. <style>document.write("Hello")</style>
✓ 3. <script>document.write("Hello")</script>
✗ 4. <link src="script.js">Hello</link>

Q.24 If an amplifier with gain A = 10^4 and β = 0.01 introduces 5% distortion without feedback, the distortion with feedback is (where the symbols have their usual meaning):

Ans
✗ 1. 0.07%
✓ 2. 0.05%
✗ 3. 0.6%
✗ 4. 0.06%

Q.25 In monolithic IC technology, which process is used to interconnect all the active and passive components to form the desired circuit?

Ans
✓ 1. Metallisation
✗ 2. Diffusion
✗ 3. Photolithography
✗ 4. Etching

Q.26 What is the output of console.log(5 + "5");?

Ans
✗ 1. 5
✗ 2. Error
✓ 3. "55"
✗ 4. 10

Q.27 In a clipping circuit, Zener diodes are used to:

Ans
✗ 1. shift DC levels
✓ 2. limit signal amplitude
✗ 3. filter noise
✗ 4. amplify signals

Q.28 In a parallel R-C circuit, what happens to the total current if the frequency increases?

Ans
✗ 1. It becomes zero.
✓ 2. It increases.
✗ 3. It remains the same.
✗ 4. It decreases.

Q.29 Which of the following statements is correct?

S1: Switched combining avoids deep fades by switching to antennas with better signal.

S2: Disadvantage of the switched combining in a wireless channel is the Possible delay during switching between antennas.

Ans
✗ 1. Neither S1 nor S2
✗ 2. S2 only
✓ 3. S1 and S2 both
✗ 4. S1 only

Q.30 The number of equations required in node analysis depends on:

Ans
✗ 1. the number of loops
✗ 2. the number of voltage sources
✗ 3. the number of current sources
✓ 4. the number of essential nodes minus one

Q.31 What is the primary function of an analogue input module in a PLC system?

Ans
✓ 1. To convert analogue signals from field devices into digital values for the CPU
✗ 2. To send ON/OFF signals to actuators
✗ 3. To store control logic programmes
✗ 4. To convert digital signals into analogue signals

Q.32 Which of the following instructions in a PLC programme is used to hold the output in the ON state even after the input is turned OFF?

Ans
✗ 1. Reset
✗ 2. Counter
✗ 3. Timer
✓ 4. Latch

Q.33 How many transistors are typically used in one cell of a DRAM?

Ans
1. Six
2. Two
3. One
4. Four

Q.34 Which of the following statements about FHSS spread spectrum technique is True?
Statement I: FHSS is a method of transmitting radio signals by rapidly switching the carrier frequency among many distinct frequencies within a wide band in a pseudorandom sequence.
Statement II: The receiver and the transmitter follow the different hopping pattern to enhance data security.

Ans
1. Both statements I and II are true.
2. Only statement II is true.
3. Neither statements I nor II are true.
4. Only statement I is true.

Q.35 The current-series feedback topology is also known as:

Ans
1. shunt-shunt feedback
2. series-series feedback
3. series-shunt feedback
4. shunt-series feedback

Q.36 In a series RLC circuit, V_R = 3 V, V_L = 14 V, V_C = 10 V. The input voltage to the circuit is:

Ans
1. 10 V
2. 5 V
3. 27 V
4. 3 V

Q.37 Which of the following is a valid critique of the OSI model when compared to the TCP/IP model?

Ans
✗ 1. Unlike TCP/IP, the OSI model was immediately adopted by the Internet and is the foundation of all current protocols.

✗ 2. The OSI model was designed based on existing protocols, while the TCP/IP model was purely theoretical.

✓ 3. The OSI model strictly defines services, interfaces, and protocols, which led to poor adoption in early networks.

✗ 4. The OSI model merges the presentation and session layers, making it more practical for real-world implementation.

Q.38 Which of the following statements correctly describes virtual circuit switching?

Ans
✗ 1. Each packet takes a completely independent route to the destination.

✗ 2. No path is determined in advance; switching decisions are made per packet.

✓ 3. A logical path is established before transmission, but resources are shared.

✗ 4. A dedicated path is established and maintained for the entire communication.

Q.39 What is the result of the binary subtraction 1010 – 0101?

Ans
✗ 1. 1001

✗ 2. 1111

✗ 3. 0111

✓ 4. 0101

Q.40 Which of the following statements about differential entropy is correct?
S1: Differential entropy is always non-negative.
S2: Bits are the units of differential entropy when the logarithm is base 2.
S3: Differential entropy is a measure of the uncertainty of a continuous random variable.

Ans
✗ 1. Only S2 and S1

✗ 2. S1,S2 and S3

✓ 3. Only S2 and S3

✗ 4. Only S1 and S3

Q.41 Which of the following statements about Cell Breathing in wireless communication is correct?

S1: It is the variation in cell coverage due to traffic load.

S2: Cell breathing is a phenomenon primarily observed in CDMA.

S3: The primary cause of cell breathing is increase in system load.

Ans
✔ 1. S1, S2 and S3
✘ 2. S1 and S2 only
✘ 3. S1 and S3 only
✘ 4. S2 and S3 only

Q.42 In the process of silicon wafer preparation, _____ is the first step for wafer preparation.

Ans
✘ 1. wafer shaping
✘ 2. wafer sawing
✔ 3. silicon crystal growing
✘ 4. wafer etching

Q.43 What is the primary function of the deflecting system in a measuring instrument?

Ans
✘ 1. To provide mechanical support to the pointer
✔ 2. To produce a torque that moves the pointer in response to the measured quantity
✘ 3. To dampen oscillations of the moving system
✘ 4. To calibrate the instrument for zero error

Q.44 Which of the following statements is correct?

S1: In on-off line coding, 1 is transmitted by a pulse and 0 is transmitted by no pulse.

S2: In polar line coding, 1 is transmitted by a pulse and 0 is transmitted by negative of pulse.

Ans
✘ 1. S2 only
✘ 2. S1 only
✘ 3. Neither S1 nor S2
✔ 4. Both S1 and S2

Q.45 Thermal runaway in a common emitter amplifier is prevented by which of the following factors?

a) Coupling capacitors
b) Emitter resistor (R_e)
c) Base divider network
d) Bypass capacitor

Ans
✗ 1. Only b and c
✗ 2. Only a and b
✓ 3. Only b
✗ 4. Only b and d

Q.46 Which of the following is the main difference between LTE-FDD and LTE-TDD?

Ans
✓ 1. LTE-FDD uses two frequencies and LTE-TDD uses a single frequency.
✗ 2. LTE-FDD uses a single frequency and LTE-TDD uses two frequencies.
✗ 3. LTE-FDD uses two frequencies and LTE-TDD uses two frequencies.
✗ 4. LTE-FDD uses a single frequency and LTE-TDD uses a single frequency.

Q.47 Which protocol is primarily used for domain name resolution?

Ans
✗ 1. HTTP
✗ 2. TCP/IP
✓ 3. DNS
✗ 4. ICMP

Q.48 Which of the following statements about the base station is correct?
S1: The primary function of a base station in a cellular network is to provide radio communication with mobile devices.
S2: Base Transceiver Station (BTS) is usually part of a base station in a cellular network.
S3: In LTE architecture, the base station is called an eNodeB.

Ans
✓ 1. S1, S2 and S3
✗ 2. S1 and S3 only
✗ 3. S2 and S3 only
✗ 4. S1 and S2 only

Q.49 Which JavaScript method is used to select an HTML element by its ID?

Ans
✗ 1. document.getElementByClass()
✓ 2. document.getElementById()
✗ 3. document.findElementById()
✗ 4. document.querySelector()

Q.50 Which of the following is NOT an NLP task?

Ans
✗ 1. Named Entity Recognition (NER)
✗ 2. Sentiment Analysis
✗ 3. Machine Translation
✓ 4. Image Segmentation

Q.51 Which of the following statements is correct?
S1: A linear block code has the property that the modulo-2 sum of any two valid codewords is also a valid codeword.
S2: A linear (n, k) block code maps n data bits into k code bits.
S3: (n-k) bits are parity bits.

Ans
✗ 1. S2 only
✗ 2. S1, S2 and S3
✗ 3. S2 and S3 only
✓ 4. S1 and S3 only

Q.52 In a De Sauty's Bridge experiment, the following values are used:

Standard capacitor, C2 = 0.2 μF
Resistors: R3 = 500 Ω, R4 = 1.5 kΩ

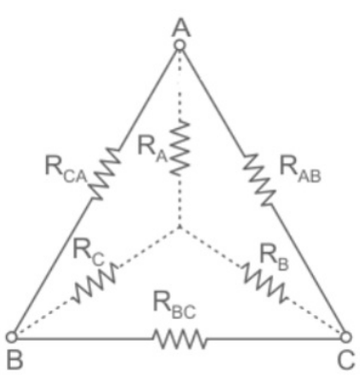
What is the value of the unknown capacitor C1 when the bridge is balanced, where symbols have their usual meaning?

Ans
✗ 1. 0.4 μF
✗ 2. 0.1 μF
✓ 3. 0.6 μF
✗ 4. 0.8 μF

Q.53 Which of the following statements about a serial adder is true?

Ans
✗ 1. It requires more hardware and adds bits in parallel.
✗ 2. It performs addition without carry storage.
✓ 3. It uses a single full adder and a clock to process one bit at a time.
✗ 4. It requires separate adders for each bit of the operands.

Q.54 Find the equivalent delta connection of the circuit in star with resistances R_A = 8 Ω, R_B = 8 Ω, and R_C = 16 Ω, respectively, in the given figure. Find the values of R_{AB}, R_{CA}, and R_{BC}.



Ans
✗ 1. RAB = 20 Ω, RBC = 20 Ω, RCA = 20 Ω
✓ 2. RAB = 20 Ω, RBC = 40 Ω, RCA = 40 Ω
✗ 3. RAB = 40 Ω, RBC = 40 Ω, RCA = 20 Ω
✗ 4. RAB = 30 Ω, RBC = 30 Ω, RCA = 40 Ω

Q.55 Which of the following blocks in the digital communication system is responsible for the protecting the data against channel noise?

Ans
✗ 1. Source decoder
✗ 2. Source encoder
✓ 3. Channel encoder
✗ 4. Modulator

Q.56 In the PLC instruction set, which instruction is typically used to retain output status even after power failure?

Ans
✗ 1. OUT
✗ 2. RST
✗ 3. SET
✓ 4. LATCH

Q.57 What will be the output of the following code?

```
let x = 0;

if ("0") {
console.log("Hello");
} else {
console.log("Goodbye");
}
```

Ans
✗ 1. 0
✗ 2. Undefined
✗ 3. Goodbye
✓ 4. Hello

Q.58 Which of the following best describes ATM switching in computer network?

Ans
✗ 1. Packet switching with variable-length packets
✓ 2. Cell-based switching with fixed-size frame
✗ 3. Frequency-based switching
✗ 4. Circuit switching

Q.59 Transform the following sinusoids into phasors.

$v = 10 \sin (\omega t - 12^\circ)$

Ans
✗ 1. 20∠102°
✗ 2. 20∠−102°
✗ 3. 10∠102°
✓ 4. 10∠−102°

Q.60 What is the function of the dig command in domain tracing?

Ans
✓ 1. It performs detailed DNS queries.
✗ 2. It maps physical location of servers.
✗ 3. It encrypts DNS traffic.
✗ 4. It tests firewall configurations.

Q.61 What is the output of the following Python code?

```
temp = 22
if temp > 30:
print("Hot")
elif temp > 20:
print("Warm")
elif temp > 10:
print("Cool")
else:
print("Cold")
```

Ans
✗ 1. Cool
✓ 2. Warm
✗ 3. Cold
✗ 4. Hot

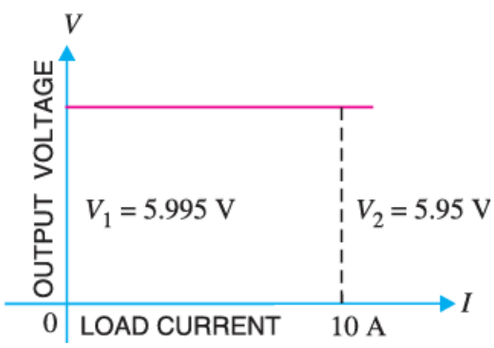
Q.62 Which of the following statements about Python dictionaries is true?

Ans
✗ 1. Dictionaries can have duplicate keys
✗ 2. Dictionary values must be unique
✓ 3. Dictionary keys must be immutable
✗ 4. Dictionary keys can be mutable objects

Q.63 A bridge rectifier uses how many diodes?

Ans
✓ 1. 4
✗ 2. 1
✗ 3. 2
✗ 4. 3

Q.64 The graph depicted in the given figure illustrates the characteristics of a _____ circuit.



Ans
✗ 1. differentiator
✗ 2. ramp generator
✗ 3. constant current source
✓ 4. constant voltage source

Q.65 In a series L-C circuit, if the frequency is increased above the resonant frequency, the circuit behaves:

Ans
✗ 1. as a resistive circuit
✗ 2. as a capacitive circuit
✓ 3. as an inductive circuit
✗ 4. as a short circuit

Q.66 What will be the output of the following code?

```
my_tuple = (1, 2, [3, 4])
my_tuple[2].append(5)
print(my_tuple)
```

Ans
✗ 1. (1, 2, (3, 4, 5))
✗ 2. Error: Tuples are immutable
✓ 3. (1, 2, [3, 4, 5])
✗ 4. (1, 2, [3, 4])

Q.67 What is the output of the following python code?

```
for i in range(5):
if i == 3:
break
print(i)
```

Ans
✓ 1. 0 1 2
✗ 2. 0 1 2 3 4
✗ 3. 1 2 3
✗ 4. 0 1 2 3

Q.68 What is the function of the cladding in a fiber optic cable?

Ans
✗ 1. It amplifies the light signal.
✓ 2. It maintains the core's optical properties by reflecting light back into the core via total internal reflection.
✗ 3. It protects the fiber from physical damage.
✗ 4. It acts as a data converter.

Q.69 What type of signal does a coaxial cable typically carry?

Ans
✗ 1. Optical signals only
✓ 2. Both analog and digital signals
✗ 3. Analog signals only
✗ 4. Digital signals only

Q.70 Which of the following statements about decision trees is FALSE?

Ans
✗ 1. They are prone to overfitting.
✗ 2. They can handle both regression and classification.
✗ 3. They split data based on impurity measures (e.g., Gini index).
✓ 4. They require feature scaling.

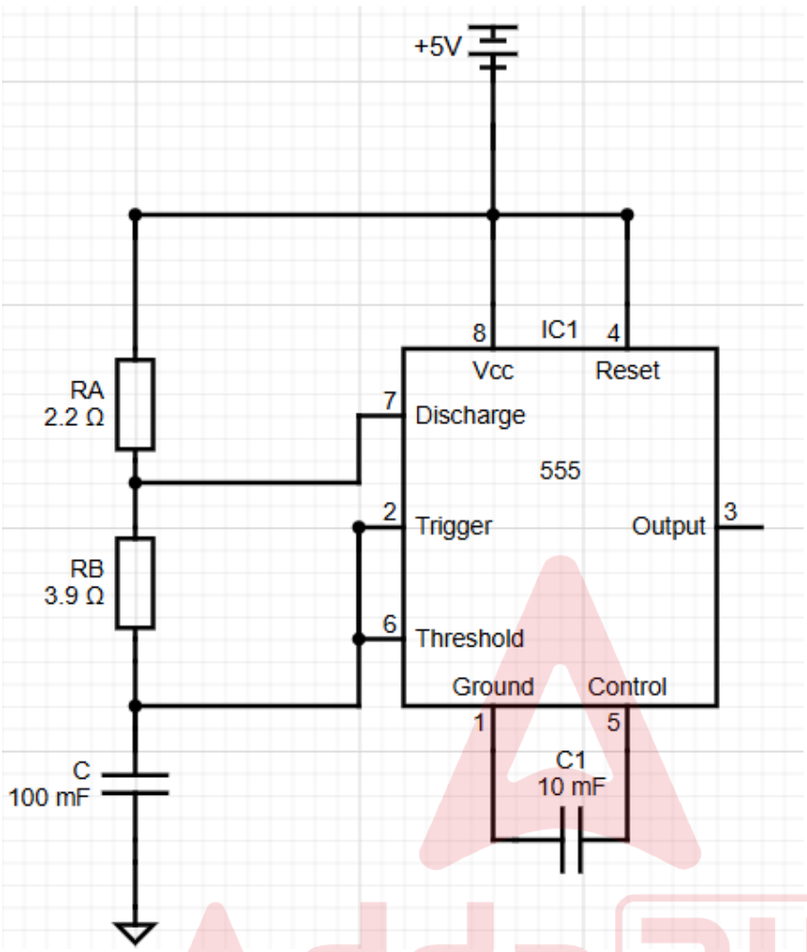
Q.71 Voltage-series feedback in amplifiers _____.

Ans
✗ 1. increases both input and output impedance
✗ 2. decreases input impedance but increases output impedance
✓ 3. increases input impedance but decreases output impedance
✗ 4. decreases both input and output impedance

Q.72 Which of the following statements is true about the Python int type?

Ans
✓ 1. It has unlimited precision, limited only by available memory.
✗ 2. It cannot represent negative numbers.
✗ 3. It has a fixed size of 32 bits.
✗ 4. It can represent numbers up to 2^31 - 1.

Q.73 In a 555 -timer configured as an astable multivibrator, as shown in the given figure, which equation is used to determine the duration of the output signal when it is low?



Ans

✗ 1. $T_{low} = \frac{1.44}{(R_A + R_B).\ C}$

✗ 2. $T_{low} = 0.7(R_A + R_B).C$

✗ 3. $T_{low} = 0.7R_AC$

✓ 4. $T_{low} = 0.7R_BC$

Q.74 How many 4-to-1 only multiplexers are required to implement an 8-to-1 multiplexer?

Ans

✓ 1. Three

✗ 2. Four

✗ 3. Two

✗ 4. One

Q.75 What will be the output of the following code?

```
x = 10
if x > 5:
print("Greater")
else:
print("Smaller")
```

Ans
- ✗ 1. 10
- ✗ 2. Smaller
- ✓ 3. Greater
- ✗ 4. Error

"