BEL PE

Previous Year Paper
(Electronics)

17 Dec, 2023 Shift 1

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Test Date	17/12/2023
Test Time	8:30 AM - 10:30 AM
Subject	Probationary Engineer Electronics

Section : **General Aptitude**

Q.1 **Which of the following practices is considered a sustainable agricultural method to enhance soil fertility and reduce environmental impact?**

Ans
✗ 1. Monoculture
✗ 2. Excessive pesticide use
✗ 3. Overgrazing
✓ 4. Agroforestry

Question ID : **630680512568**
Option 1 ID : **6306802003243**
Option 2 ID : **6306802003245**
Option 3 ID : **6306802003242**
Option 4 ID : **6306802003244**
Status : **Answered**
Chosen Option : **4**

Q.2 **Which institution is responsible for the promotion and development of the Hindi language in India?**

Ans
✓ 1. Kendriya Hindi Sansthan (KHS)
✗ 2. Akhil Bharatiya Vidyarthi Parishad (ABVP)
✗ 3. Sahitya Akademi
✗ 4. Central Institute of Indian Languages (CIIL)

Question ID : **630680512565**
Option 1 ID : **6306802003233**
Option 2 ID : **6306802003232**
Option 3 ID : **6306802003230**
Option 4 ID : **6306802003231**
Status : **Not Answered**
Chosen Option : **--**

Q.3 Who was the first ruler of the Gupta dynasty?

Ans
✗ 1. Chandragupta I
✗ 2. Chandragupta II
✓ 3. Sri Gupta
✗ 4. Kumargupta

Question ID : **630680512564**
Option 1 ID : **6306802003227**
Option 2 ID : **6306802003228**
Option 3 ID : **6306802003226**
Option 4 ID : **6306802003229**
Status : **Answered**
Chosen Option : **4**

Q.4 The rate at which the Reserve Bank of India lends money to commercial banks in the event of any shortfall of funds is known as:

Ans
✗ 1. Cash Reserve Ratio
✗ 2. Open Market Operations
✓ 3. Repo Rate
✗ 4. Statutory Liquidity Rate

Question ID : **630680512561**
Option 1 ID : **6306802003215**
Option 2 ID : **6306802003217**
Option 3 ID : **6306802003214**
Option 4 ID : **6306802003216**
Status : **Answered**
Chosen Option : **1**

Q.5 Which of the following is a monosaccharide commonly found in fruits and honey?

Ans
✓ 1. Fructose
✗ 2. Lactose
✗ 3. Starch
✗ 4. Sucrose

Question ID : **630680512572**
Option 1 ID : **6306802003261**
Option 2 ID : **6306802003260**
Option 3 ID : **6306802003259**
Option 4 ID : **6306802003258**
Status : **Not Answered**
Chosen Option : **--**

Q.6 **Which of the following is a primary characteristic of a plateau?**

Ans
✗ 1. Large, flowing water bodies
✗ 2. Deep, narrow valleys with steep sides
✗ 3. High temperature and low precipitation
✓ 4. Flat or gently sloping elevated area

Question ID : **630680512567**
Option 1 ID : **6306802003241**
Option 2 ID : **6306802003240**
Option 3 ID : **6306802003238**
Option 4 ID : **6306802003239**
Status : **Answered**
Chosen Option : **2**

Q.7 **Which institution was founded by Swami Dayananda Saraswati in 1875, with the aim of promoting Vedic education and opposing idol worship?**

Ans
✗ 1. Brahmo samaj
✓ 2. Arya Samaj
✗ 3. Theosophical Society
✗ 4. Indian National Congress

Question ID : **630680512563**
Option 1 ID : **6306802003224**
Option 2 ID : **6306802003223**
Option 3 ID : **6306802003225**
Option 4 ID : **6306802003222**
Status : **Answered**
Chosen Option : **2**

Q.8 **Who captained the Indian women's hockey team that participated at the Tokyo 2020 Summer Olympics?**

Ans
✓ 1. Rani Rampal
✗ 2. Savita Punia
✗ 3. Deep Grace Ekka
✗ 4. Gurjit Kaur

Question ID : **630680512566**
Option 1 ID : **6306802003234**
Option 2 ID : **6306802003236**
Option 3 ID : **6306802003235**
Option 4 ID : **6306802003237**
Status : **Not Answered**
Chosen Option : **--**

Q.9 Which of the following is NOT a pillar of sustainable development as outlined by the Brundtland Commission?

Ans
✗ 1. economic growth
✓ 2. environmental balance
✗ 3. social inclusion
✗ 4. Technological advancement

Question ID : **630680512562**
Option 1 ID : **6306802003218**
Option 2 ID : **6306802003220**
Option 3 ID : **6306802003219**
Option 4 ID : **6306802003221**
Status : **Not Answered**
Chosen Option : **--**

Q.10 Which of the following is a characteristic feature of the Animal Kingdom?

Ans
✗ 1. Cellulose cell wall
✗ 2. Vascular tissues
✗ 3. Autotrophic nutrition
✓ 4. Heterotrophic nutrition

Question ID : **630680512571**
Option 1 ID : **6306802003254**
Option 2 ID : **6306802003257**
Option 3 ID : **6306802003255**
Option 4 ID : **6306802003256**
Status : **Not Answered**
Chosen Option : **--**

Q.11 Which of the following is a power exclusive to the State Government in India?

Ans
✗ 1. Defense
✓ 2. Police
✗ 3. Currency and Coinage
✗ 4. Foreign Affairs

Question ID : **630680512570**
Option 1 ID : **6306802003250**
Option 2 ID : **6306802003253**
Option 3 ID : **6306802003252**
Option 4 ID : **6306802003251**
Status : **Not Answered**
Chosen Option : **--**

Q.12 Which article of the Indian Constitution deals with Indian Citizenship?

Ans
✔ 1. Article 11
✘ 2. Article 32
✘ 3. Article 21
✘ 4. Article 15

Question ID : **630680512569**
Option 1 ID : **6306802003246**
Option 2 ID : **6306802003249**
Option 3 ID : **6306802003248**
Option 4 ID : **6306802003247**
Status : **Not Answered**
Chosen Option : **--**

Section : **Reasoning**

Q.1 Four letter-clusters have been given, out of which three are alike in some manner and one is different. Select the odd letter-cluster.

Ans
✘ 1. IHG
✔ 2. MKL
✘ 3. TSR
✘ 4. ONM

Question ID : **630680512580**
Option 1 ID : **6306802003291**
Option 2 ID : **6306802003293**
Option 3 ID : **6306802003290**
Option 4 ID : **6306802003292**
Status : **Answered**
Chosen Option : **2**

Q.2 Select the option that is related to the third number in the same way as the second number is related to the first number.
5 : 130 :: 7 : ?

Ans
✔ 1. 350
✘ 2. 330
✘ 3. 360
✘ 4. 310

Question ID : **630680512585**
Option 1 ID : **6306802003312**
Option 2 ID : **6306802003310**
Option 3 ID : **6306802003313**
Option 4 ID : **6306802003311**
Status : **Answered**
Chosen Option : **1**

Q.3 If A denotes 'addition', B denotes 'division', and D denotes 'subtraction', then what will be the value of the following equation?
16 B 4 D 2 A 3 = ?

Ans
✗ 1. 4
✓ 2. 5
✗ 3. 3
✗ 4. 7

Question ID : **630680512583**
Option 1 ID : **6306802003302**
Option 2 ID : **6306802003303**
Option 3 ID : **6306802003304**
Option 4 ID : **6306802003305**
Status : **Answered**
Chosen Option : **2**

Q.4 Six girls Ananya, Priya, Sneha, Nisha, Riya, and Kavya are sitting around a circular table facing away from the centre. Sneha is sitting to the left of Riya. Ananya is sitting third to the right of Kavya. Sneha is not sitting adjacent to Kavya. Nisha sits to the immediate right of Priya. Who sits to the immediate left of Ananya?

Ans
✗ 1. Sneha
✗ 2. Kavya
✗ 3. Priya
✓ 4. Nisha

Question ID : **630680512573**
Option 1 ID : **6306802003264**
Option 2 ID : **6306802003263**
Option 3 ID : **6306802003262**
Option 4 ID : **6306802003265**
Status : **Answered**
Chosen Option : **4**

Q.5 Which of the following letter clusters will replace the question mark (?) in the given series?
AE, CG, EI, GK, ?

Ans
✗ 1. DH
✗ 2. SW
✗ 3. QU
✓ 4. IM

Question ID : **630680512576**
Option 1 ID : **6306802003276**
Option 2 ID : **6306802003277**
Option 3 ID : **6306802003275**
Option 4 ID : **6306802003274**
Status : **Answered**
Chosen Option : **4**

Q.6 तस्वीर में एक आदमी की ओर इशारा करते हुए एक लड़की कहती है, "वह मेरे पिता के इकलौते भाई का पिता है।" लड़की का पुरुष से क्या संबंध है?

Ans
✗ 1. पत्नी
✓ 2. बेटे की बेटी
✗ 3. बेटी
✗ 4. माता

Question ID : **630680512578**
Option 1 ID : **6306802003282**
Option 2 ID : **6306802003283**
Option 3 ID : **6306802003284**
Option 4 ID : **6306802003285**
Status : **Answered**
Chosen Option : **2**

Q.7 Which of the following numbers will replace the question mark (?) in the given series?
6, 12, 24, 48, ?, 192

Ans
✓ 1. 96
✗ 2. 87
✗ 3. 85
✗ 4. 93

Question ID : **630680512581**
Option 1 ID : **6306802003297**
Option 2 ID : **6306802003294**
Option 3 ID : **6306802003296**
Option 4 ID : **6306802003295**
Status : **Answered**
Chosen Option : **1**

Q.8 There are 120 students in a competition. If Aisha ranks 95th from the bottom, what is her rank from the top?

Ans
✗ 1. 25
✓ 2. 26
✗ 3. 24
✗ 4. 27

Question ID : **630680512574**
Option 1 ID : **6306802003268**
Option 2 ID : **6306802003266**
Option 3 ID : **6306802003267**
Option 4 ID : **6306802003269**
Status : **Answered**
Chosen Option : **2**

Q.9 Select the option that is related to the third study of body parts in the same way as the second study is related to the first study.
Skin : Dermatology :: Joints : ?

Ans
✔ 1. Arthrology
✘ 2. Neurology
✘ 3. Nephrology
✘ 4. Ophthalmology

Question ID : **630680512579**
Option 1 ID : **6306802003286**
Option 2 ID : **6306802003288**
Option 3 ID : **6306802003289**
Option 4 ID : **6306802003287**
Status : **Answered**
Chosen Option : **1**

Q.10 Which two numbers should be interchanged to make the given equation correct?
12 ÷ 4 × 6 - 2 + 3 = 26

Ans
✘ 1. 12 and 26
✘ 2. 2 and 4
✔ 3. 3 and 4
✘ 4. 6 and 4

Question ID : **630680512584**
Option 1 ID : **6306802003309**
Option 2 ID : **6306802003306**
Option 3 ID : **6306802003307**
Option 4 ID : **6306802003308**
Status : **Answered**
Chosen Option : **3**

Q.11 Three Statements are given followed by two conclusions numbered I and II. Assuming the statements to be true, even if they seem to be at variance with commonly known facts, decide which of the conclusions logically follow(s) from the statements.

Statement I: Some roses are red.
Statement II: All red things are colourful.
Statement III: Some colourful things are flowers.

Conclusion I: Some colourful things are roses.
Conclusion II: Some flowers are red.

Ans
✔ 1. Only conclusion I follows
✘ 2. Neither conclusion I nor II follows
✘ 3. Only conclusion II follows
✘ 4. Both conclusions I and II follow

Question ID : **630680512575**
Option 1 ID : **6306802003270**
Option 2 ID : **6306802003273**
Option 3 ID : **6306802003271**
Option 4 ID : **6306802003272**
Status : **Answered**
Chosen Option : **1**

Q.12 Which of the following numbers will replace the question mark (?) in the given series?
12, 6, 18, 9, ?

Ans
✗ 1. 31
✗ 2. 32
✗ 3. 29
✓ 4. 27

Question ID : **630680512582**
Option 1 ID : **6306802003301**
Option 2 ID : **6306802003299**
Option 3 ID : **6306802003300**
Option 4 ID : **6306802003298**
Status : **Answered**
Chosen Option : **4**

Q.13 In a certain code language, if CAR is coded as 22, BUS is coded as 42, then what will TRAIN be coded as?

Ans
✗ 1. 66
✓ 2. 62
✗ 3. 59
✗ 4. 57

Question ID : **630680512577**
Option 1 ID : **6306802003278**
Option 2 ID : **6306802003280**
Option 3 ID : **6306802003281**
Option 4 ID : **6306802003279**
Status : **Answered**
Chosen Option : **2**

Section : **Question based on Electronics Engineering**

Q.1 The number of branches of the root locus is equal to _____ of the open-loop transfer function.

Ans
✗ 1. the sum of the number of poles and zeroes
✗ 2. the difference of the number of poles and zeroes
✗ 3. the number of zeroes
✓ 4. the number of poles

Question ID : **630680512651**
Option 1 ID : **6306802003576**
Option 2 ID : **6306802003577**
Option 3 ID : **6306802003575**
Option 4 ID : **6306802003574**
Status : **Answered**
Chosen Option : **2**

Q.2 **Which of the following is correct in regards with Fermi level in semiconductors at 0 Kelvin?**

Ans
✗ 1. The Fermi level in intrinsic semiconductors lies in the conduction band,

✗ 2. The Fermi level in N-type semiconductors lies closer to valence band,

✗ 3. The Fermi level in P-type semiconductors lies closer to conduction band,

✓ 4. The Fermi level in intrinsic semiconductors lies between conduction band and valence band,

Question ID : **630680512606**
Option 1 ID : **6306802003394**
Option 2 ID : **6306802003395**
Option 3 ID : **6306802003396**
Option 4 ID : **6306802003397**
Status : **Answered**
Chosen Option : **4**

Q.3 **What is the main advantage of Double-sideband suppressed-carrier (DSB-SC) modulation over conventional AM?**

Ans
✗ 1. Higher fidelity in signal reproduction

✗ 2. Smaller bandwidth efficiency

✗ 3. Simpler demodulation process

✓ 4. Lower power consumption

Question ID : **630680512660**
Option 1 ID : **6306802003612**
Option 2 ID : **6306802003610**
Option 3 ID : **6306802003613**
Option 4 ID : **6306802003611**
Status : **Answered**
Chosen Option : **1**

Q.4 **What is the main characteristic that distinguishes white noise from other types of noise?**

Ans
✗ 1. Its randomness and unpredictability

✗ 2. Its high energy content

✗ 3. Its ability to mask other sounds

✓ 4. Its constant power spectral density

Question ID : **630680512656**
Option 1 ID : **6306802003596**
Option 2 ID : **6306802003594**
Option 3 ID : **6306802003595**
Option 4 ID : **6306802003597**
Status : **Answered**
Chosen Option : **4**

Q.5 **In a digital communication system, increasing the SNR (Signal to Noise Ratio) will:**

Ans
✗ 1. Increase the bit error rate

✓ 2. Decrease the bit error rate

✗ 3. Not affect the bit error rate

✗ 4. Increase the bandwidth requirement

Question ID : **630680512666**
Option 1 ID : **6306802003636**
Option 2 ID : **6306802003637**
Option 3 ID : **6306802003635**
Option 4 ID : **6306802003634**
Status : **Answered**
Chosen Option : **1**

Q.6 **In a 2-port network, if Y11 is the short-circuit input admittance, then the Y21 parameter represents:**

Ans
✗ 1. Open-circuit voltage transfer ratio

✓ 2. Short-circuit forward current transfer ratio

✗ 3. Short-circuit reverse current transfer ratio

✗ 4. Short-circuit reverse voltage transfer ratio

Question ID : **630680512595**
Option 1 ID : **6306802003352**
Option 2 ID : **6306802003351**
Option 3 ID : **6306802003353**
Option 4 ID : **6306802003350**
Status : **Answered**
Chosen Option : **2**

Q.7 **In a closed-loop system, what is the primary purpose of the integral controller (Ki)?**

Ans
✗ 1. To increase system bandwidth.

✗ 2. To adjust the damping ratio.

✓ 3. To reduce the steady state error.

✗ 4. To amplify the system gain.

Question ID : **630680512654**
Option 1 ID : **6306802003588**
Option 2 ID : **6306802003587**
Option 3 ID : **6306802003586**
Option 4 ID : **6306802003589**
Status : **Answered**
Chosen Option : **3**

Q.8 **Which factor does not significantly affect the line-of-sight communication range?**

Ans
✗ 1. Atmospheric conditions
✗ 2. Antenna height
✗ 3. Signal frequency
✓ 4. Modulation scheme

Question ID : **630680512672**
Option 1 ID : **6306802003660**
Option 2 ID : **6306802003659**
Option 3 ID : **6306802003661**
Option 4 ID : **6306802003658**
Status : **Answered**
Chosen Option : **1**

Q.9 **The Continuous Time Fourier Series (CTFS) of a periodic signal can be represented as:**

Ans
✓ 1. A series of sine and cosine terms
✗ 2. A series of exponential terms
✗ 3. A series of impulses
✗ 4. A series of unit steps

Question ID : **630680512596**
Option 1 ID : **6306802003356**
Option 2 ID : **6306802003357**
Option 3 ID : **6306802003354**
Option 4 ID : **6306802003355**
Status : **Answered**
Chosen Option : **2**

Q.10 **Which of the following indicates the operation of a BJT in saturation region?**

Ans
✗ 1. $I_b = 0$, Ic = 0 and $V_{be} < 0.7V$
✗ 2. $0.2 < Vce < Vcc$; $I_b > 0$, and Ic > 0; $V_{be} \geq 0.7V$
✓ 3. $V_{ce} \leq 0.2V$; $I_b > 0$, and Ic > 0; $V_{be} \geq 0.7V$
✗ 4. $0.7 < Vce < Vcc$; $I_b > 0$, and Ic > 0; $V_{be} \geq 0.7V$

Question ID : **630680512612**
Option 1 ID : **6306802003421**
Option 2 ID : **6306802003418**
Option 3 ID : **6306802003420**
Option 4 ID : **6306802003419**
Status : **Answered**
Chosen Option : **3**

Q.11 **Which of the following is a necessary condition for Routh-Hurwitz Stability?**

Ans
✔ 1. All the coefficients of its characteristic polynomial should be positive.

✘ 2. The elements of the first column of the Routh array should be positive.

✘ 3. The number of negative and positive coefficients of its characteristic polynomial should be equal.

✘ 4. The elements of the first column of the Routh array should be negative.

Question ID : **630680512655**
Option 1 ID : **6306802003592**
Option 2 ID : **6306802003590**
Option 3 ID : **6306802003593**
Option 4 ID : **6306802003591**
Status : **Answered**
Chosen Option : **2**

Q.12 **Which of the following is the hexadecimal equivalent of the octal number 7532?**

Ans
✘ 1. E72

✘ 2. F32

✘ 3. EA2

✔ 4. F5A

Question ID : **630680512632**
Option 1 ID : **6306802003498**
Option 2 ID : **6306802003501**
Option 3 ID : **6306802003499**
Option 4 ID : **6306802003500**
Status : **Answered**
Chosen Option : **4**

Q.13 Compute the DFT of the following sequence:

```
x = [j, 0, j, 1]
```

Ans
✘ 1. [1+2j, j, 1-2j, -j]

✔ 2. [1+2j, j, -1+2j, -j]

✘ 3. [1, 0, -1, 0]

✘ 4. [0, 2, 0, 2]

Question ID : **630680512599**
Option 1 ID : **6306802003368**
Option 2 ID : **6306802003369**
Option 3 ID : **6306802003366**
Option 4 ID : **6306802003367**
Status : **Not Answered**
Chosen Option : **--**

Q.14 What is the characteristic impedance of a coaxial transmission line having inner conductor radius of 1 mm, outer conductor radius of 3 mm and dielectric constant of 9.0?

Ans
✗ 1. 25 Ω
✗ 2. 20.77 Ω
✗ 3. 30 Ω
✓ 4. 21.97 Ω

Question ID : **630680512677**
Option 1 ID : **6306802003681**
Option 2 ID : **6306802003679**
Option 3 ID : **6306802003678**
Option 4 ID : **6306802003680**
Status : **Not Answered**
Chosen Option : **--**

Q.15 The response of a circuit immediately after the input is suddenly applied, is called:

Ans
✗ 1. Steady-state response
✗ 2. Impulse response
✓ 3. Transient response
✗ 4. Zero-state response

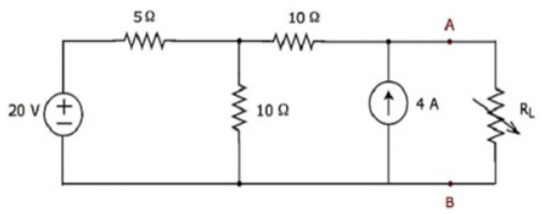
Question ID : **630680512592**
Option 1 ID : **6306802003338**
Option 2 ID : **6306802003340**
Option 3 ID : **6306802003341**
Option 4 ID : **6306802003339**
Status : **Answered**
Chosen Option : **3**

Q.16 In TDMA, what is the purpose of the guard time between time slots?

Ans
✗ 1. To improve coding efficiency.
✗ 2. To allow for frequency hopping.
✓ 3. To compensate for propagation delay differences.
✗ 4. To enhance modulation accuracy.

Question ID : **630680512671**
Option 1 ID : **6306802003657**
Option 2 ID : **6306802003654**
Option 3 ID : **6306802003655**
Option 4 ID : **6306802003656**
Status : **Answered**
Chosen Option : **3**

Q.17 Find the maximum power that can be delivered to the load resistor RL of the circuit shown in the following figure.



Ans
✔ 1. 250/3 W
✘ 2. 100/3 W
✘ 3. 500/3 W
✘ 4. 200/3 W

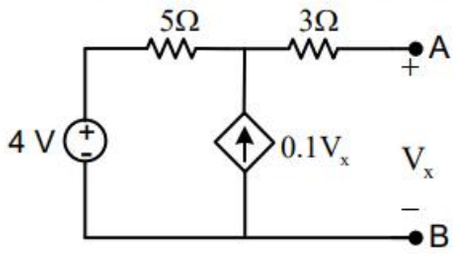
Question ID : **630680512590**
Option 1 ID : **6306802003332**
Option 2 ID : **6306802003333**
Option 3 ID : **6306802003330**
Option 4 ID : **6306802003331**
Status : **Answered**
Chosen Option : **1**

Q.18 **In the context of digital communications, what is the primary benefit of using a matched filter?**

Ans
✘ 1. It increases the transmission bandwidth.
✔ 2. It reduces inter-symbol interference.
✘ 3. It requires less power for the same performance.
✘ 4. It enhances the phase stability of the received signal.

Question ID : **630680512665**
Option 1 ID : **6306802003630**
Option 2 ID : **6306802003633**
Option 3 ID : **6306802003632**
Option 4 ID : **6306802003631**
Status : **Answered**
Chosen Option : **4**

Q.19 For the circuit shown below, determine the Thevenin's equivalent circuit:



Ans
1. $Z_{Th} = 4\ \Omega, V_{Th} = 8\ V$
2. $Z_{Th} = 2\ \Omega, V_{Th} = 6\ V$
3. $Z_{Th} = 3\ \Omega, V_{Th} = 6\ V$
4. $Z_{Th} = 3\ \Omega, V_{Th} = 9\ V$

Question ID : **630680512589**
Option 1 ID : **6306802003328**
Option 2 ID : **6306802003326**
Option 3 ID : **6306802003327**
Option 4 ID : **6306802003329**
Status : **Answered**
Chosen Option : **1**

Q.20 **The Fourier Transform of a rectangle function is:**

Ans
1. delta function
2. exponential function
3. unit step function
4. sinc function

Question ID : **630680512597**
Option 1 ID : **6306802003359**
Option 2 ID : **6306802003361**
Option 3 ID : **6306802003360**
Option 4 ID : **6306802003358**
Status : **Answered**
Chosen Option : **4**

Q.21 **How many satellite signals are required to calculate a precise 3D position using GPS?**

Ans
1. 4
2. 3
3. 5
4. 2

Question ID : **630680512674**
Option 1 ID : **6306802003668**
Option 2 ID : **6306802003669**
Option 3 ID : **6306802003667**
Option 4 ID : **6306802003666**
Status : **Answered**
Chosen Option : **2**

Q.22 If a Nyquist plot encircles the point (-1,0) N times in the anticlockwise direction and has Z zeros of the open-loop system in the right-half plane, the number of poles (P) of the closed-loop system in the right-half plane will be:

Ans
✔ 1. P = Z - N
✘ 2. P = N - Z
✘ 3. P = (N + Z)/2
✘ 4. P = Z + N

Question ID : **630680512648**
Option 1 ID : **6306802003562**
Option 2 ID : **6306802003564**
Option 3 ID : **6306802003565**
Option 4 ID : **6306802003563**
Status : **Answered**
Chosen Option : **4**

Q.23 Thevenin's theorem is applicable to which of the following network types?

I) Linear Networks
II) Non-linear Networks
III) Time Variant Networks

Ans
✘ 1. All I, II and III
✘ 2. Only II and III
✔ 3. Only I
✘ 4. Only I and III

Question ID : **630680512591**
Option 1 ID : **6306802003337**
Option 2 ID : **6306802003336**
Option 3 ID : **6306802003334**
Option 4 ID : **6306802003335**
Status : **Answered**
Chosen Option : **3**

Q.24 For an earth station transmitter input power of 25 dBW (10,000 W), with a back-off loss of 3 dB, a total branching and feeder loss of 3 dB, and a transmit antenna gain of 25 dB, determine the effective isotropic radiated power (EIRP).

Ans
✘ 1. 50 dBW
✘ 2. 57 dBW
✘ 3. 100 dBW
✔ 4. 44 dBW

Question ID : **630680512683**
Option 1 ID : **6306802003704**
Option 2 ID : **6306802003703**
Option 3 ID : **6306802003705**
Option 4 ID : **6306802003702**
Status : **Answered**
Chosen Option : **4**

Q.25 Which of the following statements is TRUE regarding the simplification of Boolean functions using Karnaugh maps?

Ans
✔ 1. You can only group adjacent 1s in powers of two
✘ 2. You cannot group 0s in the Karnaugh map
✘ 3. You can group 1s and 0s together
✘ 4. You need to group all the 1s in the map for a valid simplification

Question ID : **630680512635**
Option 1 ID : **6306802003512**
Option 2 ID : **6306802003510**
Option 3 ID : **6306802003511**
Option 4 ID : **6306802003513**
Status : **Answered**
Chosen Option : **4**

Q.26 How many RST (restart) instructions are there in the 8085 microprocessor?

Ans
✘ 1. 10
✘ 2. 5
✔ 3. 8
✘ 4. 7

Question ID : **630680512644**
Option 1 ID : **6306802003549**
Option 2 ID : **6306802003546**
Option 3 ID : **6306802003547**
Option 4 ID : **6306802003548**
Status : **Answered**
Chosen Option : **2**

Q.27 What is the effect of increasing the bypass capacitor value in a single-stage BJT amplifier with emitter degeneration?

Ans
✘ 1. Decrease in bandwidth
✘ 2. Decrease in voltage gain
✔ 3. Increase in voltage gain
✘ 4. Increase in bandwidth

Question ID : **630680512620**
Option 1 ID : **6306802003453**
Option 2 ID : **6306802003450**
Option 3 ID : **6306802003451**
Option 4 ID : **6306802003452**
Status : **Answered**
Chosen Option : **2**

Q.28 What is the execution time of the NOP instruction in an 8085 microprocessor with a 3 MHz clock frequency?

Ans
✗ 1. 7 µs
✗ 2. 5.32 µs
✓ 3. 1.33 µs
✗ 4. 6.67 µs

Question ID : **630680512645**
Option 1 ID : **6306802003553**
Option 2 ID : **6306802003551**
Option 3 ID : **6306802003550**
Option 4 ID : **6306802003552**
Status : **Answered**
Chosen Option : **4**

Q.29 In the context of the Channel Capacity Theorem, what role does channel bandwidth play in determining the capacity of a communication channel?

Ans
✗ 1. Increasing channel bandwidth decreases channel capacity.
✓ 2. Channel Bandwidth is directly proportional to channel capacity.
✗ 3. Channel Bandwidth is inversely proportional to channel capacity.
✗ 4. Channel Bandwidth has no effect on channel capacity.

Question ID : **630680512667**
Option 1 ID : **6306802003640**
Option 2 ID : **6306802003638**
Option 3 ID : **6306802003639**
Option 4 ID : **6306802003641**
Status : **Answered**
Chosen Option : **2**

Q.30 For an underdamped second-order system, the damping ratio (ζ) is:

Ans
✓ 1. Between 0 and 1
✗ 2. Equal to 1
✗ 3. Less than 0
✗ 4. Greater than 1

Question ID : **630680512649**
Option 1 ID : **6306802003568**
Option 2 ID : **6306802003569**
Option 3 ID : **6306802003567**
Option 4 ID : **6306802003566**
Status : **Answered**
Chosen Option : **1**

Q.31 The bandwidth of an RLC parallel circuit is _____.

Ans
✗ 1. Directly proportional to Q-factor
✗ 2. Inversely proportional to inductance
✗ 3. Directly proportional to resistance
✓ 4. Inversely proportional to Q-factor

Question ID : **630680512594**
Option 1 ID : **6306802003346**
Option 2 ID : **6306802003349**
Option 3 ID : **6306802003348**
Option 4 ID : **6306802003347**
Status : **Answered**
Chosen Option : **4**

Q.32 Closed-loop control systems are characterized by which of the following?

I) Direct control of system output without sensors.
II) Use of feedback to reduce system errors.
III)Independence from external environmental changes.

Ans
✗ 1. Only I and II
✓ 2. Only II
✗ 3. All I, II and III
✗ 4. Only III Only

Question ID : **630680512647**
Option 1 ID : **6306802003558**
Option 2 ID : **6306802003559**
Option 3 ID : **6306802003561**
Option 4 ID : **6306802003560**
Status : **Answered**
Chosen Option : **3**

Q.33 Which of the following is the correct binary representation of the hexadecimal number 3A9?

Ans
✓ 1. 001110101001
✗ 2. 011110101001
✗ 3. 1110101001
✗ 4. 11110101001

Question ID : **630680512631**
Option 1 ID : **6306802003495**
Option 2 ID : **6306802003496**
Option 3 ID : **6306802003494**
Option 4 ID : **6306802003497**
Status : **Answered**
Chosen Option : **1**

Q.34 In phase modulation, what happens to the phase of the carrier wave when the amplitude of the modulating signal is zero?

Ans
✗ 1. It becomes half of its maximum value
✓ 2. It remains constant
✗ 3. It becomes zero
✗ 4. It becomes maximum

Question ID : **630680512662**
Option 1 ID : **6306802003621**
Option 2 ID : **6306802003618**
Option 3 ID : **6306802003620**
Option 4 ID : **6306802003619**
Status : **Answered**
Chosen Option : **2**

Q.35 Which biasing method provides the best thermal stability for a Bipolar Junction Transistor (BJT)?

Ans
✓ 1. Voltage divider bias
✗ 2. Collector feedback bias
✗ 3. Emitter feedback bias
✗ 4. Base bias

Question ID : **630680512618**
Option 1 ID : **6306802003444**
Option 2 ID : **6306802003443**
Option 3 ID : **6306802003445**
Option 4 ID : **6306802003442**
Status : **Answered**
Chosen Option : **1**

Q.36 In a clipper circuit using a diode, what component is typically used in parallel with the diode to control the clipping threshold?

Ans
✗ 1. An inductor
✓ 2. A voltage source
✗ 3. A capacitor
✗ 4. A resistor

Question ID : **630680512616**
Option 1 ID : **6306802003436**
Option 2 ID : **6306802003437**
Option 3 ID : **6306802003434**
Option 4 ID : **6306802003435**
Status : **Answered**
Chosen Option : **2**

Q.37 **Which of the following statements is NOT true about the Commutative Law in Boolean algebra?**

Ans
✔ 1. $(A \wedge B) \wedge C = A \wedge (B \wedge C)$
✘ 2. $A \wedge B = B \wedge A$
✘ 3. $A \vee B = B \vee A$
✘ 4. $(A \vee B) \vee C = A \vee (B \vee C)$

Question ID : **630680512633**
Option 1 ID : **6306802003505**
Option 2 ID : **6306802003503**
Option 3 ID : **6306802003502**
Option 4 ID : **6306802003504**
Status : **Answered**
Chosen Option : **1**

Q.38 **Which of the following is a characteristic of a sinusoidal oscillator operating at its frequency of oscillation?**

Ans
✘ 1. The phase shift around the loop is maximum.
✔ 2. The amplitude of the output signal is constant.
✘ 3. The frequency of the output signal varies with time.
✘ 4. The loop gain is less than one.

Question ID : **630680512627**
Option 1 ID : **6306802003479**
Option 2 ID : **6306802003480**
Option 3 ID : **6306802003478**
Option 4 ID : **6306802003481**
Status : **Answered**
Chosen Option : **2**

Q.39 **For maximum power transfer in AC circuits, the load impedance should be:**

Ans
✘ 1. Equal to source impedance
✘ 2. Double of the source impedance
✘ 3. Half of the source impedance
✔ 4. Complex conjugate of the source impedance

Question ID : **630680512588**
Option 1 ID : **6306802003322**
Option 2 ID : **6306802003325**
Option 3 ID : **6306802003324**
Option 4 ID : **6306802003323**
Status : **Answered**
Chosen Option : **4**

Q.40 In PCM, what effect does an increase in the number of quantization levels have on the signal?

Ans
✗ 1. It increases the bandwidth of the signal
✗ 2. It decreases the bandwidth of the signal
✗ 3. It increases the quantization noise
✓ 4. It decreases the quantization noise

Question ID : **630680512664**
Option 1 ID : **6306802003626**
Option 2 ID : **6306802003627**
Option 3 ID : **6306802003629**
Option 4 ID : **6306802003628**
Status : **Answered**
Chosen Option : **4**

Q.41 In a Bode plot, what is the significance of the gain crossover frequency?

Ans
✓ 1. It indicates the unity gain frequency
✗ 2. It corresponds to the phase crossover frequency
✗ 3. It represents the damping ratio
✗ 4. It is the frequency at which phase margin is minimum.

Question ID : **630680512653**
Option 1 ID : **6306802003582**
Option 2 ID : **6306802003585**
Option 3 ID : **6306802003584**
Option 4 ID : **6306802003583**
Status : **Answered**
Chosen Option : **1**

Q.42 A system is said to be distortion less if its group delay is _____.

Ans
✗ 1. Decreasing with frequency
✗ 2. Zero
✗ 3. Increasing with frequency
✓ 4. Constant

Question ID : **630680512605**
Option 1 ID : **6306802003393**
Option 2 ID : **6306802003390**
Option 3 ID : **6306802003392**
Option 4 ID : **6306802003391**
Status : **Answered**
Chosen Option : **1**

Q.43 In a Hamming (7,4) code, how many bits are used for the message and how many are used for error correction?

Ans
✔ 1. 4 bits for message, 3 bits for error correction
✘ 2. 7 bits for message, 4 bits for error correction
✘ 3. 4 bits for message, 7 bits for error correction
✘ 4. 3 bits for message, 4 bits for error correction

Question ID : **630680512669**
Option 1 ID : **6306802003648**
Option 2 ID : **6306802003647**
Option 3 ID : **6306802003646**
Option 4 ID : **6306802003649**
Status : **Answered**
Chosen Option : **2**

Q.44 For an astable multivibrator using IC 555, if the values of R_1, R_2, and C are 47 kΩ, 100 kΩ, and 10 μF respectively, what is the time period of the output waveform?

Ans
✘ 1. 1.63 s
✔ 2. 1.71 s
✘ 3. 1.47 s
✘ 4. 3.33 s

Question ID : **630680512630**
Option 1 ID : **6306802003492**
Option 2 ID : **6306802003493**
Option 3 ID : **6306802003490**
Option 4 ID : **6306802003491**
Status : **Answered**
Chosen Option : **2**

Q.45 The characteristic equation of a system is given as $s^3 + 3s^2 + 7s + k = 0$, find the range of values of k for which the system would be stable.

Ans
✘ 1. 0 < k < 10
✔ 2. 0 < k < 21
✘ 3. 3 < k < 18
✘ 4. 4 < k < 10

Question ID : **630680512650**
Option 1 ID : **6306802003572**
Option 2 ID : **6306802003571**
Option 3 ID : **6306802003570**
Option 4 ID : **6306802003573**
Status : **Answered**
Chosen Option : **2**

Q.46 How many 4-to-1 multiplexers will be needed for implementing a 32-to-1 multiplexer?

Ans
✔ 1. 8
✘ 2. 9
✘ 3. 6
✘ 4. 11

Question ID : **630680512637**
Option 1 ID : **6306802003518**
Option 2 ID : **6306802003520**
Option 3 ID : **6306802003519**
Option 4 ID : **6306802003521**
Status : **Answered**
Chosen Option : **4**

Q.47 What is a crucial factor to consider in designing an active filter for high-frequency applications?

Ans
✘ 1. The open-loop gain of the operational amplifier
✘ 2. The value of the input resistor
✔ 3. The slew rate of the operational amplifier
✘ 4. The power supply voltage of the operational amplifier

Question ID : **630680512624**
Option 1 ID : **6306802003466**
Option 2 ID : **6306802003467**
Option 3 ID : **6306802003469**
Option 4 ID : **6306802003468**
Status : **Answered**
Chosen Option : **3**

Q.48 Poynting vector represents _____.

Ans
✔ 1. The rate of energy transfer per unit area
✘ 2. Magnetic field per unit area
✘ 3. Electric field per unit area
✘ 4. The rate of flux change per unit area

Question ID : **630680512682**
Option 1 ID : **6306802003700**
Option 2 ID : **6306802003698**
Option 3 ID : **6306802003699**
Option 4 ID : **6306802003701**
Status : **Answered**
Chosen Option : **1**

Q.49 Which of the following latches will change its output only when the enable signal is active and there is a change in the input?

Ans
✗ 1. SR Latch
✗ 2. D Latch
✓ 3. Gated D Latch
✗ 4. T Latch

Question ID : **630680512639**
Option 1 ID : **6306802003526**
Option 2 ID : **6306802003528**
Option 3 ID : **6306802003527**
Option 4 ID : **6306802003529**
Status : **Answered**
Chosen Option : **3**

Q.50 In a sinusoidal oscillator, what is the phase shift around the loop at the frequency of oscillation?

Ans
✗ 1. 60 degrees
✗ 2. 180 degrees
✓ 3. 360 degrees
✗ 4. 90 degrees

Question ID : **630680512626**
Option 1 ID : **6306802003474**
Option 2 ID : **6306802003477**
Option 3 ID : **6306802003476**
Option 4 ID : **6306802003475**
Status : **Answered**
Chosen Option : **2**

Q.51 Which parameter of the MOSFET is crucial in determining the unity-gain bandwidth of a single-stage amplifier?

Ans
✗ 1. Oxide capacitance per unit area (C_{ox})
✗ 2. Threshold voltage
✓ 3. Transconductance (g_m)
✗ 4. Channel length modulation

Question ID : **630680512621**
Option 1 ID : **6306802003456**
Option 2 ID : **6306802003454**
Option 3 ID : **6306802003455**
Option 4 ID : **6306802003457**
Status : **Answered**
Chosen Option : **3**

Q.52 **Electric flux through a closed surface in free space is equal to:**

Ans
✗ 1. Electric field strength times the area

✓ 2. Charge enclosed divided by ε_0

✗ 3. Charge enclosed times ε_0

✗ 4. Electric flux density times the area

Question ID : **630680512679**
Option 1 ID : **6306802003686**
Option 2 ID : **6306802003687**
Option 3 ID : **6306802003689**
Option 4 ID : **6306802003688**
Status : **Answered**
Chosen Option : **2**

Q.53 **Diffusion current in a semiconductor arises because of:**

Ans
✗ 1. Electric field.

✗ 2. Movement of holes.

✗ 3. Concentration gradient of carriers.

✓ 4. Applied voltage.

Question ID : **630680512607**
Option 1 ID : **6306802003400**
Option 2 ID : **6306802003401**
Option 3 ID : **6306802003399**
Option 4 ID : **6306802003398**
Status : **Answered**
Chosen Option : **3**

Q.54 **The impedance of an RLC series circuit at resonance is _____.**

Ans
✗ 1. Zero

✓ 2. Purely resistive

✗ 3. Purely reactive

✗ 4. Maximum

Question ID : **630680512593**
Option 1 ID : **6306802003342**
Option 2 ID : **6306802003344**
Option 3 ID : **6306802003345**
Option 4 ID : **6306802003343**
Status : **Answered**
Chosen Option : **2**

Q.55 **Barkhausen's Criterion for sustained oscillations in an oscillator circuit states that:**

Ans
✗ 1. The loop gain must be zero.

✗ 2. The phase shift around the loop must be 180 degrees.

✓ 3. The product of the loop gain and the feedback factor must be one.

✗ 4. The product of the loop gain and the feedback factor must be greater than one.

Question ID : **630680512625**
Option 1 ID : **6306802003473**
Option 2 ID : **6306802003471**
Option 3 ID : **6306802003472**
Option 4 ID : **6306802003470**
Status : **Answered**
Chosen Option : **3**

Q.56 **For the transformation of a delta-connected network to a wye-connected network, the resistance between any two terminals in the wye-connection is:**

Ans
✓ 1. The resistance is equal to the product of the two delta resistances connected to the common terminal, divided by the sum of all three delta resistances.

✗ 2. The resistance is equal to the difference between the highest and lowest delta resistances.

✗ 3. The resistance is equal to the sum of the two delta resistances connected to the common terminal.

✗ 4. The resistance is equal to the sum of the two delta resistances connected to the common terminal, divided by the total number of resistances in the delta network.

Question ID : **630680512587**
Option 1 ID : **6306802003318**
Option 2 ID : **6306802003321**
Option 3 ID : **6306802003319**
Option 4 ID : **6306802003320**
Status : **Answered**
Chosen Option : **1**

Q.57 **In the twin tub CMOS process, the p-well is used primarily for:**

Ans
✗ 1. Providing a substrate for resistors

✗ 2. Isolating the pMOS transistors

✗ 3. Connecting the bulk terminal to the positive supply

✓ 4. Fabricating the nMOS transistors

Question ID : **630680512613**
Option 1 ID : **6306802003424**
Option 2 ID : **6306802003422**
Option 3 ID : **6306802003425**
Option 4 ID : **6306802003423**
Status : **Not Answered**
Chosen Option : **--**

Q.58 Convolution of an input signal with the impulse response of an LTI system provides:

Ans
1. The phase response of the system
2. The system's frequency response
3. The system's transfer function
4. The output of the system for that input

Question ID : **630680512603**
Option 1 ID : **6306802003384**
Option 2 ID : **6306802003383**
Option 3 ID : **6306802003385**
Option 4 ID : **6306802003382**
Status : **Answered**
Chosen Option : **4**

Q.59 How does white noise affect the performance of communication systems?

Ans
1. It improves signal-to-noise ratio
2. It has no effect on signal quality
3. It degrades signal quality
4. It enhances channel bandwidth

Question ID : **630680512657**
Option 1 ID : **6306802003601**
Option 2 ID : **6306802003599**
Option 3 ID : **6306802003600**
Option 4 ID : **6306802003598**
Status : **Answered**
Chosen Option : **1**

Q.60 Calculate the reflection coefficient when VSWR is 5.

Ans
1. 0
2. 1/2
3. 2/3
4. 1

Question ID : **630680512676**
Option 1 ID : **6306802003676**
Option 2 ID : **6306802003674**
Option 3 ID : **6306802003675**
Option 4 ID : **6306802003677**
Status : **Answered**
Chosen Option : **3**

Q.61 In a BJT configured as a common-emitter amplifier, what role does the emitter resistor play in biasing?

Ans
✗ 1. It isolates the input and output signals
✓ 2. It provides negative feedback to stabilize the bias point
✗ 3. It increases the input impedance
✗ 4. It amplifies the input signal

Question ID : **630680512619**
Option 1 ID : **6306802003448**
Option 2 ID : **6306802003447**
Option 3 ID : **6306802003446**
Option 4 ID : **6306802003449**
Status : **Answered**
Chosen Option : **3**

Q.62 A broadside array operating at 50cm wavelength consists of 4 half wave dipoles spaced 25cm apart. Each element carries radio frequency current in the same phase and of magnitude 0.2 A. What will be the radiated power if the radiation resistance is 126 Ω?

Ans
✗ 1. 11 W
✓ 2. 10 W
✗ 3. 35 W
✗ 4. 30 W

Question ID : **630680512678**
Option 1 ID : **6306802003684**
Option 2 ID : **6306802003685**
Option 3 ID : **6306802003682**
Option 4 ID : **6306802003683**
Status : **Not Answered**
Chosen Option : **--**

Q.63 Find the gain of a system with transfer function G(s) = (s + 2) / [(s + 1) (s + 3) (s + 4)] for a d.c. (zero frequency) input.

Ans
✗ 1. 1
✗ 2. 0
✗ 3. 1/8
✓ 4. 1/6

Question ID : **630680512652**
Option 1 ID : **6306802003581**
Option 2 ID : **6306802003578**
Option 3 ID : **6306802003580**
Option 4 ID : **6306802003579**
Status : **Answered**
Chosen Option : **4**

Q.64 In a 4-bit binary adder, if the inputs are A = 1101 and B = 1011 with an initial carry of 0, what will be the sum and final carry?

Ans
✗ 1. Sum: 11000, Carry: 0
✗ 2. Sum: 1100, Carry: 1
✗ 3. Sum: 10010, Carry: 0
✓ 4. Sum: 1000, Carry: 1

Question ID : **630680512634**
Option 1 ID : **6306802003508**
Option 2 ID : **6306802003507**
Option 3 ID : **6306802003506**
Option 4 ID : **6306802003509**
Status : **Answered**
Chosen Option : **4**

Q.65 The electric field measured in the far field of an antenna at a distance of 30 m is 1 Vm^{-1}. The average power density at a distance of 300m from the antenna is:

Ans
✗ 1. 13.3 μW m^{-2}
✓ 2. 26.6 μW m^{-2}
✗ 3. 1.33 μW m^{-2}
✗ 4. 2.66 μW m^{-2}

Question ID : **630680512685**
Option 1 ID : **6306802003713**
Option 2 ID : **6306802003710**
Option 3 ID : **6306802003712**
Option 4 ID : **6306802003711**
Status : **Not Answered**
Chosen Option : **--**

Q.66 In semiconductor fabrication, the process used to pattern specific areas of a wafer for subsequent removal or deposition of materials is called:

Ans
✗ 1. Epitaxy
✗ 2. Annealing
✗ 3. Diffusion
✓ 4. Lithography

Question ID : **630680512611**
Option 1 ID : **6306802003415**
Option 2 ID : **6306802003416**
Option 3 ID : **6306802003417**
Option 4 ID : **6306802003414**
Status : **Answered**
Chosen Option : **1**

Q.67 A portable device requires low power consumption for extended battery life. Which logic family would be the most energy-efficient choice for its digital circuitry?

Ans
✗ 1. RTL
✗ 2. ECL
✓ 3. CMOS
✗ 4. TTL

Question ID : **630680512640**
Option 1 ID : **6306802003533**
Option 2 ID : **6306802003532**
Option 3 ID : **6306802003530**
Option 4 ID : **6306802003531**
Status : **Answered**
Chosen Option : **3**

Q.68 What is the main purpose of the intermediate frequency (IF) stage in a superheterodyne receiver?

Ans
✗ 1. To amplify the received signal
✓ 2. To facilitate easier and more selective filtering
✗ 3. To demodulate the signal
✗ 4. To convert the signal to a lower frequency

Question ID : **630680512663**
Option 1 ID : **6306802003622**
Option 2 ID : **6306802003624**
Option 3 ID : **6306802003623**
Option 4 ID : **6306802003625**
Status : **Answered**
Chosen Option : **2**

Q.69 What is the main cause of GPS signal degradation in urban environments?

Ans
✗ 1. Satellite geometry
✗ 2. Tropospheric effects
✗ 3. Ionospheric effects
✓ 4. Multipath propagation

Question ID : **630680512675**
Option 1 ID : **6306802003673**
Option 2 ID : **6306802003672**
Option 3 ID : **6306802003671**
Option 4 ID : **6306802003670**
Status : **Not Answered**
Chosen Option : **--**

Q.70 In a Hamming code, if one of the received bits is incorrect, which of the following is true?

Ans
✗ 1. The syndrome vector will be all zeros.

✗ 2. The error will always be in a data bit.

✓ 3. The syndrome vector will point to the position of the error.

✗ 4. The error cannot be corrected.

Question ID : **630680512670**
Option 1 ID : **6306802003650**
Option 2 ID : **6306802003653**
Option 3 ID : **6306802003651**
Option 4 ID : **6306802003652**
Status : **Answered**
Chosen Option : **3**

Q.71 What is the relationship between the modulation index (m) and the amplitudes of the carrier (Ac) and message (Am) signals in amplitude modulation?

Ans
✗ 1. M = 1/ (Ac.Am)

✓ 2. m = Am/ Ac

✗ 3. M = Ac. Am

✗ 4. M = Ac/ Am

Question ID : **630680512658**
Option 1 ID : **6306802003605**
Option 2 ID : **6306802003603**
Option 3 ID : **6306802003604**
Option 4 ID : **6306802003602**
Status : **Answered**
Chosen Option : **2**

Q.72 How does a positive clipper circuit operate when the diode is forward biased?

Ans
✓ 1. It blocks all positive parts of the input signal.

✗ 2. It allows all positive parts of the input signal to pass.

✗ 3. It allows negative as well as positive parts of the input signal to pass.

✗ 4. It blocks all negative parts of the input signal.

Question ID : **630680512617**
Option 1 ID : **6306802003441**
Option 2 ID : **6306802003440**
Option 3 ID : **6306802003439**
Option 4 ID : **6306802003438**
Status : **Answered**
Chosen Option : **1**

Q.73 In an n-channel enhancement-type MOSFET, what happens when $V_{GS} < V_T$?

Ans
✗ 1. The MOSFET is in the triode region.

✗ 2. The MOSFET is in the saturation mode.

✗ 3. The MOSFET conducts maximum current.

✓ 4. The MOSFET is in the cutoff mode and no current flows between the drain and the source.

Question ID : **630680512615**
Option 1 ID : **6306802003433**
Option 2 ID : **6306802003431**
Option 3 ID : **6306802003430**
Option 4 ID : **6306802003432**
Status : **Answered**
Chosen Option : **4**

Q.74 In a single-stage MOSFET amplifier, what role does the Miller capacitance play?

Ans
✓ 1. It decreases the high-frequency gain.

✗ 2. It increases the high-frequency gain.

✗ 3. It stabilizes the DC operating point.

✗ 4. It enhances the linearity of the amplifier.

Question ID : **630680512622**
Option 1 ID : **6306802003458**
Option 2 ID : **6306802003459**
Option 3 ID : **6306802003460**
Option 4 ID : **6306802003461**
Status : **Answered**
Chosen Option : **1**

Q.75 In a BJT, the base-emitter junction is _____ biased and the collector-base junction is _____ biased in active mode of operation.

Ans
✓ 1. forward; reverse

✗ 2. reverse; reverse

✗ 3. reverse; forward

✗ 4. forward; forward

Question ID : **630680512610**
Option 1 ID : **6306802003411**
Option 2 ID : **6306802003410**
Option 3 ID : **6306802003413**
Option 4 ID : **6306802003412**
Status : **Answered**
Chosen Option : **1**

Q.76 In the context of LEDs, what does the term "quantum effi ciency" refer to?

Ans
✗ 1. The efficiency of converting electric energy into heat.

✗ 2. The efficiency of converting electric energy into magnetic fields.

✓ 3. The ratio of the number of photons emitted into free space per second to the number of electrons injected into LED per second.

✗ 4. The number of photons absorbed per second.

Question ID : **630680512614**
Option 1 ID : **6306802003427**
Option 2 ID : **6306802003428**
Option 3 ID : **6306802003426**
Option 4 ID : **6306802003429**
Status : **Answered**
Chosen Option : **3**

Q.77 In a binary-to-gray code converter, if the binary input is 1011, what will be the gray code output?

Ans
✓ 1. 1110

✗ 2. 1001

✗ 3. 1010

✗ 4. 1101

Question ID : **630680512636**
Option 1 ID : **6306802003515**
Option 2 ID : **6306802003517**
Option 3 ID : **6306802003514**
Option 4 ID : **6306802003516**
Status : **Answered**
Chosen Option : **1**

Q.78 In a shift register, if a binary number 1101 is initially stored and the register is made to shift two times to the right, which of the following would be the content of the register?

Ans
✗ 1. 1110

✗ 2. 1101

✓ 3. 0011

✗ 4. 0110

Question ID : **630680512642**
Option 1 ID : **6306802003538**
Option 2 ID : **6306802003541**
Option 3 ID : **6306802003540**
Option 4 ID : **6306802003539**
Status : **Answered**
Chosen Option : **3**

Q.79 **Which of the following statements is true regarding the bandwidth of an amplitude-modulated signal?**

Ans
✗ 1. The bandwidth is dependent on the modulation index.

✓ 2. The bandwidth is twice the highest frequency of the message signal.

✗ 3. The bandwidth is equal to the sum of the carrier frequency and twice the highest frequency of the message signal.

✗ 4. The bandwidth is equal to the carrier frequency.

Question ID : **630680512659**
Option 1 ID : **6306802003609**
Option 2 ID : **6306802003608**
Option 3 ID : **6306802003606**
Option 4 ID : **6306802003607**
Status : **Answered**
Chosen Option : **2**

Q.80 **In a monostable multivibrator using IC 555, what is the purpose of the external trigger?**

Ans
✗ 1. To control the duty cycle

✗ 2. To reset the output to a low state

✓ 3. To initiate the timing interval

✗ 4. To toggle the output to the reverse state

Question ID : **630680512629**
Option 1 ID : **6306802003489**
Option 2 ID : **6306802003488**
Option 3 ID : **6306802003486**
Option 4 ID : **6306802003487**
Status : **Not Answered**
Chosen Option : **--**

Q.81 **During the process of Interpolation, Upsampling is followed by _____.**

Ans
✗ 1. Decimation

✗ 2. Amplitude scaling

✓ 3. Low-pass filtering

✗ 4. Quantization

Question ID : **630680512602**
Option 1 ID : **6306802003379**
Option 2 ID : **6306802003381**
Option 3 ID : **6306802003380**
Option 4 ID : **6306802003378**
Status : **Answered**
Chosen Option : **2**

Q.82 For a source with M equiprobable symbols, what is the formula for calculating entropy (H)?

Ans
✗ 1. $H = M\log_2(M)$
✓ 2. $H = \log_2(M)$
✗ 3. $H = -\log_2(M)$
✗ 4. $H = -M\log_2(M)$

Question ID : **630680512668**
Option 1 ID : **6306802003645**
Option 2 ID : **6306802003644**
Option 3 ID : **6306802003643**
Option 4 ID : **6306802003642**
Status : **Answered**
Chosen Option : **4**

Q.83 In a rectangular waveguide, the TE10 mode has _____.

Ans
✓ 1. one variation in the broader dimension and none in the narrower dimension
✗ 2. no field variation in both dimensions
✗ 3. one variation in the narrower dimension and none in the broader dimension
✗ 4. multiple variations in the broader dimension

Question ID : **630680512684**
Option 1 ID : **6306802003708**
Option 2 ID : **6306802003709**
Option 3 ID : **6306802003706**
Option 4 ID : **6306802003707**
Status : **Answered**
Chosen Option : **1**

Q.84 When the modulation index of an FM signal is small (much less than one), the bandwidth of the FM signal can be approximated by which of the following?

Ans
✗ 1. The sum of the carrier frequency and the frequency deviation.
✗ 2. Twice the sum of the carrier frequency and the modulating frequency.
✓ 3. Twice the highest frequency of the modulating signal.
✗ 4. Twice the frequency deviation.

Question ID : **630680512661**
Option 1 ID : **6306802003616**
Option 2 ID : **6306802003617**
Option 3 ID : **6306802003615**
Option 4 ID : **6306802003614**
Status : **Answered**
Chosen Option : **3**

Q.85 In a non-inverting amplifier using an operational amplifier, the voltage gain is determined by which of the following?

Ans
✗ 1. The open-loop gain of the operational amplifier
✗ 2. The product of the input and feedback resistors
✓ 3. The ratio of the feedback resistor to the input resistor
✗ 4. The sum of the input and feedback resistors

Question ID : **630680512623**
Option 1 ID : **6306802003463**
Option 2 ID : **6306802003464**
Option 3 ID : **6306802003462**
Option 4 ID : **6306802003465**
Status : **Answered**
Chosen Option : **3**

Q.86 Which of the following conditions is responsible for the occurrence of Aliasing?

Ans
✓ 1. The sampling frequency is too low
✗ 2. The signal is periodic
✗ 3. The sampling frequency is too high
✗ 4. The signal is non-periodic

Question ID : **630680512598**
Option 1 ID : **6306802003363**
Option 2 ID : **6306802003364**
Option 3 ID : **6306802003362**
Option 4 ID : **6306802003365**
Status : **Answered**
Chosen Option : **1**

Q.87 The fan-out of a TTL gate is mainly determined by:

Ans
✗ 1. The output resistance of the gate
✓ 2. The input resistance of the gate
✗ 3. The capacitance of the load
✗ 4. The power supply voltage

Question ID : **630680512638**
Option 1 ID : **6306802003522**
Option 2 ID : **6306802003523**
Option 3 ID : **6306802003525**
Option 4 ID : **6306802003524**
Status : **Not Answered**
Chosen Option : **--**

Q.88 In line-of-sight communication, the Fresnel Zone is important for:

Ans
✗ 1. Determining the minimum height of the antenna.
✓ 2. Ensuring that the signal path is free from obstacles.
✗ 3. Decreasing the required transmission power.
✗ 4. Ensuring proper modulation.

Question ID : **630680512673**
Option 1 ID : **6306802003663**
Option 2 ID : **6306802003662**
Option 3 ID : **6306802003665**
Option 4 ID : **6306802003664**
Status : **Not Answered**
Chosen Option : **--**

Q.89 At the boundary between two dielectric materials, which of the following is continuous?

Ans
✗ 1. Magnetic field H
✓ 2. The normal component of the Electric displacement field (D)
✗ 3. Current density J
✗ 4. Electric field E

Question ID : **630680512681**
Option 1 ID : **6306802003696**
Option 2 ID : **6306802003695**
Option 3 ID : **6306802003697**
Option 4 ID : **6306802003694**
Status : **Answered**
Chosen Option : **2**

Q.90 Which of the following is the primary purpose of IFFT?

Ans
✗ 1. Compress the frequency domain signal
✗ 2. Decompress the time-domain signal
✗ 3. Reconstruct the frequency components from time domain signal
✓ 4. Convert frequency domain signal to time domain

Question ID : **630680512600**
Option 1 ID : **6306802003371**
Option 2 ID : **6306802003372**
Option 3 ID : **6306802003373**
Option 4 ID : **6306802003370**
Status : **Not Answered**
Chosen Option : **--**

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Q.91 In nodal analysis, the number of nodes to be considered for KCL equations is equal to:

Ans

✗ 1. Total nodes

✓ 2. Total nodes - 1

✗ 3. Total nodes - 2

✗ 4. Total nodes + 1

Question ID : **630680512586**
Option 1 ID : **6306802003315**
Option 2 ID : **6306802003316**
Option 3 ID : **6306802003314**
Option 4 ID : **6306802003317**
Status : **Answered**
Chosen Option : **2**

Q.92 The Region of Convergence (ROC) of the Z transform for which of the following Discrete-Time sequences is NOT |z| > 1 ?

Ans

✗ 1. $\cos \omega n \, u(n)$

✗ 2. $\frac{1}{n}; \quad n > 0$

✓ 3. $\delta(n)$

✗ 4. $u(n)$

Question ID : **630680512601**
Option 1 ID : **6306802003376**
Option 2 ID : **6306802003374**
Option 3 ID : **6306802003377**
Option 4 ID : **6306802003375**
Status : **Answered**
Chosen Option : **2**

Q.93 How many T-states are required for the opcode fetch cycle in 8085 microprocessor?

Ans

✗ 1. 1

✗ 2. 3

✓ 3. 4

✗ 4. 2

Question ID : **630680512643**
Option 1 ID : **6306802003542**
Option 2 ID : **6306802003545**
Option 3 ID : **6306802003543**
Option 4 ID : **6306802003544**
Status : **Answered**
Chosen Option : **2**

Q.94 In a Bode plot, how is the order of a system determined from the phase plot?

Ans
✗ 1. By examining the gain margin
✓ 2. By counting the number of phase crossings
✗ 3. By the location of the magnitude peak
✗ 4. By analysing the slope of the phase plot

Question ID : **630680512646**
Option 1 ID : **6306802003556**
Option 2 ID : **6306802003554**
Option 3 ID : **6306802003557**
Option 4 ID : **6306802003555**
Status : **Not Answered**
Chosen Option : **--**

Q.95 What is the length of the linear convolution of two sequences of length M and N?

Ans
✓ 1. $M+N-1$
✗ 2. $M+N$
✗ 3. $M*N$
✗ 4. $M*N-1$

Question ID : **630680512604**
Option 1 ID : **6306802003389**
Option 2 ID : **6306802003388**
Option 3 ID : **6306802003386**
Option 4 ID : **6306802003387**
Status : **Answered**
Chosen Option : **1**

Q.96 In asynchronous counters, the flip-flops (except the first) are triggered by:

Ans
✓ 1. The output of the preceding flip-flop
✗ 2. A reset signal
✗ 3. An external control signal
✗ 4. The clock signal at the same time

Question ID : **630680512641**
Option 1 ID : **6306802003535**
Option 2 ID : **6306802003537**
Option 3 ID : **6306802003536**
Option 4 ID : **6306802003534**
Status : **Answered**
Chosen Option : **1**

Q.97 A 10.0 V stabilised power supply is required to be produced from a 12 V DC power supply input source. If the maximum power rating of the Zener diode used is 4 W, calculate the maximum Current through zener diode.

Ans
✗ 1. 200 mA
✗ 2. 150 mA
✓ 3. 400 mA
✗ 4. 100 mA

Question ID : **630680512609**
Option 1 ID : **6306802003407**
Option 2 ID : **6306802003408**
Option 3 ID : **6306802003406**
Option 4 ID : **6306802003409**
Status : **Answered**
Chosen Option : **3**

Q.98 A Zener diode is specially designed to _____.

Ans
✓ 1. Operate in the reverse breakdown region.
✗ 2. Increase the forward current.
✗ 3. Operate in the forward-biased region.
✗ 4. Enhance power dissipation.

Question ID : **630680512608**
Option 1 ID : **6306802003404**
Option 2 ID : **6306802003403**
Option 3 ID : **6306802003402**
Option 4 ID : **6306802003405**
Status : **Answered**
Chosen Option : **1**

Q.99 The integral form of Faraday's law is given by:

Ans
✗ 1. The electromotive force around a closed loop is proportional to the electric field
✗ 2. The magnetic field around a closed loop is equal to the electric flux
✓ 3. The electromotive force around a closed loop is equal to the time rate of change of magnetic flux through the loop
✗ 4. The magnetic flux through a closed surface is zero

Question ID : **630680512680**
Option 1 ID : **6306802003692**
Option 2 ID : **6306802003693**
Option 3 ID : **6306802003690**
Option 4 ID : **6306802003691**
Status : **Answered**
Chosen Option : **3**

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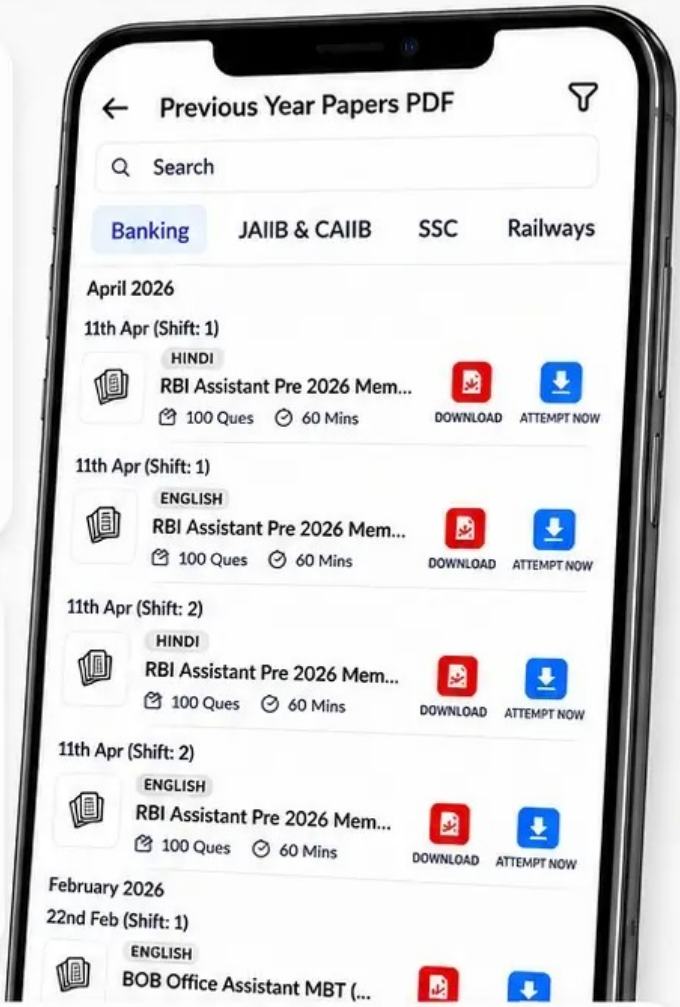
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Q.100 In a monostable multivibrator using IC 555, if the resistance R is 100 kΩ and the capacitance C is 10 μF, what is the pulse width of the output?

Ans
1. 1.1 ms
2. 1.1 s
3. 2.2 s
4. 2.2 ms

Question ID : **630680512628**
Option 1 ID : **6306802003482**
Option 2 ID : **6306802003483**
Option 3 ID : **6306802003484**
Option 4 ID : **6306802003485**
Status : **Answered**
Chosen Option : **2**