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PGD BIG DATA AND PHD Computaional Biology TRACK 3

Group Number :	1
Group Id :	128206196
Group Maximum Duration :	0
Group Minimum Duration :	120
Revisit allowed for view? :	No
Revisit allowed for edit? :	No
Break time:	0
Group Marks:	100

Part-A

Section Id :	128206534
Section Number :	1
Section type :	Online
Mandatory or Optional:	Mandatory
Number of Questions:	15
Number of Questions to be attempted:	15
Section Marks:	30
Display Number Panel:	Yes
Group All Questions:	No

Sub-Section Number:	1
Sub-Section Id:	128206533
Question Shuffling Allowed :	Yes

Question Number : 1 Question Id : 12820611581 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

...ET, above the pinch-off voltage, as the drain voltage increases,

(A) the drain current remains constant.

(B) the drain current decreases.

(C) the drain current increases linearly.

(D) the drain current varies parabolically.

Options :
12820645771. A
12820645772. B
12820645773. C
12820645774. D

Question Number : 2 Question Id : 12820611582 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0

Which of the following techniques are used to generate frequency modulated signal :

1. Armstrong

2. Foster-Sealy Discriminator

3. Balanced Modulator

4. Reactance Modulator

Which one of the following is true?

(A) 1 and 2 only

(B) 1, 2 and 3 only

(C) 1 and 3 only

(D) 1 and 4 only

Options :
12820645775. A
12820645776. B
12820645777. C
12820645778. D

Question Number : 3 Question Id : 12820611583 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0

r two terminal circuit can be replaced by an equivalent circuit consisting of a voltage source V_t in series with a resistor R_t where R_t is the ratio of

1. open circuit voltage to the short circuit current at the terminal pair.

2. short circuit current to the short circuit voltage at the terminal.

3. Open circuit voltage to the open circuit current at the terminal pair.

4. the independent sources are turned off.

(A) 1 and 4

(B) 2 and 4

(C) 3 and 4

(D) 2 and 3

Options :

12820645779. A

12820645780. B

12820645781. C

12820645782. D

Question Number : 4 Question Id : 12820611584 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0

The most important application of tunnel diode is
(A) as rectifier

(B) as switching device in digital circuits

(C) as voltage controlled device

(D) as oscillator

Options :

12820645783. A

12820645784. B

12820645785. C

12820645786. D

Question Number : 5 Question Id : 12820611585 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0

Laplace transform of $e^{-at} \sin wt$ is
(A) $w/(s + a)^2 + w^2$

(B) $w/(s - a)^2 + w^2$

(C) $w/(s - a)^2 - w^2$

(D) $w/(s + a)^2 - w^2$

12820645787. A
12820645788. B
12820645789. C
12820645790. D

**Question Number : 6 Question Id : 12820611586 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical**
Correct Marks : 2 Wrong Marks : 0

For a steady magnetic field, which of the following is true :

1. The tangential component of magnetic field is continuous across any boundary except the surface of perfect conductor.

2. The tangential component of magnetic flux density is continuous across any boundary.

3. The normal component of magnetic flux density is continuous across any boundary.

4. The normal component of electric field is continuous across the boundary.

Which one of the following is correct?

(A) 1 and 2

(B) 1 and 3

(C) 1 and 4

(D) 3 and 4

Options :
12820645791. A
12820645792. B
12820645793. C
12820645794. D

**Question Number : 7 Question Id : 12820611587 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical**
Correct Marks : 2 Wrong Marks : 0

r the following statements : Losses in optical fibres are caused by

1. Impurities in the fibre material

2. Microbending

3. Splicing

4. Step index profile

Of these statements :

(A) 1, 3 & 4 are correct.

(B) 2, 3 & 4 are correct.

(C) 1, 2 & 3 are correct.

(D) 1, 2 & 4 are correct.

Options :
12820645795. A
12820645796. B
12820645797. C
12820645798. D

Question Number : 8 Question Id : 12820611588 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

Arrange in ascending order based on power dissipation the following logic families :
(i) ECL

(ii) TTL

(iii) CMOS

Codes :

(A) (i), (ii), (iii)

(B) (iii), (ii), (i)

(C) (i), (iii), (ii)

(D) (iii), (i), (ii)

Options :
12820645799. A
12820645800. B
12820645801. C
12820645802. D

Question Number : 9 Question Id : 12820611589 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

the following bands/waves :

1. L band   2. C band

3. Ku band   4. Ka band

Arrange them in increasing frequency order, the correct sequence of the ascending order in terms of frequency is

(A) 1, 2, 3, 4

(B) 4, 3, 2, 1

(C) 1, 3, 2, 4

(D) 4, 2, 3, 1

Options :

12820645803. A
12820645804. B
12820645805. C
12820645806. D

Question Number : 10 Question Id : 12820611590 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

. The primary of the helix in a travelling wave tube is to

(A) prevent the electron beam from spreading in the long tube

(B) reduce the axial velocity of the RF field

(C) ensure broadband operation

(D) reduce the noise figure.

Options :

12820645807. A
12820645808. B
12820645809. C
12820645810. D

Question Number : 11 Question Id : 12820611591 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

Which statement is valid about magnetic tape?

(A) It is a plastic ribbon
(B) It is coated on both sides with iron oxide
(C) It can be erased and reused
(D) All of the above

Options :

12820645811. A

12820645812. B

12820645813. C
12820645814. D

Question Number : 12 **Question Id : 12820611592** **Question Type : MCQ** **Option Shuffling : No** **Display Question Number : Yes**
Single Line Question Option : No **Option Orientation : Vertical**
Correct Marks : 2 **Wrong Marks : 0**

Which of the following is associated with error detector?
(A) Odd parity bit
(B) Even parity bit
(C) Both of the above
(D) None of the above

Options :

12820645815. A

12820645816. B

12820645817. C

12820645818. D

Question Number : 13 **Question Id : 12820611593** **Question Type : MCQ** **Option Shuffling : No** **Display Question Number : Yes**
Single Line Question Option : No **Option Orientation : Vertical**
Correct Marks : 2 **Wrong Marks : 0**

Access time is
(A) seek time + latency time
(B) seek time
(C) seek time – latency time
(D) latency time

Options :

12820645819. A

12820645820. B

12820645821. C

12820645822. D

Question Number : 14 **Question Id : 12820611594** **Question Type : MCQ** **Option Shuffling : No** **Display Question Number : Yes**
Single Line Question Option : No **Option Orientation : Vertical**
Correct Marks : 2 **Wrong Marks : 0**

RAD stands for
(A) Relative Application Development
(B) Rapid Application Development
(C) Rapid Application Document
(D) None of the mentioned

Options :

12820645823. A

12820645824. B

12820645825. C

12820645826. D

Question Number : 15 **Question Id : 12820611595** **Question Type : MCQ** **Option Shuffling : No** **Display Question Number : Yes**
Single Line Question Option : No **Option Orientation : Vertical**
Correct Marks : 2 **Wrong Marks : 0**

of the following testing types is not a part of system testing?

(A) Recovery testing
(B) Stress testing
(C) System testing
(D) Random testing

Options :

12820645827. A

12820645828. B

12820645829. C

12820645830. D

Part–B Engineering Science

Section Id :	128206335
Section Number :	2
Section type :	Online
Mandatory or Optional:	Optional
Number of Questions:	35
Number of Questions to be attempted:	35
Section Marks:	70
Display Number Panel:	Yes
Group All Questions:	No

Sub-Section Number:	1
Sub-Section Id:	12820654
Question Shuffling Allowed :	Yes

Question Number : 16 Question Id : 12820611596 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0

The free space wave number 'K$_0$' is defined as

(A) $K_0 = W_0 (\mu_0 \varepsilon_0)^{1/2}$
(B) $K_0 = W_0 (\mu_0/\varepsilon_0)^{1/2}$
(C) $K_0 = W_0 / (\mu_0 \varepsilon_0)^{1/2}$
(D) $K_0 = W_0 / (\varepsilon_0 /\mu_0)^{1/2}$

Options :

12820645831. A

12820645832. B

12820645833. C

12820645834. D

Question Number : 17 Question Id : 12820611597 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0

the field intensity vector identified as a phasor by its subscript 'S' and K_0 is the wave number, equation $\partial^2 E_S = -K^2 E_S$ is known as :

(A) Vector Helmholtz equation
(B) Poisson's equation

(C) Coulombs gauge equation

(D) Diffusion equation

Options :
12820645835. A
12820645836. B
12820645837. C
12820645838. D

Question Number : 18 Question Id : 12820611598 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0

The standard reference antenna for the directive gain is:

(A) Infinitesimal dipole

(B) Isotropic antenna

(C) Elementary dipole

(D) Half wave dipole

Options :
12820645839. A
12820645840. B
12820645841. C
12820645842. D

Question Number : 19 Question Id : 12820611599 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0

F_N a half wave dipole the directivity 'D' in dB is of the order of:

(A) 1.76 dB
(B) 3.14 dB

(C) 2.15 dB
(D) 1.64dB

Options :
12820645843. A
12820645844. B
12820645845. C
12820645846. D

Correct Marks : 2 Wrong Marks : 0

Which of the following antenna is not a wideband antenna
(A) Discone
(B) Helical
(C) Folded dipole
(D) Marconi

Options :

12820645847. A

12820645848. B

12820645849. C

12820645850. D

Correct Marks : 2 Wrong Marks : 0

If 'Z' is the impedance of a simple dipole, the impedance of 'n' fold dipole is given by:

(A) nZ

(B) n^2Z

(C) Z/n

(D) Z/n^2

Options :

12820645851. A

12820645852. B

12820645853. C

12820645854. D

Correct Marks : 2 Wrong Marks : 0

Patch is a :

(A) High gain wideband antenna

(B) High gain narrowband antenna

(C) Low gain narrowband antenna

(D) Low gain wideband antenna

Options :

12820645855. A

12820645856. B

12820645857. C

12820645858. D

Correct Marks : 2 Wrong Marks : 0

The directivity of a small loop and a short dipole has the following ratio:

(A) 2:1

(B) 1:2

(C) 1:1

(D) 1:4

Options :

12820645859. A

12820645860. B

12820645861. C

12820645862. D

Question Number : 24 Question Id : 12820611604 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

The maximum gain for H-plane sectoral horn with slant length of 12λ occurs when aperture width is:

(A) λ

(B) 3 λ

(C) 6 λ

(D) 12 λ

Options :

12820645863. A

12820645864. B

12820645865. C

12820645866. D

Question Number : 25 Question Id : 12820611605 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

Helical antennas are often used for satellite tracking in VHF range because of:

(A) Troposcatter

(B) Super-refraction

(C) Ionospheric refraction

(D) Faraday effect

Options :

12820645867. A

12820645868. B

12820645869. C

12820645870. D

A lossless transmission line of $Z_o = 100$ Ω is terminated by an unknown impedance. The termination is found to be at a maximum of the voltage standing wave and the VSWR is 5. What is the value of the terminating impedance?

(A) 20 Ω

(B) 500 Ω

(C) $(500)^{1/2}$ Ω

(D) 105 Ω

Options :
12820645871. A
12820645872. B
12820645873. C
12820645874. D

A rectangular waveguide with dimensions of 3X2 cm operates in the TM_{11} mode at 10 GHz. Determine the characteristic wave impedance.

(A) 62 Ω

(B) 54 Ω

(C) 50 Ω

(D) 100 Ω

Options :
12820645875. A
12820645876. B
12820645877. C
12820645878. D

Calculate the resonant frequency of a circular resonator of dimensions a = 3cm, b = 2cm and l = 4cm, when the mode of operator is TE_{101}.

(A) 10 GHz

(B) 4.25 GHz

(C) 6.25 GHz

(D) 8 GHz

12820645879. A
12820645880. B
12820645881. C
12820645882. D

Question Number : 29 Question Id : 12820611609 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0

Two identical directional couplers are used in a waveguide to sample the incident and reflected powers. The output of the two couplers is found to be 2.5 mW and 0.15 mW. Find the value of VSWR in the waveguide.

(A) 2.64

(B) 1.64

(C) 3.64

(D) 4.64

Options :
12820645883. A
12820645884. B
12820645885. C
12820645886. D

Question Number : 30 Question Id : 12820611610 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0

The radiation efficiency of an antenna with input power 100 W and power dissipation 1 W is:

(A) 9.9 %

(B) 0.99%

(C) 99%

(D) 100%

Options :
12820645887. A
12820645888. B
12820645889. C
12820645890. D

Question Number : 31 Question Id : 12820611611 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0

n loss in a transmission line is given by:

Where, P_i = input power at port-1, P_r = reflected power at port-1, P_o = output power at port-2

(A) $10 \log \left\{ \dfrac{P_i}{P_i - P_r} \right\}$

(B) $10 \log \left\{ \dfrac{P_i - P_r}{P_o} \right\}$

(C) $10 \log \{ P_i / P_r \}$

(D) $10 \log \{ P_i / P_o \}$

Options :

12820645891. A

12820645892. B

12820645893. C

12820645894. D

Question Number : 32 Question Id : 12820611612 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0

Matrix [S] is symmetric when:

(A) $S_{ij} = 0$

(B) $S_{ij} = S_{ji}$

(C) $[S] [S]^* = I$

(D) $S_{ii} = 0$

Options :

12820645895. A

12820645896. B

12820645897. C

12820645898. D

Question Number : 33 Question Id : 12820611613 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0

Microwave component that has 3 ports:

(A) Directional coupler

(B) Rat-race coupler

(C) Magic Tee

(D) H-plane Tee

Options :

12820645899. A

12820645900. B

12820645901. C

12820645902. D

An antenna that is circularly polarized is:

(A) Small circular loop

(B) Parabolic reflector

(C) Yagi-uda

(D) Helical

Options :
12820645903. A
12820645904. B
12820645905. C
12820645906. D

Question Number : 35 Question Id : 12820611615 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0

The angular distribution of the transmitted power around the antenna is generally known as:

(A) Angular pattern

(B) Power pattern

(C) Radiation pattern

(D) Antenna array

Options :
12820645907. A
12820645908. B
12820645909. C
12820645910. D

Question Number : 36 Question Id : 12820611616 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0

Which one of the following is a property of the solutions to the Laplace equation: $\nabla^2 f = 0$?

(A) The solutions have neither maxima nor minima anywhere except at the boundaries.
(B) The solutions are not separable in the coordinates.
(C) The solutions are not continuous.
(D) The solutions are not dependent on the boundary conditions.

Options :
12820645911. A
12820645912. B
12820645913. C
12820645914. D

Which one of the following is an eigen function of the class of all continuous-time, linear, time-invariant systems ((t) denotes the unit-step function)?

(A) $e^{j\omega_0 t}(t)$

(B) $\cos(\omega_0 t)$

(C) $e^{j\omega_0 t}$

(D) $\sin(\omega_0 t)$

Options :

12820645915. A

12820645916. B

12820645917. C

12820645918. D

Question Number : 38 Question Id : 12820611618 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0

Consider the following statements for a metal oxide semiconductor field effect transistor (MOSFET):

P: As channel length reduces, OFF-state current increases.

Q: As channel length reduces, output resistance increases.

R: As channel length reduces, threshold voltage remains constant.

S: As channel length reduces, ON current increases.
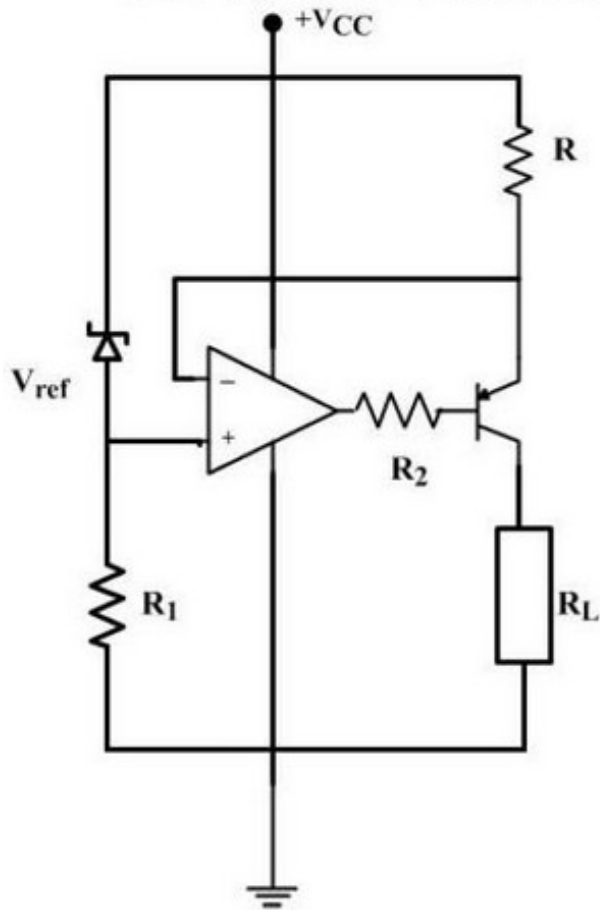
Which of the above statements are INCORRECT?

(A) P and Q

(B) P and S

(C) Q and R

(D) R and S

Options :

12820645919. A

12820645920. B

12820645921. C

12820645922. D

Question Number : 39 Question Id : 12820611619 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0

Consider the constant current source shown in the figure below. Let β represent the current gain of the transistor.
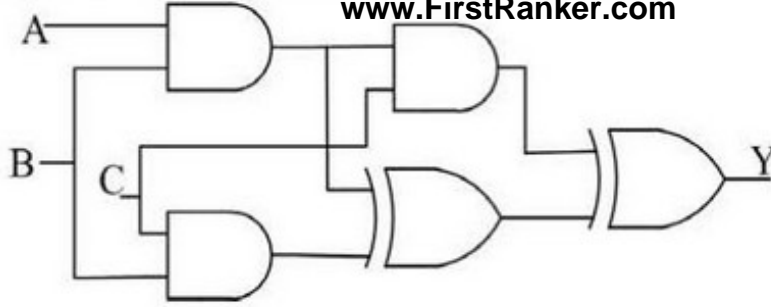

The load current $I0$ through RL is

(A) $I_0 = \left(\frac{\beta+1}{\beta}\right)\frac{V_{ref}}{R}$

(B) $I_0 = \left(\frac{\beta}{\beta+1}\right)\frac{V_{ref}}{R}$

(C) $I_0 = \left(\frac{\beta+1}{\beta}\right)\frac{V_{ref}}{2R}$

(D) $I_0 = \left(\frac{\beta}{\beta+1}\right)\frac{V_{ref}}{2R}$

out of the combinational circuit given below is

(A) A+B+C

(B) A(B+C)

(C) B(C+A)

(D) C(A+B)

Options :
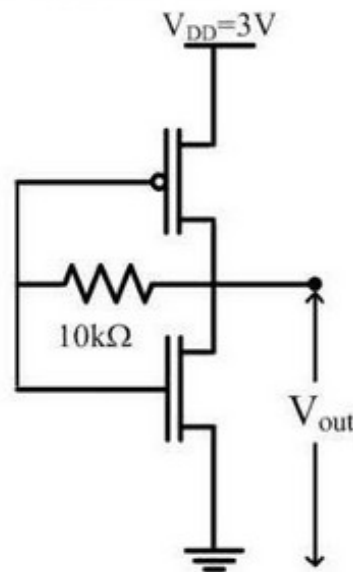
12820645927. A

12820645928. B

12820645929. C

12820645930. D

Question Number : 41 Question Id : 12820611621 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

What is the voltage *Vout* in the following circuit?

(A) 0 V

(B) (|VT of PMOS| + VT of NMOS) / 2

(C) Switching threshold of inverter

(D) VDD

Options :

12820645931. A

12820645932. B

12820645933. C

12820645934. D

Question Number : 42 Question Id : 12820611622 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

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Correct Marks : 2 Wrong Marks : 0

A closed-loop control system is stable if the Nyquist plot of the corresponding open-loop transfer function

(A) encircles the s-plane point $(-1 + j0)$ in the counter clockwise direction as many times as the number of right-half s-plane poles.

(B) encircles the s-plane point $(0 - j1)$ in the clockwise direction as many times as the number of right-half s-plane poles.

(C) encircles the s-plane point $(-1 + j0)$ in the counter clockwise direction as many times as the number of left-half s-plane poles.

(D) encircles the s-plane point $(-1 + j0)$ in the counter clockwise direction as many times as the number of right-half s-plane zeros.

Options :

12820645935. A

12820645936. B

12820645937. C

12820645938. D

Question Number : 43 Question Id : 12820611623 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

The propagation constant of a lossy transmission line is $(2 + j5)$ m^{-1} and its characteristic impedance is $(50 + j0)$ Ω at $\omega = 10^6$ rad s^{-1}. The values of the line constants L, C, R, G are, respectively,

(A) L = 200 μH/m, C = 0.1 μF/m, R = 50 Ω/m, G = 0.02 S/m

(B) L = 250 μH/m, C = 0.1 μF/m, R = 100 Ω/m, G = 0.04 S/m

(C) L = 200 μH/m, C = 0.2 μF/m, R = 100 Ω/m, G = 0.02 S/m

(D) L = 250 μH/m, C = 0.2 μF/m, R = 50 Ω/m, G = 0.04 S/m

Options :

12820645939. A

12820645940. B

12820645941. C

12820645942. D

Question Number : 44 Question Id : 12820611624 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

rs-Moll model of a BJT is valid

(A) only in active mode

(B) only in active and saturation modes

(C) only in active and cut-off modes

(D) in active, saturation and cut-off modes

Options :

12820645943. A

12820645944. B

12820645945. C

12820645946. D

Question Number : 45 Question Id : 12820611625 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

Consider the signal $(t) = \cos(6\pi t) + \sin(8\pi t)$, where t is in seconds. The Nyquist sampling rate (in samples/second) for the signal $(t) = (2t + 5)$ is

(A) 8

(B) 12

(C) 16

(D) 32

Options :

12820645947. A

12820645948. B

12820645949. C

12820645950. D

Question Number : 46 Question Id : 12820611626 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

A discrete-time signal $[n] = [n - 3] + 2[n - 5]$ has z-transform $X(z)$. If $(z) = (-z)$ is the z-transform of another signal $y[n]$, then

(A) $[n] = [n]$

(B) $[n] = [-n]$

(C) $[n] = -[n]$

(D) $[n] = -[-n]$

Options :

12820645951. A

12820645952. B

12820645953. C

Question Number : 47 Question Id : 12820611627 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

In an 8085 microprocessor, the contents of the accumulator and the carry flag are A7 (in hex) and 0, respectively. If the instruction RLC is executed, then the contents of the accumulator (in hex) and the carry flag, respectively, will be

(A) 4E and 0
(B) 4E and 1
(C) 4F and 0
(D) 4F and 1

Options :

12820645955. A
12820645956. B
12820645957. C
12820645958. D

Question Number : 48 Question Id : 12820611628 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

The minimum number of 2-input NAND gates required to implement a 2-input XOR gate is
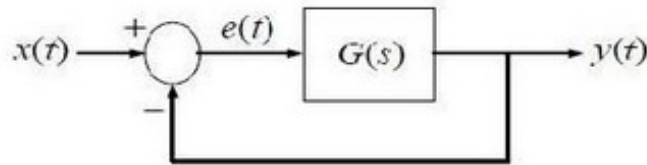
(A) 4
(B) 5
(C) 6
(D) 7

Options :

12820645959. A
12820645960. B
12820645961. C
12820645962. D

Question Number : 49 Question Id : 12820611629 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

unity feedback control system shown in the figure, the open-loop transfer function $G(s)$ is given as

$$G(s) = \frac{2}{s(s+1)}.$$

The steady state error *ess* due to a unit step input is

(A) 0
(B) 0.5
(C) 1.0
(D) ∞

Options :
12820645963. A
12820645964. B
12820645965. C
12820645966. D

Question Number : 50 Question Id : 12820611630 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0

If a right-handed circularly polarized wave is incident normally on a plane perfect conductor, then the reflected wave will be

(A) right-handed circularly polarized

(B) left-handed circularly polarized

(C) elliptically polarized with a tilt angle of 450

(D) horizontally polarized

Options :
12820645967. A
12820645968. B
12820645969. C
12820645970. D

Part-B Computer Science

Optional

Number of Questions: 35

Number of Questions to be attempted: 35

Section Marks: 70

Display Number Panel: Yes

Group All Questions: No

Sub-Section Number: 1

Sub-Section Id: 128206535

Question Shuffling Allowed : Yes

Question Number : 51 Question Id : 12820611631 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

What is the maximum length of CAT-5 UTP cable in Fast Ethernet network?
(A) 500 meters
(B) 500 centimeters
(C) 100 meters
(D) 1000 meters

Options :

12820645971. A

12820645972. B

12820645973. C

12820645974. D

Question Number : 52 Question Id : 12820611632 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

8-bit 1's complement form of −77.25 is:

(A) 10110010.1011

(B) 01001101.0100

(C) 01001101.0010

(D) 10110010.1101

Options :

12820645975. A

12820645976. B

12820645977. C

12820645978. D

Question Number : 53 Question Id : 12820611633 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

a file of 10, 000 characters is to be sent over a line at 2400 bps. Assume that the data is sent in frames. Each frame consists of 1000 characters and an overhead of 48 bits per frame. Using synchronous transmission, the total overhead time is:

(A) 0.05 second

(B) 0.1 second

(C) 0.2 second

(D) 2.0 second

Options :

12820645979. A

12820645980. B

12820645981. C

12820645982. D

Question Number : 54 Question Id : 12820611634 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0

Assume, L is regular language. Let statements S1 and S2 are defined as: S1: SQRT $(L) = \{x|$ for some y with $|y| = |x|2, xy \in L\}$. S2: LOG $(L) = \{x|$ for some y with $|y| = 2|x|, xy \in L\}$. Which of the following is true?

(A) S1 is correct and S2 is not correct.

(B) Both S1 and S2 are correct.

(C) Both S1 and S2 are incorrect.

(D) S1 is not correct and S2 is correct.

Options :

12820645983. A

12820645984. B

12820645985. C

12820645986. D

Question Number : 55 Question Id : 12820611635 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0

Which normal form is considered as adequate for usual database design?

(A) 2NF

(B) 3NF

(C) 4NF

(D) 5NF

Options :

12820645987. A

12820645988. B

12820645989. C

12820645990. D

Question Number : 56 Question Id : 12820611636 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0

grammar : S1→Sc, S→SA|A, A→aSb|ab, there is a rightmost derivation, S1=>Sc =>SAC=>SaSbc. Thus, SaSbc is a right sentential form, and its handle is

(A) SaS
(B) be
(C) Sbe
(D) aSb

Options :

12820645991. A
12820645992. B
12820645993. C
12820645994. D

Question Number : 57 Question Id : 12820611637 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0

Which is the correct statement(s) for Non Recursive predictive parser?
S1: First(α) = {t | α => * t β for some string β } => *tβ
S2: Follow(X) = { a | S => * αXa β for some strings α and β }
(A) Both statements S1 and S2 are incorrect.
(B) S1 is incorrect and S2 is correct.
(C) Both statements S1 and S2 are correct.
(D) S1 is correct and S2 is incorrect.

Options :

12820645995. A
12820645996. B
12820645997. C
12820645998. D

Question Number : 58 Question Id : 12820611638 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0

Consider an undirected graph G with 100 nodes. The maximum number of edges to be included in G so that the graph is not connected is:
(A) 4851
(B) 4852
(C) 5248
(D) 2426

Options :

12820645999. A
12820646000. B
12820646001. C
12820646002. D

Question Number : 59 Question Id : 12820611639 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0

...number of ways to paint 12 offices so that 3 of them will be green, 2 of them pink, 2 of them yellow and the rest ones white.

(A) 55,440
(B) 4.790E+08
(C) 39, 91,680
(D) 1, 66,320

Options :

12820646003. A

12820646004. B

12820646005. C

12820646006. D

Question Number : 60 Question Id : 12820611640 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

What is the output of the following program segment?

```
sum (n) {
        if ( n < 1 ) return n;
        else return (n + sum(n–1));
        }
main(){
        print f("%d", sum(5));

        }
```

(A) 11
(B) 15
(C) 25
(D) 34

Options :

12820646007. A

12820646008. B

12820646009. C

12820646010. D

Question Number : 61 Question Id : 12820611641 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

The hit ratio of a Translation Look Aside Buffer (TLAB) is 80%. It takes 20 nanoseconds (ns) to search TLAB and 100 ns to access main memory. The effective memory access time is:

(A) 40 ns
(B) 100 ns
(C) 140 ns
(D) 240 ns

Options :

12820646011. A

Question Number : 62 Question Id : 12820611642 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0

If the disk head is located initially at 32, find the number of disk moves required with FCFS if the disks queue of I/O blocks requests are 98, 37, 14, 124, 65, 67.
(A) 312
(B) 412
(C) 326
(D) 310

Options :
12820646015. A
12820646016. B
12820646017. C
12820646018. D

Question Number : 63 Question Id : 12820611643 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0

In which addressing mode, the effective address of the operand is generated by adding a constant value to the contents of register?
(A) Absolute
(B) Immediate
(C) Indirect
(D) Index

Options :
12820646019. A
12820646020. B
12820646021. C
12820646022. D

Question Number : 64 Question Id : 12820611644 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0

Which of the following is true?
(A) A relation in BCNF is always in 3NF.
(B) A relation in 3NF is always in BCNF.
(C) BCNF and 3NF are same.
(D) A relation in BCNF is not in 3NF.

Options :
12820646023. A
12820646024. B
12820646025. C
12820646026. D

Correct Marks : 2 Wrong Marks : 0

Regression testing is primarily related to
(A) Functional testing
(B) Development testing
(C) Data flow testing
(D) Maintenance testing

Options :

12820646027. A

12820646028. B

12820646029. C

12820646030. D

Question Number : 66 Question Id : 12820611646 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

Big-O estimates for the factorial function and the logarithm of the factorial function
i.e. n! and log n! is given by
(A) O(n!) and O(n log n)
(B) O(nn) and O(n log n)
(C) O(n!) and O(log n!)
(D) O(nn) and O(log n!)

Options :

12820646031. A

12820646032. B

12820646033. C

12820646034. D

Question Number : 67 Question Id : 12820611647 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

A software agent is defined as:
I.   A software developed for accomplishing a given task.
II.   A computer program which is capable of acting on behalf of the user in order
        to accomplish a given computational task.
III.   An open source software for accomplishing a given task.
(A) II only
(B) III only
(C) I and III
(D) II and III

Options :

12820646035. A

12820646036. B

12820646037. C

12820646038. D

Correct Marks : 2 Wrong Marks : 0

Consider a system with five processes P0 through P4 and three resource types R1, R2 and R3. Resource type R1 has 10 instances, R2 has 5 instances and R3 has 7 instances. Suppose that at time T0, the following snapshot of the system has been taken :

Assume that now the process P1 requests one additional instance of type R1 and two instances of resource type R3. The state resulting after this allocation will be
(A) Ready State
(B) Safe State
(C) Blocked State
(D) Unsafe State

Options :

12820646039. A

12820646040. B

12820646041. C

12820646042. D

Question Number : 69 Question Id : 12820611649 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

An algorithm is made up of 2 modules M1 and M2. If time complexity of modules M1 and M2 are $h(n)$ and $g(n)$ respectively, the time complexity of the algorithm is
(A) min $(h(n), g(n))$
(B) $h(n) * g(n)$
(C) $h(n) + g(n)$
(D) max $(h(n), g(n))$

Options :

12820646043. A

12820646044. B

12820646045. C

12820646046. D

Question Number : 70 Question Id : 12820611650 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

When we pass an array as an argument to a function, what actually gets passed?
(A) Address of the array
(B) Values of the elements of the array
(C) Base address of the array
(D) Number of elements of the array

Options :

12820646047. A

12820646048. B

12820646049. C

12820646050. D

Correct Marks : 2 Wrong Marks : 0

Let R ={A, B, C, D, E, F} be a relation scheme with the following dependencies
C→F,E→A,EC→D,A→B. Which of the following is a key for R ?
(A) CD
(B) EC
(C) AE
(D) AC

Options :

12820646051. A

12820646052. B

12820646053. C

12820646054. D

Question Number : 72 Question Id : 12820611652 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

Consider a full-adder with the following input values:
I.   x=1, y=0 and Ci (carry input) = 0
II.   x=0, y=1 and Ci = 1
Compute the values of S (sum) and C0 (carry output) for the above input values.

(A) S=1 , C0= 0 and S=0 , C0= 1
(B) (b) S=0 , C0= 0 and S=1 , C0= 1
(C) S=1 , C0= 1 and S=0 , C0= 0
(D) (d) S=0 , C0= 1 and S=1 , C0= 0

Options :

12820646055. A

12820646056. B

12820646057. C

12820646058. D

Question Number : 73 Question Id : 12820611653 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

Consider the grammer
$$S→PQ|SQ|PS$$
$$P→X$$
$$Q→Y$$
to get a string of n terminals, the number of productions to be used
(A)n^2
(B)$n+1$
(C)$2n$
(D)$2n-1$

Options :

12820646059. A

12820646060. B
12820646061. C
12820646062. D

Question Number : 74 Question Id : 12820611654 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

An Assertion is a predicate expressing a condition we wish database to always satisfy. The correct syntax for Assertion is :
(A) CREATE ASSERTION 'ASSERTION Name' CHECK 'Predicate'
(B) CREATE ASSERTION 'ASSERTION NAME'
(C) CREATE ASSERTION, CHECK Predicate
(D) SELECT ASSERTION

Options :

12820646063. A
12820646064. B
12820646065. C
12820646066. D

Question Number : 75 Question Id : 12820611655 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

Which one from the following is false ?
(A) LALR parser is Bottom - Up parser
(B) A parsing algorithm which performs a left to right scanning and a right most deviation is RL (1).
(C) LR parser is Bottom - Up parser.
(D) In LL(1), the 1 indicates that there is a one - symbol look - ahead.

Options :

12820646067. A
12820646068. B
12820646069. C
12820646070. D

Question Number : 76 Question Id : 12820611656 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

Which of the following is not a form of memory?
(A) Instruction cache
(B) Instruction register
(C) Instruction opcode
(D) Both (a) and (b)

Options :

12820646071. A
12820646072. B
12820646073. C
12820646074. D

Correct Marks : 2 Wrong Marks : 0

Which memory is difficult to interface with processor?

(A) Static memory
(B) Dynamic memory
(C) ROM
(D) None of these

Options :

12820646075. A

12820646076. B

12820646077. C

12820646078. D

Question Number : 78 Question Id : 12820611658 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

A CPU has a 32 kB direct mapped cache with 128-byte block size. Suppose A is a two-dimensional array of size 512 x 512 with elements that occupy 8-bytes each. Consider the following two C code segments, Pl and P2

P1 : for (i=0; i<512; i++) {
for (j=0; j<512; j++) {
X+ = A[i] [j];
}
}

P2 : for(i=0; i<512; i++) {
for (j=0 ; j< 512; j ++) {
{X+ = A[j] [i];}
}
}

P1 and P2 are executed independently with the same initial state, namely, the array A is not in the cache and i, j, x are in registers. Let the number of cache misses experienced by P1 be M_1 and that for P2 be M_2.

The value of the ratio M_1/M_2 is

(A) 0
(B) 1/6
(C) 1/8
(D) 16

Options :

12820646079. A

12820646080. B

12820646081. C

12820646082. D

Correct Marks : 2 Wrong Marks : 0

An ADT is defined to be a mathematical model of a user-defined type along with the collection of all _____ operations on that model
  (A) Cardinality
  (B) Assignment
  (C) Primitive
  (D) Structured

Options :
12820646083. A
12820646084. B
12820646085. C
12820646086. D

Question Number : 80 Question Id : 12820611660 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0

. An algorithm is made up of 2 modules M1&M2. If order of M1 is f(n) & M2 is g(n) then the order of algorithm is?
  (A) Max(f(n), g(n))
  (B) Min(f(n), g(n))
  (C) f(n)+g(n)
  (D) f(n)*g(n)

Options :
12820646087. A
12820646088. B
12820646089. C
12820646090. D

Question Number : 81 Question Id : 12820611661 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0

Naive prediction is

  (A) A class of learning algorithms that try to derive a Prolog program from examples
  (B) A table with n independent attributes can be seen as an n- dimensional space.
  (C) A prediction made using an extremely simple method, such as always predicting the same output.
  (D) None of these;

Options :
12820646091. A
12820646092. B
12820646093. C
12820646094. D

'm' processes share 'n' resources of the same type. The maximum need of each process doesn't exceed 'n' and the sum all the their maximum needs is always less than m + n. In this set up

(A) deadlock can never occur
(B) deadlock may occur
(C) deadlock has to occur
(D) none of these

Options :

12820646095. A

12820646096. B

12820646097. C

12820646098. D

Question Number : 83 Question Id : 12820611663 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

To obtain better memory utilization, dynamic loading is used. With dynamic loading, a routine is not loaded until it is called for. For implementing dynamic loading.

(A) special support from hardware is essential
(B) special support from operating system is essential
(C) special support from both hardware and operating system are essential
(D) user programs can implement dynamic loading without any special support from the operating system or the hardware

Options :

12820646099. A

12820646100. B

12820646101. C

12820646102. D

Question Number : 84 Question Id : 12820611664 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

Correct hierarchical relationship among context- free, right-linear, and context- sensitive language is

(A) context-free $\subset$ right-linear $\subset$ context-sensitive
(B) context-free $\subset$ context-sensitive $\subset$ right-linear
(C) context-sensitive $\subset$ right-linear $\subset$ context-free
(D) right-linear $\subset$ context-free $\subset$ context-sensitive

Options :

12820646103. A

12820646104. B

12820646105. C

12820646106. D

Correct Marks : 2 Wrong Marks : 0

Which of the following statements is correct?

(A) A = { If $a^n b^n$ | n = 0, 1, 2, 3 ..} is regular language
(B) Set B of all strings of equal number of a's and b's defines a regular language
(C) L (A* B*)∩ B gives the set A
(D) None of these

Options :

12820646107. A

12820646108. B

12820646109. C

12820646110. D