

PROVISIONAL ANSWER KEY

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Question1:-Name the person who was greatly influenced by the radical reformist journal of Cairo, the Al-Manar

- A:-Moulana Abdul Kalam Azad
- B:-Sir Sayyid Ahmed Khan
- C:-Mohammed Abdul Rahman
- D:-Vakkom Moulavi

Correct Answer:- Option-D

Question2:-Which among the following organization was founded in 1914 ?

- A:-Samathwa Samajam
- B:-Nair Service Society
- C:-SNDP Yogam
- D:-Yogaskhema Sabha

Correct Answer:- Option-B

Question3:-Which one of the following is not written by Ponkunnam Varkey ?

- A:-Vikarasadanam
- B:-Nivedanam
- C:-Aniyara
- D:-Kudumbini

Correct Answer:- Option-D

Question4:-Name the first editor of Swadeshbhimani

- A:-Ramakrishna Pillai
- B:-P. Krishna Pillai
- C:-K. P. Kesava Menon
- D:-C. P. Govinda Pillai

Correct Answer:- Option-D

Question5:-Vagbhadanandha was the main disciple of

- A:-Sree Narayanaguru
- B:-Chattampi Swamikal
- C:-Brahmananda Sivayogi
- D:-V. T Bhattathiripad

Correct Answer:- Option-C

Question6:-Monetary Museum of Reserve Bank of India is situated at

- A:-Kolkata
- B:-Mumbai
- C:-Bengaluru
- D:-Delhi

Correct Answer:- Option-B

Question7:-Recently Thousand history buffs gathered in Czech Republic to re-enact the Battle of Austerlitz. Name the ruler related with this Battle.

- A:-Napoleon
- B:-Henry V
- C:-Louis XVI
- D:-Sir Nicholas II

Correct Answer:- Option-A

Question8:-India made the Howitzer Artillery gun deal with

- A:-France
- B:-USA
- C:-Russia
- D:-Israel

Correct Answer:- Option-B

Question9:-Central Road Research Institute was established in

- A:-1952
- B:-1948
- C:-1956
- D:-1964

Correct Answer:- Option-A

Question10:-Who directed the Hindi film 'Ae Dil Hai Mushkil'

- A:-Apoorva Mehta
- B:-Mukesh Bhat
- C:-Karan Johar
- D:-Yash Chopra

Correct Answer:- Option-C

Question11:-The minority carrier current in a semiconductor diode is largely a function of

- A:-Amount of doping
- B:-Temperature
- C:-Forward bias voltage
- D:-Reverse bias voltage

Correct Answer:- Option-B

Question12:-When the transistor is in high saturation, the biasing condition of base emitter BE and collector base CB junction is

- A:-BE forward biased, CE reverse biased
- B:-BE reversed biased, CE forward biased
- C:-BE forward biased, CE forward biased
- D:-BE reverse biased, CE reverse biased

Correct Answer:- Option-C

Question13:-Memory that losses its contents when power is lost is

- A:-Non volatile
- B:-Volatile
- C:-Flash memory
- D:-Static memory

Correct Answer:- Option-B

Question14:-In a bridge rectifier, if V_m is the peak voltage across the secondary of transformer, the maximum voltage coming across each reverse biased diode is

- A:- $V_m/2$
- B:- $V_m/\sqrt{2}$
- C:- $2V_m$
- D:- V_m

Correct Answer:- Option-D

Question15:-The main advantage of CMOS is its

- A:-Low power consumption
- B:-High power rating
- C:-Small signal operation
- D:-Fast switching capability

Correct Answer:- Option-A

Question16:-The space-charge region contains charges that are

- A:-Mostly majority carriers
- B:-Mostly minority carriers
- C:-Fixed donor and acceptor ions
- D:-Mobile donor and acceptor ions

Correct Answer:- Option-C

Question17:-The microwave tube that uses buncher and catcher cavities is

- A:-Magnetron
- B:-Klystron
- C:-Reflex Klystron
- D:-Travelling wave tube

Correct Answer:- Option-B

Question18:-Which of the following has same probability of error ?

- A:-BPSK and QAM
- B:-BPSK and ASK

C:-BPSK and QPSK

D:-BPSK and PAM

Correct Answer:- Option-D

Question19:-The negative resistance of the tunnel diode occurs when the bias voltage is

A:-Between the peak and valley voltages

B:-Above the valley voltage

C:-Below the peak voltage

D:-In the reverse direction

Correct Answer:- Option-A

Question20:-In an RC differentiator, the condition for differentiation is

A:- $RC \gg 0.16T$

B:- $RC \ll 0.16T$

C:- $RC \gg T/0.16$

D:- $RC \ll T/0.16$

Correct Answer:- Option-B

Question21:-For an input pulse train of clock period T, the delay produced by an n stage shift register is

A:- $2nT$

B:- nT

C:- $(n + 1)T$

D:- $(n - 1)T$

Correct Answer:- Option-C

Question22:-An n-channel JFET has $I_{(DSS)} = 1 \text{ mA}$ and $V_{(P)} = -5 \text{ V}$. Its maximum transconductance is

A:-0.4 millimho

B:-0.1 millimho

C:-1.0 millimho

D:-4.0 millimho

Correct Answer:- Option-A

Question23:-For thyristors, pulse triggering is preferred to dc triggering because

A:-Gate dissipation is low

B:-Pulse system is simpler

C:-Triggering system is required for a very short duration

D:-All of these

Correct Answer:- Option-D

Question24:-If an amplifier with a gain of -1000 and feedback of $\beta = -0.1$ had a gain change of 20% due to temperature, the change in gain of the feedback amplifier would be

A:-0.2%

B:-5%

C:-10%

D:-0.01%

Correct Answer:- Option-A

Question25:-The sensitivity of a multimeter is given in

A:- Ω

B:- $K\Omega/V$

C:-Amperes

D:- $V/K\Omega$

Correct Answer:- Option-B

Question26:-A superheterodyne radio receiver with an intermediate frequency of 455 KHz is tuned to a station operating at 1200 KHz. The associated image frequency is

A:-55 KHz

B:-1110 KHz

C:-2110 KHz

D:-4220 KHz

Correct Answer:- Option-C

Question27:-The multivibrator circuit configuration that can be used to convert a sinusoidal input into a square wave output is

A:-A stable multivibrator

B:-Monostable multivibrator

C:-Bistable multivibrator

D:-Schmitt trigger

Correct Answer:- Option-D

Question28:-A Yagi antenna in a horizontal plane produces

- A:-A broadside pattern
 - B:-An endfire pattern
 - C:-A figure of eight pattern
 - D:-None of the above
- Correct Answer:- Option-B

Question29:-A problem with class B push pull amplifier is that they usually suffer from

- A:-Harmonic distortion
 - B:-Intermodulation distortion
 - C:-Cross-over distortion
 - D:-None of these
- Correct Answer:- Option-C

Question30:-A 12 bit binary number has an accuracy equivalent to the decimal fraction

- A:-1/1024
 - B:-1/2048
 - C:-1/6400
 - D:-1/4096
- Correct Answer:- Option-D

Question31:-If a pulse train with a frequency of 10 KHz is applied to the trigger input of a bistable multivibrator, the frequency of the output pulse train would be

- A:-5KHz
 - B:-20 KHz
 - C:-10 KHz
 - D:-None of these
- Correct Answer:- Option-A

Question32:-Six independent low pass signals of bandwidth 3 W, W, W, 2W, 3W and 2W Hz are to be time division multiplexed on a common channel using PAM. To achieve this, the minimum transmission bandwidth of the channel should be _____ Hz.

- A:-12W
 - B:-6W
 - C:-3W
 - D:-24 W
- Correct Answer:- Option-A

Question33:-Class A amplifiers are characterised by

- A:-Maximum efficiency and minimum distortion
 - B:-Minimum efficiency and maximum distortion
 - C:-Maximum efficiency and maximum distortion
 - D:-Minimum efficiency and minimum distortion
- Correct Answer:- Option-D

Question34:-From circuit design simplicity and economy point of view, one of the following configurations for a converter is the best. Which is that ?

- A:-Push-pull DC-DC converter using one transformer
 - B:-Ringing choke converter
 - C:-Push-pull converter using two transformers
 - D:-None of these
- Correct Answer:- Option-B

Question35:-An op-amp is having an open loop gain of 10^5 and open loop upper cutoff frequency of 10 Hz. If this op-amp is connected as an amplifier with a closed loop gain of 100, then the new upper cutoff frequency will be

- A:-10 Hz
 - B:-100 Hz
 - C:-10 KHz
 - D:-100 KHz
- Correct Answer:- Option-C

Question36:-An amplifier power level is changed from 8 Watts to 16 Watts, equivalent dB gain is

- A:-2 dB
 - B:-3dB
 - C:-6 dB
 - D:-5 dB
- Correct Answer:- Option-C

Question37:-Which of the following statements are correct for the basic transistor amplifier configurations

- A:-CB amplifier has low input impedance and a low current gain
- B:-CC amplifier has low output impedance and a low current gain
- C:-CE amplifier has very poor voltage gain but very high input impedance
- D:-none of the above

Correct Answer:- Option-A

Question38:-In antenna measurement using two aperture antennas of dimensions D1 and D2, minimum separation between the two should be (λ is free space wavelength of radiation uses)

- A:- $(D1 + D2)/(2\lambda)$
- B:- $\sqrt{(D1^2+D2^2)} /(\lambda)$
- C:- $\sqrt{(D1^2+D2^2)} / (8\lambda)$
- D:- $\sqrt{(D1^2+D2^2)} /2\lambda)$

Correct Answer:- Option-B

Question39:-Compared to the junction transistor, FET

- 1) Has a larger gain bandwidth product
- 2) Is less noisy
- 3) Has less input resistance
- 4) Has only the majority carrier flow

The correct statements are

- A:-1, 3
- B:-1, 2
- C:-3, 4
- D:-2, 4

Correct Answer:- Option-D

Question40:-How does 80386 change operation from real mode to protected mode ?

- A:-By resetting MSB of CR1 contents
- B:-By setting MSB of CR0 contents
- C:-By setting MSB of CR1 contents
- D:-By setting MSB of CR2 contents

Correct Answer:- Option-B

Question41:-A source follower (using a FET) usually has a voltage gain which is

- A:-Slightly less than unity, but positive
- B:-Greater than +1
- C:-Exactly unity but negative
- D:-About – 10

Correct Answer:- Option-A

Question42:-Which of the following logic family consumes the least amount of power ?

- A:- I^2L
- B:-ECL
- C:-TTL
- D:-CMOS

Correct Answer:- Option-D

Question43:-In a 100% amplitude modulated signal, the power in the lower sideband is : Assume carrier power to be 100 watts and modulation system to be SSBSC.

- A:-50 watts
- B:-100 watts
- C:-25 watts
- D:-None of these

Correct Answer:- Option-C

Question44:-A combinational logic circuit which is used to send data coming from a source to two or more separate destinations is called as

- A:-Demultiplexer
- B:-Encoder
- C:-Multiplier
- D:-Decoder

Correct Answer:- Option-A

Question45:-The pinch off voltage of a JFET is 5V. Its cut off voltage is

- A:- $(5.0)^{(1/2)}$ V
- B:-2.5 V
- C:- $(5.0)^{(3/2)}$ V
- D:-5.0 V

Correct Answer:- Option-D

Question46:-A full wave rectifier uses two diodes, the internal resistance of each diode may be 20Ω each. The transformer rms secondary voltage from centre tap to each of secondary is 50V and load resistance is 980Ω . Find the mean load current and rms value of load current.

- A:- $0.05\sqrt{2}$, 0.05π
- B:- $0.05\sqrt{2}$, 0.05
- C:- $0.1\sqrt{2}$, 0.05
- D:- $50\sqrt{2}$, 50

Correct Answer:- Option-C

Question47:-The 2732 is a 4096 $\times 8$ EPROM. How many address lines does it have ?

- A:-8
- B:-12
- C:-1600
- D:-2732

Correct Answer:- Option-B

Question48:-A lamp is controlled from two positions A and B (eg : staircase circuit). The boolean expression for the above circuit is

- A:- $AB + A\bar{B}$
- B:- $A\bar{B} + \bar{A}B$
- C:- $AB + \bar{A}\bar{B}$
- D:- $A\bar{B} + \bar{A}\bar{B}$

Correct Answer:- Option-B

Question49:-Most of the linear IC s are based on the two transistor differential amplifier because of its

- A:-High CMRR
- B:-High voltage gain
- C:-High input resistance
- D:-Input voltage dependent linear transfer characteristics

Correct Answer:- Option-A

Question50:-A speech signal occupying the bandwidth of 300 Hz to 3 KHz is converted into PCM format for use in digital communication. If the sampling frequency is 8 KHz and each sample quantized into 256 levels, then the output bit rate will be

- A:-3 Kb/s
- B:-8 Kb/s
- C:-256 Kb/s
- D:-64 Kb/s

Correct Answer:- Option-D

Question51:-A push pull inverter provides a

- A:-Highly regulated output
- B:-Constant DC output
- C:-Square wave output
- D:-None of these

Correct Answer:- Option-C

Question52:-When an antenna is placed in a vertical plane it will produce ?

- A:-Circularly polarised waves
- B:-Elliptically polarised waves
- C:-Horizontally polarised waves
- D:-Vertically polarised waves

Correct Answer:- Option-C

Question53:-The octal equivalent of decimal 324.781 is

- A:-40.987
- B:-540.781
- C:-215.234
- D:-504.771

Correct Answer:- Option-D

Question54:-In a travelling wave tube, the phase velocity of the axial components of the field of the slow wave structure is kept

- A:-Slightly less than the velocity of electrons
- B:-Equal to the velocity of the electrons
- C:-Slightly more than the velocity of electrons
- D:-Equal to the velocity of light in free space

Correct Answer:- Option-B

Question55:-Address bus of 8086 contains

- A:-20 lines
- B:-32 lines
- C:-16 lines
- D:-24 lines

Correct Answer:- Option-A

Question56:-The propagation delay for ECL IC family is approximately

- A:-2ns
- B:-10ns
- C:-25ns
- D:-50ns

Correct Answer:- Option-A

Question57:-The pre-emphasis circuit is used

- A:-After modulation
- B:-To increase or emphasise the amplitude low frequency
- C:-Prior to modulation
- D:-None of these

Correct Answer:- Option-C

Question58:-A NAND circuit with positive logic will operate as

- A:-AND with negative logic
- B:-AND with negative logic
- C:-OR with negative logic
- D:-NOR with negative logic

Correct Answer:- Option-D

Question59:-The average on state current for an SCR is 20A for a conduction angle of 120° . The average on=state current for 60° conduction angle will be

- A:-20 A
- B:-Less than 20 A
- C:-10 A
- D:-40 A

Correct Answer:- Option-B

Question60:-A switched mode power supply operating at 20 KHz to 100 KHz range uses _____ as the main switching element.

- A:-MOSFET
- B:-Triac
- C:-Thyristor
- D:-UJT

Correct Answer:- Option-A

Question61:-The biggest disadvantage of CW Doppler radar is that

- A:-It does not give the target position
- B:-It does not give target velocity
- C:-It does not give target range
- D:-A transponder is required at the target

Correct Answer:- Option-C

Question62:-The field frequency of HDTV is

- A:-15
- B:-60
- C:-30

D:-120

Correct Answer:- Option-B

Question63:-An NPN transistor has a beta frequency f_{β} of 1 MHz, and emitter short circuit low frequency current gain $\beta(0)$ of 200. The unity gain frequency f_T and alpha cutoff frequency f_{α} respectively are

A:-199 MHz, 200 MHz

B:-200 MHz, 199 MHz

C:-201 MHz, 200 MHz

D:-200 MHz, 201 MHz

Correct Answer:- Option-D

Question64:-An opamp has a slew rate of $5V/\mu S$. The largest sine wave output voltage possible at frequency of 1 MHz is

A:- 10π volts

B:-5 volts

C:- $(5/\pi)$ volts

D:- $(5/2\pi)$ volts

Correct Answer:- Option-D

Question65:-The number of comparisons carried out in a 5 bit flash type A/D converter is

A:-31

B:-32

C:-5

D:-3

Correct Answer:- Option-A

Question66:-A PLA can be used

A:-As a dynamic memory

B:-To realise a combinational logic

C:-As a microprocessor

D:-To realise a sequential logic

Correct Answer:- Option-B

Question67:-Hamming codes are used for error detection and correction. If the minimum hamming distance is m , then the number of errors correctable is

A:-Equal to $2m$

B:-Equal to m

C:-Less than $m/2$

D:-Greater than m

Correct Answer:- Option-C

Question68:-Given that $W = e^{-i(2\pi/N)}$, where $N = 3$. Then $F = W^N$ can be computed as $F =$

A:-0

B:-1

C:-e

D:- -1

Correct Answer:- Option-B

Question69:-The code division multiple access technique is not used in satellite communication because of

A:-Wastage of power

B:-Wastage of baseband spectrum

C:-Increase in delay

D:-Complexity and unreliability of operation

Correct Answer:- Option-A

Question70:-Which of the following is introduced in the frequency sampling realization of the FIR filter ?

A:-Poles are more in number on unit circle

B:-Zeros are more in number on the unit circle

C:-Poles and zeros at equally spaced points on the unit circle

D:-None of the above

Correct Answer:- Option-C

Question71:-The number of LED display indicators in logic probes are

A:-1

B:-4

C:-1 or 2

D:-2

Correct Answer:- Option-D

Question72:-In a linear IC voltage, series pass transistor always operates in _____ region.

- A:-Active
- B:-Saturation
- C:-Cutoff
- D:-All of the above

Correct Answer:- Option-A

Question73:-The data rate of QPSK is _____ of BPSK.

- A:-Thirce
- B:-4 times
- C:-Twice
- D:-Same

Correct Answer:- Option-C

Question74:-Asymmetrical astable multivibrartor has $R = 100\Omega$ and $C = 0.1\text{mF}$. The periodic time T is equal to

- A:-138 mS
- B:-69 mS
- C:-6.9 mS
- D:-13.8 mS

Correct Answer:- Option-D

Question75:-Bootstrap sweep circuit generally employs

- A:-CE amplifier
- B:-Emitter follower
- C:-CB amplifier
- D:-Tuned amplifier

Correct Answer:- Option-B

Question76:-If $P = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ and $Q = \begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$, then PQ is

- A:-A null matrix
- B:-An identity matrix
- C:-A singular matrix
- D:-A symmetric matrix

Correct Answer:- Option-D

Question77:-If $P = \begin{bmatrix} 2 & 3 \\ 5 & 7 \end{bmatrix}$, then $P^{-1} =$

- A:- $\begin{bmatrix} -2 & -3 \\ -5 & -7 \end{bmatrix}$
- B:- $\begin{bmatrix} 7 & -3 \\ -5 & 2 \end{bmatrix}$
- C:- $\begin{bmatrix} -7 & 3 \\ 5 & -2 \end{bmatrix}$
- D:- $\begin{bmatrix} 2 & -5 \\ -3 & 7 \end{bmatrix}$

Correct Answer:- Option-C

Question78:-The first three terms in the expansion of $(a+bx)^\alpha$ are 1, $6x$ and $16x^2$ respectively ($\alpha > 0$, m is a natural number). Then

- A:- $m = 9, b = \sqrt[2]{3}$
- B:- $m = 2, b = 3$
- C:- $m = 4, b = \sqrt[3]{2}$
- D:- $m = 3, b = 2$

Correct Answer:- Option-A

Question79:-The value of $\cot 1^\circ + \cot 89^\circ$ is

- A:-0
- B:-1
- C:- $\frac{2}{\sin 2^\circ}$
- D:-None of these

Correct Answer:- Option-C

$$\begin{vmatrix} \cos(A+B) & -\tan A & 0 \\ \sin(A+B+C) & \sin B & \cos C \\ \sin B & 0 & -\tan A \end{vmatrix}$$

Question80:-In ΔABC , the value of

- A:- $-2 \tan A \sin B \cos C$
- B:-0
- C:- $\tan^2 A$
- D:- $\tan A(\tan A - 2 \sin B \cos C)$

Correct Answer:- Option-B

Question81:-The x-intercept of the line passing through the point (1, 1) and perpendicular to the line $x - 2y + 1 = 0$ is

- A:- $\frac{2}{3}$

B: $-\frac{2}{3}$

C: $-\frac{3}{2}$

D: $-\frac{3}{2}$

Correct Answer: - Option-C

$$f(x) = \begin{vmatrix} \sin x & x & x^3 \\ \cos x & 1 & x^2 \\ \tan x & 1 & x \end{vmatrix}$$

Question82:-If , then the value of $\lim_{x \rightarrow 0} \frac{f(x)}{x^2}$ is

A: -2

B: 0

C: -1

D: -2

Correct Answer: - Option-B

Question83:-If $x = a(\cos \theta - \log \cot \frac{\theta}{2})$, $y = a \sin \theta$, then $\frac{dy}{dx} =$

A: $\tan \theta$

B: $-\tan \theta$

C: $\cot \theta$

D: $-\cot \theta$

Correct Answer: - Option-A

$$\frac{(x+1)e^x}{\cos^2(xe^x)}$$

Question84:-The integral of _____ with respect to x is

A: $\tan(xe^x)/(x+1)e^x + C$

B: -

sec $^2(xe^x)$ $\tan(xe^x) + C$

C: $\sec^2(xe^2) + C$

D: $\tan(xe^x) + C$

Correct Answer: - Option-D

Question85:-The slope of normal to a curve at any point (x, y) on it is $\frac{-x}{(x+1)y}$. The equation of the curve is

A: $y = Cxe^x$

B: $xy = Ce^x$

C: $xy = Ce^{-x}$

D: $y^2 = 2[\log(x+1) - x] + C$

Correct Answer: - Option-A

Question86:-The Coulomb is equal to charge on _____ electrons.

A: 1.602×10^{-19}

B: 6.28×10^{18}

C: 1.67×10^{-27}

D: 6.18×10^{28}

Correct Answer: - Option-B

Question87:-The Ohm's laws deals with the relation between

A: Charge and capacity

B: Capacity and p.d.

C: Charge and resistance

D: Current and p.d.

Correct Answer: - Option-D

Question88:-One kwh is equal to _____ kCal.

A: 860

B: 735.5

C: 36×10^5

D: 746

Correct Answer: - Option-A

Question89:-Resistivity is usually expressed in terms of

A: ohm/°C

B: Moh

C:-Ohm meter

D:-Ohm/cm square

Correct Answer:- Option-C

Question90:-Three equal resistors are connected in series across an emf source, dissipate 60 W of power. What is the power dissipated if the same resistors are connected in parallel ?

A:-270

B:-60

C:-20

D:-180

Correct Answer:- Option-B

Question91:-The main constituents of a Portland Cement is

A:-lime

B:-Alumina

C:-Iron Oxide

D:-Alkalies

Correct Answer:- Option-A

Question92:-The most commonly used bond for all wall thickness is

A:-Flemish bond

B:-English bond

C:-Stretching bond

D:-Heading bond

Correct Answer:- Option-B

Question93:-A line normal to the plumb line at all points is known as

A:-Horizontal line

B:-Vertical line

C:-Level line

D:-Line of the collimation

Correct Answer:- Option-C

Question94:-In a well-conditioned triangle, no angle should be less than

A:-30°

B:-45°

C:-60°

D:-90°

Correct Answer:- Option-A

Question95:-A fixed point of reference of known elevation is called

A:-Change point

B:-Station point

C:-Bench mark

D:-Datum

Correct Answer:- Option-C

Question96:-The part which controls the air fuel ratio in a petrol engine is

A:-Injector

B:-Carburettor

C:-Governor

D:-None of the above

Correct Answer:- Option-B

Question97:-In IC Engines the process of removing burnt gases from combustion chamber of cylinder is known as

A:-Supercharging

B:-Polymerisation

C:-Scavenging

D:-Detonation

Correct Answer:- Option-C

Question98:-The compression ratio of Diesel engine varies from

A:-15 to 25

B:-10 to 15

C:-6 to 10

D:-25 to 40

Correct Answer:- Option-A

Question99:-The purpose of moderator in a nuclear power plant is

A:-To moderate the radioactive pollution

B:-To control reaction

C:-To reduce temperature

D:-To reduce the speed of fast moving neutrons

Correct Answer:- Option-D

Question100:-The differential is located between propeller shaft and the

A:-Clutch

B:-Engine

C:-Rear axle

D:-None of the above

Correct Answer:- Option-C