PROVISIONAL ANSWER KEY

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Question1:-Who was the K.P.C.C. President at the time of Indian Independents ?

A:-K. Kelappan
B:-Panampilly Govindamenon
C:-C. Kesavan
D:-Pattom. A. Thanupillai
Correct Answer:- Option-A

Question2:-First annual session of SNDP was help at which of the following places ?

A:-Aluva
B:-Aruvipuram
C:-Varkala
D:-Sivagiri
Correct Answer:- Option-B

Question3:-Who was the author of 'Jathikummi' ?

A:-Pandit Karuppan
B:-Kumaranassan
C:-Sree Narayana Guru
D:-Thycaud Ayya Vaikundar
Correct Answer:- Option-A

Question4:-Among the following organisations which one is the oldest ?

A:-Araya Samajam
B:-Samathwa Samajam
C:-Yogakshema Sabha
D:-Ananda Mahasabha
Correct Answer:- Option-B

Question5:-Among the following reforms who is not belongs to the upliftment of Namboothiri Women ?

A:-Lalithambika Antharjanam
B:-Parvathi Nenmenimangalam
C:-Arya Pallam
D:-Devaki Antharjanam
Correct Answer:- Option-D

Question6:-Name the first unmanned Tank developed by DRDO in India recently

A:-Arjun
B:-Arihant
C:-Sivalik
D:-Muntra
Correct Answer:- Option-D

Question7:-Who was FIFA under 17 World Cup foot ball ?

A:-England
B:-Spain
C:-Brazil
D:-India
Correct Answer:- Option-A

Question8:-Who is the winner of Vayalar Award 2017 ?

A:-U.k. Kumaran
B:-K.R. Meera
C:-Subashchandran
D:-T.D. Ramakrishnan
Correct Answer:- Option-D

Question9:-Who is appointed as the `15^(th)` Finance Commission Chairman of India ?

A:-Y.V. Reddy
B:-C.Rangarajan
C:-N.K. Singh
D:-Dr. Vijay kelkar
Correct Answer:- Option-C

Question10:-What is the ordinal status of Antonio Gutters among the secretary Generals of UNO ?
A:-Tenth
B:-Seventh
C:-Ninth
D:-Eighth
Correct Answer:- Option-C

Question11:-The maximum number of eigen values of an n `xx` n matrix is
A:-n
B:-`n^(2)`
C:-2n
D:-`(1)/(2)n(n-1)`
Correct Answer:- Option-A

Question12:-Which among the following is a mathematically incorrect operation ?
A:-grad div
B:-div curl
C:-grad curl
D:-curl grad
Correct Answer:- Option-C

Question13:-In cylindrical co-ordinates, where surface `rho` = 3 and z = 2 intersect is
A:-a finite plane
B:-a semi infinite plane
C:-a cylinder
D:-a circle
Correct Answer:- Option-D

Question14:-For a Fourier transform, which of the following statements is correct ``?
A:-FT of an even function is even and that of an odd function is odd
B:-FT of an even function is odd and the of an odd function is even
C:-FT of an even function is even and that of an odd function is even
D:-FT of an even function is odd and that of an odd function is odd
Correct Answer:- Option-A

Question15:-The complex function `Z^((1)/(2))` is
A:-single valued
B:-double valued
C:-n-valued
D:-2n-valued
Correct Answer:- Option-B

Question16:-If `A_(ij)` and `B^(ik)` are two tensors and `A_(ij)B^(ik)=delta^(k)_j` the Kronecker Delta, then `A_(ij)` and `B^(ik)` are
A:-associate tensors
B:-conjugate tensors
C:-symmetric tensors
D:-fundamental tensors
Correct Answer:- Option-B

Question17:-If `P_(n)(x)` represents the Legendre polynomials, the value of `int_-1^1[P_(2)(x)]^(2)dx` is
A:-`(2)/(3)`
B:-`(1)/(3)`
C:-`(2)/(5)`
D:-`(3)/(5)`
Correct Answer:- Option-C

Question18:-The value of `int_c(4-3z)/(z(z-1)(z-2)` dz where c is the circle |z| = `(1)/(2)` is
A:-2`Pii`
B:-`8Pii`
C:-`4Pii`
D:-zero

Correct Answer:- Option-C

Question19:-The value of a so that the vector $(2x+3y)\hat{i}+(5y-2z)\hat{j}+(7x+\alpha z)\hat{k}$ is solenoidal is

A:-1

B:-4

C:--5

D:--7

Correct Answer:- Option-D

Question20:-For a system in which the Lagrangian is not an explicit function of time, the Hamiltonian is

A:-constant

B:-infinity

C:-zero

D:-none of these

Correct Answer:- Option-A

Question21:-For a system of two coupled oscillators, the total number of normal modes is

A:-1

B:-2

C:-3

D:-4

Correct Answer:- Option-B

Question22:-In the short wavelength limit, the schrödinger equation reduces to

A:-Lagrange's equation

B:-Euler-Lagrange equation

C:-Hamilton's equations

D:-Hamilton-Jocobi equation

Correct Answer:- Option-D

Question23:-What is the dimension of the fractal-Cantor set ?

A:-0.52

B:-0.63

C:-0.74

D:-0.85

Correct Answer:- Option-B

Question24:-If [F, H] represents the Poisson bracket between an arbitrary function F and the Hamiltonian of a system H, the equation of motion will be

A:-`(dF)/(dt)` = [F, H]

B:-`(dF)/(dt)` = [H, F]

C:-`(dF)/(dt) =(delF)/(delt) + [F, H]`

D:-`(dF)/(dt) =(delF)/(delt) + [H, F]`

Correct Answer:- Option-C

Question25:-The maximum number of rotational degrees of freedom possible for a rigid body is

A:-1

B:-2

C:-6

D:-3

Correct Answer:- Option-D

Question26:-If `a_(0)` donates the Bohr radius, the most probable distance of the electron from the nucleus in a Hydrogen atom in its ground state is

A:-`(a_(0))/(2)`

B:-`a_(0)`

C:-`2a_(0)`

D:-`(3a_(0))/(2)`

Correct Answer:- Option-B

Question27:-The normalized wave functions `psi_(1)` and `Psi_(2)` correspond to the ground state and the first excited state of a particle in a potential. An operator Â acts on the wave functions as Â`psi_(1)=Psi_(2)` and Â`Psi_(2)` = `Psi_(1)`. The expectation value of Â for the state `psi` = `(3psi_(1) + 4psi_(2))/(6)` is

A:-0.67

B:-0.33

C:-0.44

D:-0.82

Correct Answer:- Option-A

Question28:-The value of the commutator `[x^(4)` , `p_(x)]` is

A:- $i\hbar$

B:- $(i\hbar)^4$

C:- $4i\hbar x^4$

D:- $4i\hbar x^3$

Correct Answer:- Option-D

Question29:-Application of time independent perturbations to linear stark effect of hydrogen atom

A:-Completely removes degeneracy of n = 2 level and splits it into four levels

B:-Partially removes degeneracy of n = 2 levels and splits it into three levels

C:-Partially removes degeneracy of n = 2 level and splits it into two levels

D:-Does not remove degeneracy to any extent

Correct Answer:- Option-B

Question30:-The wave function of a particle is given by `Psi =(1)/(sqrt(2))phi_(0)` , where `phi_(0)` is the normalized eigen function with energy `E_(0)`. The expectation value of the Hamiltonian in the state `psi` is

A:-`E_(0)`

B:-`(E_(0))/(sqrt(2))`

C:-`(E_(0))/(2)`

D:-`sqrt(2)E_(0)`

Correct Answer:- Option-C

Question31:-For a one dimensional potential well specified by V(x) = 0 for -a < x < a and V(x) = `oo` for |x| > a, the zero point energy is

A:-Some value greater then zero

B:-Some value less than zero

C:-Equal to zero

D:- $\frac{1}{2}\hbar\omega$

Correct Answer:- Option-A

Question32:-The total spin angular momentum S of a system of three electrons is

A:-`(1)/(2)`

B:-0 and 1

C:-1

D:-`(1)/(2) and (3)/(2)`

Correct Answer:- Option-D

Question33:-The phase shifts measured for the elastic scattering of 50 MeV neutrons from a nucleus are `delta_(0)= 90^(@)` ; `delta_(1) = 60^(@)` . The total cross section is

A:-`(13pi)/(k^(2))`

B:-`(4pi)/(k^(2))`

C:-`(pi)/(k^(2))`

D:-`(7pi)/(k^(2))`

Correct Answer:- Option-A

Question34:-For a Hermitian operator, the eigen values are

A:-zeros

B:-real

C:-complex

D:-imaginary

Correct Answer:- Option-B

Question35:-The eigen functions of angular momentum operator are

A:-Bessel function

B:-Gamma function

C:-Hermite polynomials

D:-Spherical harmonics

Correct Answer:- Option-D

Question36:-A charged particle is moving in a helical path under the influence of a constant magnetic field. The initial velocity of the particle is such that the component along the magnetic field is twice the component in the plane normal to the magnetic field. What will be the ratio of the pitch to the radius of the helical path ?

A:-`pi`/2

B:-`Pi`

C:-2`pi`

D:-4`pi`

Correct Answer:- Option-D

Question37:-A square wire loop carries a steady current I. Let R be the shortest distance from the centre to the side. What will be the magnetic field at the centre of the square loop ?

A:-`(mu_(0)I)/(piR)`

B:-`(mu_(0)I)/(6piR)`

C:-`(sqrt(2)mu_(0)I)/(piR)`

D:-`(mu_(0)I)/(sqrt(2)piR)`

Correct Answer:- Option-C

Question38:-The magnetic field at a distance R from a straight wire carrying a steady current I is proportional to

A:-I/R

B:-IR

C:-I/`R^(2)`

D:-`I^(2)`/R

Correct Answer:- Option-A

Question39:-Which of the following thermodynamic relation is correct ?

A:-dU = T dS + P dV

B:-dU = T dS - P dV

C:-dU = T dS + G dP

D:-dU = T dS - G dP

Correct Answer:- Option-B

Question40:-Which mode of electromagnetic radiation cannot propagate through a rectangular waveguide ?

A:-TE

B:-TM

C:-TEM

D:-All the above

Correct Answer:- Option-C

Question41:-Which is the least symmetric crystal system ?

A:-cubic

B:-triclinic

C:-orthorhombic

D:-monoclinic

Correct Answer:- Option-B

Question42:-The amount of split in an energy level in the case of anomalous Zeeman effect due a magnetic field B, from non field level (where `mu_(B)` is the Bohr magnetron, `m_(j)` is the magnetic total angular momentum quantum number and g is the Lande g factor) is given by

A:-`(gm_(j))/(mu_(B))B`

B:-`(gmu_(B))/(m_(j))B`

C:-g`mu_(B)m_(j)B`

D:-`(m_(j)mu_(B))/(g)B`

Correct Answer:- Option-C

Question43:-The substances, which are expected to show electron spin resonance spectroscopy, are

A:-paramagentic

B:-diamagnetic

C:-ferromagnetic

D:-none of these

Correct Answer:- Option-A

Question44:-The selection rule governing the transition between different energy levels in pure rotational Raman spectra, in terms of rotational quantum number J, is

A:-ΔJ = 0 or `+- 1` only

B:-ΔJ = `+- 1` only

C:-ΔJ = 0 or `+- 2` only

D:-ΔJ = `+- 2` only

Correct Answer:- Option-C

Question45:-A radio wave has electric field intensity `10^(-4)` V`m^(-1)` at the location of a receiving antenna. What will be the magnetic flux density ?

A:-zero

B:-3.3 `xx10^(-4)` T

C:-1.1 `xx10^(-9)` T

D:-3.3 `xx10^(-13)` T

Correct Answer:- Option-D

Question46:-The cut off frequency of T`E_(10)` dominant mode of an air filled rectangular wave guide of dimension x = 8 cm and y = 4 cm is 1875 MHz. What will be the cut off frequency of the T`E_(10)` dominant mode for another wave guide of dimension x = 8cm and y = 6 cm ?

A:-1875 MHz

B:-1945 MHz

C:-707 MHz

D:-1947 MHz

Correct Answer:- Option-A

Question47:-The ratio of the electric field vector E and magnetic field vector H has the dimension of

A:-current

B:-resistance

C:-inductance

D:-capacitance

Correct Answer:- Option-B

Question48:-For the reverse leakage current of a BJT in CB (`I_(CBO)`) and CE(`I_(CEO)`) configuration, which among the following statements is true ?

A:-`I_(CBO)` > `I_(CEO)`

B:-`I_(CBO)` = `I_(CEO)`

C:-`I_(CBO)` < `I_(CEO)`

D:-none of these

Correct Answer:- Option-C

Question49:-With a 1 MHz clock frequency, eight bits can be parallel entered into a shift register in

A:-8`mus`

B:-propagation delay time of eight flip flops

C:-propagation delay time of one flip flop

D:-1`mus`

Correct Answer:- Option-C

Question50:-For an ideal OPAMP integrator circuit, the peak value of output voltage

A:-is independent of frequency of the signal

B:-decreases with frequency of the signal

C:-increases with frequency of the signal

D:-decreases with amplitude of the signal

Correct Answer:- Option-B

Question51:-In a 4 bit R-2R ladder digital to analog converter, R = 10kΩ and `V_(ref)` is 10V. The current resolution of the converter is

A:-10.5 `muA`

B:-50.25 `muA`

C:-62.5 `muA`

D:-6.25`muA`

Correct Answer:- Option-C

Question52:-In the expression for the binding energy of a nucleus according to the liquid drop model, which among the following terms arises due to Pauli's exclusion principle ?

A:-volume term

B:-surface term

C:-pairing term

D:-asymmetry term

Correct Answer:- Option-D

Question53:-The strangeness quantum number S, in the Quark Model for up (u) and down (d) quarks are

A:-zero for both u and d

B:-+1 for both u and d

C:--1 for both u and d

D:--1 for u and +1 for d

Correct Answer:- Option-A

Question54:-The relation between the Einstein coefficients `A_(21)` and `B_(21)` is

A:-`(A_(21))/(B_(21))` = 1

B:-`(A_(21))/(B_(21))` = `(1)/(2)`

C:-`(A_(21))/(B_(21))` = `(8pihv^(2))/(c^(2))`

D:-`(A_(21))/(B_(21))` = `(8pihv^(3))/(c^(3))`

Correct Answer:- Option-D

Question55:-In a canonical ensemble, the elements differ in their

A:-volume

B:-energy

C:-temperature

D:-number of particles

Correct Answer:- Option-B

Question56:-The Halmholtz free energy F, absolute temperature T and partition function Z of a canonical ensemble are related as

A:-F = - kT ln Z

B:-F = kT ln Z

C:-F = - kTZ

D:-F = kTZ

Correct Answer:- Option-A

Question57:-The mass defect per nucleon is called

A:-packing fraction

B:-quadrupole moment

C:-angular momentum

D:-binding energy

Correct Answer:- Option-A

Question58:-In how many directions, the electrons in a quantum dot are confined ?

A:-1

B:-2

C:-3

D:-4

Correct Answer:- Option-C

Question59:-The energy versus wave vector graph of an electron in free space is a

A:-Straight line

B:-parabola

C:-hyperbola

D:-circle

Correct Answer:- Option-A

Question60:-The bandgap energy of GaAs is about

A:-0.42 eV

B:-1.42 eV

C:-0.42 keV

D:-1.42 keV

Correct Answer:- Option-B

Question61:-The light emission mechanism in LED is

A:-electroluminescence

B:-photoluminescence

C:-chemiluminescence

D:-thermoluminescence

Correct Answer:- Option-A

Question62:-In a first order phase transition, which among the following statements is true ?

A:-volume is continuous at the boundary

B:-entropy is continuous at the boundary

C:-entropy is discontinuous at the boudnary

D:-a latent heat is not involved

Correct Answer:- Option-C

Question63:-The chemical potential of a photon gas is

A:-infinity

B:-finite

C:-imaginary

D:-zero
Correct Answer:- Option-D
Question64:-When a particle of rest mass m attains the velocity of light, its mass becomes
A:-zero
B:-m
C:-infinity
D:-2m
Correct Answer:- Option-C
Question65:-For a conservative system, the slop of the potential energy versus position curve gives
A:-kinetic energy
B:-force
C:-power
D:-momentum
Correct Answer:- Option-B
Question66:-Are two simultaneous events, happening at the same point, simultaneous in all inertial frames ?
A:-yes
B:-no
C:-depends on the velocity of the frames
D:-none of these
Correct Answer:- Option-A
Question67:-The critical field of a superconductor at the critical temperature is
A:-inifinity
B:-zero
C:-finite
D:-depends on the superconductor
Correct Answer:- Option-B
Question68:-In a C60 fullerence molecule, how many pentagonal sides exist ?
A:-24
B:-6
C:-20
D:-12
Correct Answer:- Option-D
Question69:-The open circuit voltage of a solar cell
A:-Increases with temperature first and then decreases
B:-decreases with temperature first and then increases
C:-Decreases with temperature
D:-Increases with temperature
Correct Answer:- Option-C
Question70:-The bandwidth of an amplifier is the range of frequencies at the limits of which its voltage gain falls by _____ from the maximum gain.
A:-1 dB
B:-3 dB
C:-9 dB
D:-70 dB
Correct Answer:- Option-B
Question71:-Which transistor configuration is commonly used for impedance matching ?
A:-common emitter
B:-common base
C:-common collector
D:-common mode
Correct Answer:- Option-C
Question72:-What is the hybridization in graphene ?
A:-sp
B:-sp2
C:-sp3
D:-sp4
Correct Answer:- Option-B
Question73:-What happens to the X-ray diffraction peaks from a polycrystalline solid, when its crystalline size decreases ?
A:-become broad

B:-become narrow
C:-no effect
D:-disappears
Correct Answer:- Option-A
Question74:-The fundamental effect that is used in the conversion of solar energy to heat energy is
A:-Photovoltaic effect
B:-Faraday effect
C:-Joule-Kelvin effect
D:-Green house effect
Correct Answer:- Option-D
Question75:-In biomass, the solar energy is stored in the form of
A:-electrical energy
B:-heat energy
C:-chemical energy
D:-mechanical energy
Correct Answer:- Option-C
Question76:-the dimensional of the phase space of a particle moving in a plane is
A:-4
B:-1
C:-2
D:-0
Correct Answer:- Option-A
Question77:-Which among the following is an elementary particle ?
A:-neutron
B:-kaon
C:-electron
D:-sigma
Correct Answer:- Option-C
Question78:-The sodium D lines arise due to the transitions
A:-from P state to S state
B:-from F state to S state
C:-from F state to D state
D:-from D state to S state
Correct Answer:- Option-A
Question79:-The departure of relative permeability from unity is called
A:-Magnetic field strength
B:-Magnetic susceptibility
C:-Magnetic flux density
D:-Magnetizing field intensity
Correct Answer:- Option-B
Question80:-If the Hall co-efficient of a specimen is positive, the current conduction in the specimen is dominated by
A:-electrons
B:-phonons
C:-photons
D:-holes
Correct Answer:- Option-D
Question81:-The tools used to represent thoughts, ideas, knowledge and concepts are
A:-Rubrics
B:-Feedback tools
C:-Renew and reflection tools
D:-Graphic organizers
Correct Answer:- Option-C
Question82:-Which of the following is not a basic purpose of lecture method ?
A:-To motivate
B:-To explore
C:-To renew
D:-To expand
Correct Answer:- Option-B
Question83:-Validity of a test means

A:-Purposiveness
B:-Objectiveness
C:-Regularity
D:-Consistency
Correct Answer:- Option-A

Question84:-The criterion which is least important while planning a learning experience ?
A:-Expertise of the teacher
B:-Extent of realisation of objectives
C:-Mental level of the learner
D:-Practicability of the experience
Correct Answer:- Option-A

Question85:-Which of the following process skill uses a test under controlled conditions ?
A:-Experimenting
B:-Hypothesizing
C:-Inferring
D:-Measuring
Correct Answer:- Option-A

Question86:-Which of the following assessment technique is most appropriate for assessing creative thinking in students ?
A:-Reasoning questions
B:-Open ended questions
C:-Logical questions
D:-Hypothesising
Correct Answer:- Option-B

Question87:-The process of maintaining a gradation by which specific items are gradually presented one by one in the hierarchical order is
A:-Progressive differentiation
B:-Narration
C:-Integrative Reconciliation
D:-Exposition
Correct Answer:- Option-A

Question88:-Which is not considered as a self-reporting technique ?
A:-Questionnaire
B:-Autobiography
C:-Interview
D:-Performance test
Correct Answer:- Option-D

Question89:-"A teacher should plough the sort before souring the seed". This statement indicates
A:-Preparing the technical support in advance
B:-Planning innovative strategies for teaching
C:-Developing a rapport with the students
D:-Instilling an intrinsic motivation in students to learn
Correct Answer:- Option-D

Question90:-Skipping is an approach used to cater the needs of
A:-Average learners
B:-Differentially abled
C:-Gifted
D:-Slow learners
Correct Answer:- Option-C

Question91:-Who said the Constituent Assembly that the Directive Principles of State Policy are like a cheque on a bank payable at the convenience of the bank ?
A:-B.R. Ambedkar
B:-Jawaharlal Nehru
C:-K.T. Shah
D:-N. Madhava Rao
Correct Answer:- Option-C

Question92:-'Contempt of court' place restriction on :
A:-Right to equality
B:-Right to freedom
C:-Right to cultural and educational Rights

D:-None of these
Correct Answer:- Option-B

Question93:-Which commission recommended the abolition of the IAS and IPS ?
A:-Shah Commission
B:-Sarkaria Commission
C:-Venkata Chalaiah Commission
D:-Rajamannar Commission
Correct Answer:- Option-D

Question94:-The scheme Antyodaya Anna Yojana (AAY) was launched by the government on :
A:-26 January 1999
B:-25 December 2000
C:-31 May 2000
D:-24 October 2005
Correct Answer:- Option-B

Question95:-The authorization for withdraw of funds from the consolidated fund of India must come from
A:-The Parliament of India
B:-The President of India
C:-The Prime Minister of India
D:-The Union Minister
Correct Answer:- Option-A

Question96:-The system of 'Privacy Purses' in respect of former rules of Indian states before independence was abolished by the constitution through :
A:-`1^(st)` Amendment Act, 1951
B:-`26^(th)` Amendment Act, 1971
C:-`38^(th)` Amendment Act, 1975
D:-`52^(nd)` Amendment Act, 1985
Correct Answer:- Option-B

Question97:-The Environmental (Protection) Act was enacted in the year
A:-1972
B:-1984
C:-1986
D:-1992
Correct Answer:- Option-C

Question98:-The Emergency Powers of President was taken from which Constitution ?
A:-Constitution of South Africa
B:-Constitution of Germany
C:-Constitution of Australia
D:-Constitution of Canada
Correct Answer:- Option-B

Question99:-What is the time limit to get the information concerning life and liberty of a person under RTI Act ?
A:-30 days
B:-3 days
C:-24 hours
D:-48 hours
Correct Answer:- Option-D

Question100:-Members of the Rajya Sabha are not associated with
A:-Public Account Committee
B:-Committee on Public Undertakings
C:-Estimate Committee
D:-All the above
Correct Answer:- Option-C