PROVISIONAL ANSWER KEY

Question Paper Code: 28/2018/OL Category Code: 053/2013 Exam: Lecturer in Physical Science Medium of Question: English Date of Test 22-05-2018 Department **Collegiate Education** Alphacode А Question1:-Who among the following missionary opened an English school at Mattanchery in 1818 with the financial aid from the Cochin Government? A:-Rev. J. Dawson B:-Rev. Mead C:-W.T. Ringletaube D:-Bailey Correct Answer:- Option-A Question2:-Who authored the book Mokshapradipam ? A:-Brahmananda Sivayogi B:-Sri Narayanaguru C:-Chattampi Swamikal D:-Swami Vagbhatananda Correct Answer:- Option-A Question3:-Guruvayur Satyagraha was started under the auspices of the A:-Nair Service Society B:-Yogakshema Sabha C:-Kerala Provincial Congress Committee D:-Communist Party of India Correct Answer:- Option-C Question4:-In which year Ayyankali founded the Sadhu Jana Paripalana Yogam ? A:-1903 A.D. B:-1907 A.D. C:-1910 A.D. D:-1917 A.D. Correct Answer:- Option-B Question5:-Name the Diwan who issued order permitting the converted Shanar women to cover their bodies with jackets ? A:-Velu Thampi **B:-Ummini Thampi** C:-Padmanabhan Menon D:-Col. Munro Correct Answer:- Option-D Question6:-Where did Royal Indian Navy (RIN) revolt start in February 1946 ? A:-Calcutta B:-Karachi C:-Karwar D:-Bombay Correct Answer:- Option-D Question7:-Which Article of Indian Constitution prohibits untouchability ? A:-Article 16 B:-Article 17 C:-Article 18 D:-Article 19 Correct Answer:- Option-B Question8:-The World Economic Forum 2018 was held at A:-Paris **B:-New York** C:-Davos D:-New Delhi

Correct Answer:- Option-C

Question9:-Who was the Second Vice Chairman of the Higher Education Council of Kerala ? A:-Dr. B. Igbal B:-Dr. K.N. Panikkar C:-T.P. Sreenivasan D:-Dr. Rajan Gurukkal Correct Answer:- Option-C Question10:-Where did India's first U.N. Technology innovation lab set up ? A:-Mumbai B:-Thiruvananthapuram C:-New Delhi D:-Bangalore Correct Answer:- Option-B Question11:-The Inclusive Education approach must have (i) elements of social justice and equitable distribution (ii) more autonomy for teachers and students (iii) care and development of varying ability among the student population (iv) participation of physically and intellectually challenged students in normal setting (v) single examination for all children A:-(i) and (iv) only B:-(iii) and (iv) only C:-(i), (iii) and (iv) only D:-Both (ii) and (v) Correct Answer:- Option-C Question12:-A cost-effective principle of learning in practice is A:-Punishment B:-Re-inforcement C:-Rewards D:-Avoidance Correct Answer:- Option-B Question13:-Which among the following is an intellectual disability of a learner to be addressed by a teacher ? A:-ADHA **B:-Dyslexia** C:-Autistic spectrum disorders **D:-Mental Retardation** Correct Answer:- Option-D Question14:-In the five stage SOLO Taxonomy of Biggs and Collis; SOLO stands for A:-Structure of Observed Learning Outcomes **B:-Strategy of Organised Learning Outcomes** C:-Structure of Observed Learning Objectives **D:-Sequential Organization of Learning Outcomes** Correct Answer:- Option-A Question15:-A web2.0 mobile app for real time continuous and comprehensive assessment of pupils engagement in class is A:-Go class B:-Edmodo C:-Socrative D:-My class talk Correct Answer:- Option-C Question 16:-In an item-analysis exercise, if correct to wrong response in the upper age group is 80 : 20 and that in the lower age group is 30:70; where N = 10 in each group; the value of D will be A:-2.2 B:-2.6 C:-2.4 D:-2.8 Correct Answer:- Option-B Question17:-Action research owes to its origin to the contributions made by A:-Erlandson B:-J.W. Best C:-S.M.Corey D:-Hilda Taba Correct Answer:- Option-C

Question18:-The qualitative research methodology equivalent to 'reliability' in data analysis is A:-Internal Cohession **B:-Predictability** C:-Transferability D:-Trustworthiness Correct Answer:- Option-D Question19:-Big-Data Analysis in research handles data set that are A:-Structured Terrabytes **B:-Semi-structured Terrabytes C:-Unstructured Terrabytes D:-Structured Petabytes** Correct Answer:- Option-C Question20:-The concept of Journal Impact Factor was coined by A:-Robert Gunning **B:-John Marshey** C:-Marsha Weil D:-Eugene Garfield Correct Answer:- Option-D Question21:-The sum of eigen values of a 2`xx`2 matrix is 5 and the product of eigen values is 6. Which of the following is the matrix ? A:-`[[1,1],[2,3]]` B:-`[[3,2],[1,1]]` C:-`[[3,1],[1,2]]` D:-`[[3,0],[0,2]]` Correct Answer:- Option-D Question22:-Integrating the volume element in spherical polar coordinates gives the value A:-`4/3` πr`^3` B:-``πr`^2h` C:-πr`^2` D:-4πr`^2` Correct Answer:- Option-A Question23:-The Fourier transform of a Gaussian function is A:-Poisson function B:-Zero C:-Gaussian function **D:-Greens function** Correct Answer:- Option-C Question24:-The Laplace transform of x is; (p>0)A:-`1/p` B:-`1/p^2` C:-`1/x^n` $D:-(n!)/(p^{n+1})$ Correct Answer:- Option-B Question25:-Which is the correct identity ? A:-`delta (ii)` = 2 B:-`delta (ik)``epsi (ikm)` = 0 $C:-\delta(x-x') = x$ D:-`delta (xy)` = x^2 y Correct Answer:- Option-B Question26:-The value of `vecL````xx``vecL` μ , (`vecL` is angular momentum) A:-Zero B:-`L (2)` C:--1

D:-Correct Answer:- Option-D Question27:-For a central force motion, the Lagrangian is A:-(1)/(2) m($dotr^{2}+r^{2}$)dottheta^{2}) B:-`(1)/(2)`m(`dotr^(2)-r^(2)dottheta^(2))` C:-(1)/(2) m($dotr^{2}+r^{2})dottheta^{2})+(k)/(r)$ $D:-(1)/(2)m(r^{2})+dotr^{2})theta^{2})(k)/(r)$ Correct Answer:- Option-C Question28:-For the transformation Q = aq + bp, p = cq + dp to be canonical A:-ad + bc = 1 $B:-ad - b^2 = 1$ C:-ad - bc = 1 $D:-ad - b^2 = 1$ Correct Answer:- Option-C Question29:-An object in the shape of a cube is moving at a speed of 0.8C. The motion is parallel to X axis. The length of the body along the Z direction is A:-0.6 `L (0)` B:-0.36 `L (0)` C:-0.64 `L_(0)` D:-`L (0)` (`L_(0)` is the Length at rest) Correct Answer:- Option-D Question 30:-The Poisson bracket of three dynamical variables, [u, [v, w]] + [v, [w, u]] + [w, [u, v]] is A:-Zero B:--1 C:-1 D:-u Correct Answer:- Option-A Question31:-A curve function is written in terms of an orthonormal basis; `|psi>`=```sqrt(2/6)|``u_1>`+```sqrt(1/6)````|u_2>``+sqrt(3/6)````|v_3``>` What is the probability that the system is found to be in the state |`v 2`> is A:-`1/3` B:-1 C:-`1/6` D:-zero Correct Answer:- Option-C Question32:-The angular part of the wave function for 1-1-atom is written using A:-Spherical harmonics **B:-Bessel function** C:-Hermite polynomial **D:-Newmann function** Correct Answer:- Option-A Question33:-The value of [J+, J-] is

) ____

A:-

B:-C:-D:-Correct Answer:- Option-D Question34:-Which of the following is an exactly solvable time dependent problem in Quantum mechanics ? A:-Start effect **B:-MASER** C:-Zeeman effect D:-Harmonic Oscillator Correct Answer:- Option-B Question35:-Select the correct relativistic linear Hamiltonian $A:-H = [P^2`C^2`+m^2_0`C^4]`1/2`$ B:-`(P^2)/(2m)` $C:-`mC^{(2)} = H$ $D:-H = C(\alpha`.P) + \beta``m_(0)``C^(2)`$ Correct Answer:- Option-D Question36:-The line integral of magnetic field is A:-Potential **B:-Current** C:-Energy **D:-Polarization** Correct Answer:- Option-B Question37:-Magnetic vector potential is A:-Not conservative **B:-Conservative** C:-Unipolar D:-Endless Correct Answer:- Option-A Question38:-Entropy is A:-additive quantity **B:-constant quantity** C:-conserved quantity D:-covariant quantity Correct Answer:- Option-A Question39:-Bose-Einstein condensation will occur A:-in the presence of intermolecular forces B:-in the absence of intermolecular forces

C:-in the position space D:-none of the above Correct Answer:- Option-A Question40:-Which of the following is NOT a first order phase transition ? A:-transition from liquid to vapour B:-transition from solid to vapour C:-transition from ferromagnet to paramagnet D:-melting of ice to liquid Correct Answer:- Option-C Question41:-To get vibrational spectra of molecule, it must involve A:-a change in structure B:-a change in force C:-a change in electronic state D:-a change in dipolemoment Correct Answer:- Option-D Question42:-The correct expression for rotational energy of a rotating molecule A:-`(J(J+1)h^(2))/(8pil)` B:-`(J(J+1)h^(2))/(8pi^(2)I)` C:-`((J+1)h^(2))/(8pi^(2)I)` D:-`(Jh^(2))/(8pil^(2)`` Correct Answer:- Option-B Question43:-Water is a A:-spherical top molecule B:-symmetric top molecule C:-linear molecule D:-asymmetric top molecule Correct Answer:- Option-D Question44:-How many Bravai's Lattices exists for seven crystal system ? A:-7 B:-10 C:-13 D:-14 Correct Answer:- Option-D Question45:-The specific heat of a superconductor A:-decreases linearly temperature B:-varies exponentially with temperature C:-is independent of temperature D:-increases linearly with temperature Correct Answer:- Option-B Question46:-Which is the wrong relation ? A:-`beta` =`(alpha)/(1-alpha)` $B:-I_C = beta I_B + L_C_E_O$

C:-D:- $I_C_E_O = (1)/(1-alpha)I_C$ Correct Answer:- Option-D Question47:-For an OPAMP, the higher the value of CMRR A:-indicates mismatch between two input terminals B:-indicates low input capacitance C:-indicates matching between input terminals D:-higher offset voltage Correct Answer:- Option-C Question48:-Nuclear force is A:-central force B:-spin independent force C:-weak force D:-spin dependent force Correct Answer:- Option-D Question49:-The value of the boolean expression; z = (`barA+B`) (A + B) isA:-B B:-A C:-`A+barA` D:-`barA+B` Correct Answer:- Option-A Question50:-A negative Liapunov exponent measures A:-the rate at which a system point approaches a regular attractor B:-the rate at which a system point diverges from a regular attractor C:-the amount of sensitivity to initial conditions D:-the relation with poincare maps Correct Answer:- Option-A Question51:-Which of the following are related to chaos? A:-Breakdown of integrability **B:-Appearance of islands** C:-Extreme sensitivity to initial conditions D:-All of the above Correct Answer:- Option-D Question52:-Cosmic background radiation supports A:-Big crunch of the universe B:-Steady state of the universe C:-Dark energy of the universe D:-Big Bang of the universe Correct Answer:- Option-D Question53:-Which of the following is a left-handed particle ? A:-Antineutrino`` B:-`pi` -measons C:-Neutrino D:-Positrons Correct Answer:- Option-A Question54:-The energy gap in a semiconductor is proportional to the inverse of the square of size. The effect is a result of A:-Etching **B:-Quantum confinement** C:-Erosion D:-Dip pen nano-lithography Correct Answer:- Option-B Question55:-Energy from gravitational field is energy obtained from A:-Wind B:-Solar cells C:-Tides D:-Coal Correct Answer:- Option-C Question56:-The number of chemical shift non-equivalent protons expected in `^1`H NMR spectrum of `alpha` -plnene A:-7 B:-8 C:-9

D:-10 Correct Answer:- Option-D Question57:-Example of a boson A:-Photon **B:-Electron** C:-Neutron D:-Positron Correct Answer:- Option-A Question58:-The molecule that has `S (6)` symmetry element is A:-`B (2)``H (6)` B:-`CH (4)` C:-`PH (3)` D:-`SF (6)` Correct Answer:- Option-D Question59:-Calculate the dipole moment of NaCl in the gas phase assuming equal and opposite charges equal to the proton charges. The equilibrium internuclear distance is 236 pm. A:-38`xx``10^(-20)` Cm B:-28`xx``10^(-15)` Cm C:-38`xx``10^(-30)` Cm D:-18`xx``10^(-30)` Cm Correct Answer:- Option-C Question60:-In the iodometric titration of sodium thiosulfate (`Na (2)``S (2)``O (3)`) with acidic dichromate solution, 25 mL of 0.1 M dichromate requires 25 mL of 'x' M thiosulfate. The value of 'x' is A:-0.2 B:-0.1 C:-0.6 D:-0.4 Correct Answer:- Option-D Question61:-The loss of an alkene fragment by a cyclic rearrangement of acarbonyl compound with Γ -hydrogen is termed as A:-Beckman rearrangement **B:-Lossen rearrangement** C:-Cope rearrangement D:-Mc Lafferty rearrangement Correct Answer:- Option-D Question62:-How many peaks do you expect in the proton decoupled CMR spectra of cycloheptane and t-butyl alcohol ? A:-1.2 B:-2, 4 C:-1.3 D:-2, 2 Correct Answer:- Option-A Question63:-The heterocyclic ring present in the amino acid histidine is A:-Pyridine **B:-Tetrahydrofuran** C:-Indole D:-Imidazole Correct Answer:- Option-D Question64:-The co-enzyme that is involved in the reduction of a double bond in fatty acid bisyntheis is A:-NADH **B:-Biotin** C:-Pvridoxal D:-FADH2 Correct Answer:- Option-D Question65:-Ground state term symbols for Lanthanum and Uranium atom are A:-`^2L (3/2),^5L (6)` B:-`^2D (2/3),^6L (5)` C:-`^2D (3/2),^5L (6)` D:-`^1D (3/2),^5L (5)` Correct Answer:- Option-C Question66:-The simultaneous Eigen functions of angular momentum operators $L^{(2)}$ and L(z) are

A:-all of $2_(s)$, $2p_(x)$, $2p_(y)$ and $2p_(z)$ orbitals B:-only 2 (s), 2p (x), 2p (y) orbitals C:-only `2_(s)` and `2p_(z)` orbitals D:-only`` `2p_(z)` orbital Correct Answer:- Option-C Question67:-The point group symmetry of CH(2) = C = CH(2) is A:-`C (2h)` B:-`C (2v)` C:-`D_(2h)` D:-`D (2d)` Correct Answer:- Option-D Question68:-The molecule that has `S (6)` symmetry element is A:-`B (2)H (6)` B:-`CH (4)` C:-`PH (3)` D:-`SF_(6)` Correct Answer:- Option-D Question69:-An element with density 11.2 g/cm⁽³⁾ forms an fcc lattice with edge length of $4xx10^{-8}$ cm. Calculate the atomic mass of the element. A:-120.8 B:-240.4 C:-98 D:-107.9 Correct Answer:- Option-D Question70:-The crystal with metal deficiency defect is A:-NaCl B:-ZnO C:-FeO D:-KCl Correct Answer:- Option-C Question71:-Which one of the following is used as piezo electric material ? A:-Silica gel **B:-Graphite** C:-Kieselghur D:-Quartz Correct Answer:- Option-D Question72:-Standard electrode potentials of three metals X, Y, Z are -1.2V, +.5V and -3V respectively. The reducing power of these metals will be A:-Y>Z> B:-Y>X>Z C:-Z>X>Y D:-X>Y>Z Correct Answer:- Option-C Question73:-The most populated rotational state for HCl (B = $8.5 \text{ } \text{cm}^{-1}$) at 300 K is A:-4 B:-3 C:-1 D:-8 Correct Answer:- Option-B Question74:-The value of `d (111)` in a cubic crystal is 325.6 pm. The value of `d (333) `is A:-208 pm B:-308 pm C:-108.5 pm D:-420 pm Correct Answer:- Option-C Question75:-The molecule active in rotational microwave, infrared absorption as well as rotational Raman spectra is A:-`CO (2)` B:-`SF (6)` C:-HCI

D:-`N (2)` Correct Answer:- Option-C Question 76:-Which of the following electrolyte have maximum Flocculation Value ? A:-`K (2)SO (4)` B:-`(NH_(4))_3PO_(4)` C:-`Na (2)` S D:-NaCl Correct Answer:- Option-D Question77:-The equilibrium constant of the following redox reactions at 298 K is $1xx10^{(8)} 2Fe^{(3+)}$ (ag) + $2I-(aq) = = 2fe^{(2)} + (aq) + 1(2)$ (s) If the standard reduction potential of iodine becoming iodine is +.54V, what is the standard reduction potential of `Fe^(3+)`/`Fe^(2+)` ? A:--1.006V B:-+.77V C:--.77V D:--.652V Correct Answer:- Option-B Question78:-A first order reaction is 50% complete in 69.3 minutes. Time required for 90% completion for this reaction is A:-100 minutes B:-230 minutes C:-2303 minutes D:-125 minutes Correct Answer:- Option-B Question79:-An organic compound with the molecular formula `C (9)H (10)`O forms 2, 4-DNP derivative, reduces Tollen's reagent and undergoes Cannizzaro reaction. On vigorous oxidation, it gives 1, 2-bezendicarboxylic acid. Identify the compound. A:-2-methyl Benzaldehyde B:-3-ethyl Benzaldehyde C:-2-ethyl Benzaldehyde D:-4-ethyl Benzaldehyde Correct Answer:- Option-C Question80:-The reaction that involves the formation of both C-C and C-O bonds is A:-Diels-Alder reaction B:-Darzen's glycidic ester condensation C:-Aldol reaction D:-Beckmann rearrangement Correct Answer:- Option-B Question81:-Amongst the following which is not isolobal pairs ? A:-`Mn(CO) (5)`, `CH (3)` B:-`Fe(CO)_(4)`, O` C:-`Co(CO) (3)`, `R (2)Si` D:-`Mn(CO) (5)`, RS` Correct Answer:- Option-C Question82:-The ligand system present in Vitamin `B (12)` is A:-Porphyrin B:-Corrin C:-Phthalocyanine D:-Crown ether Correct Answer:- Option-B Question83:-Match the metalloproteins in Column A with its biological and metal center in Column B. Column A Column B (a) Hemoglobin (i) Electron carrier and iron (b) Cytochrome b (ii) Electron carrier and copper (iii) `O (2)` transport and copper (c) Vitamin `B (12)` (d) Hemocyanin (iv) Group transfer reactions and cobalt (v) $O_(2)$ storage and cobalt (vi) `O_(2) ` transport and iron The correct match is A:-(a)-(vi); (b)-(i); (c)-(iv) and (d)-(iii) B:-(a)-(v); (b)-(i); (c)-(iv) and (d)-(iii) C:-(a)-(iv); (b)-(v); (c)-(i) and (d)-(ii)

D:-(a)-(v); (b)-(vi); (c)-(ii) and (d)-(iv)

Correct Answer:- Option-A

Question84:-The light pink color of $[Co(H_(2)O)_6]^{(2+)}$ and the deep blue color of $[CoCl_(4)]^{(2-)}$ are due to A:-MLCT transition in the first and d-d transition in the second

A:-MLC1 transition in the first and d-d transition in the second

B:-LMCT transition in both

C:-d-d transitions in both

 $\mathsf{D}\text{:-}\mathsf{d}\text{-}\mathsf{d}$ transition in the first and MLCT transition in the second

Correct Answer:- Option-C

Question85:-Patients suffering from Wilson's disease have

A:-Low level of Cu-Zn superoxide dismutase

B:-High level of Cu-Zn superoxide dismutase

C:-Low level of copper-storage protein, ceruloplasmin

D:-High level of copper-storage protein, ceruloplasmin

Correct Answer:- Option-C

Question86:-The carbon-14 activity of an old wood sample is found to be 14.2 disintegrations $\min^{-1}g^{-1}$. Calculate age of oldwood sample, if for a fresh wood sample carbon-14 activity is 15.3 disintegrations $\min^{-1}g^{-1}(t_1/2)$ carbon-14 is 5730 years), is

A:-5,000 years B:-4,000 years

C:-877 years

D:-617 years

Correct Answer:- Option-D

Question87:-In a polarographic estimation, the limiting currents (μ A) were 0.15, 4.65, 9.15 and 27.15 when concentration (mM) of Pb(II) were 0, 0.5, 1.0 and 3.0 respectively. An unknown solution of Pb(II) gives a limiting current of 13.65 μ A. Concentration of Pb(II) in the unknown is

A:-1.625 mM B:-1.208 mM C:-1.768 mM D:-1.500 mM

Correct Answer:- Option-D

Question88:-The number of valence electrons provided [Ru`(CO)_(3)`] fragment towards cluster bonding is

- A:-1
- B:-12
- C:-8
- D:-2

Correct Answer:- Option-D

Question89:-0.106 mg of stearic acid ($M = 284 \text{ g} \text{mol}^{-1}$) is found to cover 500 $\text{cm}^{(2)}$ of water surface at the point where surface pressure just begins to rise sharply. Estimate the cross sectional area a, per stearic acid molecule and thickness t, of the surface film of stearic acid on water. Density of stearic acid = 0.85 g $\text{cm}^{(-3)}$.

A:-3.5 nm B:-2.5 nm C:-1.9 nm D:-.05 cm Correct Answer:- Option-B Question 90:-For Daniel cell calculate ΔG , if E = 1.10v at 250 C and D = 2, F = 96500 C A:-185.4 KJ B:-200.2 KI C:-212.3 KJ D:-256.2 KI Correct Answer:- Option-C Question91:-Which of the following expression does not figure in the Preamble of Indian Constitution ? A:-Republic **B:-Socialist** C:-Federal D:-Secular Correct Answer:- Option-C Question92:-Which was described by Dr. B.R. Ambedkar as the 'Heart and Soul of the Constitution' ? A:-Right to Equality **B:-Right to Constitutional Remedies** C:-Right to Freedom

D:-Right to Freedom of Religion Correct Answer:- Option-B Question93:-The Article of Indian Constitution which deals with Uniform Civil Code ? A:-44 B:-48A C:-43A D:-47 Correct Answer:- Option-A Question94:-The total number of ministers including the Prime Minister in the Council of Ministers should not exceed _ percent of the total membership of the Lok Sabha. A:-7 B:-10 C:-20 D:-15 Correct Answer:- Option-D Ouestion 95:-Which Article of Indian Constitution deals with Amendment ? A:-368 B:-352 C:-358 D:-315 Correct Answer:- Option-A Question96:-Which of the following is a small deposit scheme for girl child ? A:-Pradhan Mantri Suraksha Bima Yojana B:-Pradhan Mantri Jeevan Jyothi Bima C:-Pradhan Mantri Sukanya Samridhi Yojana D:-Pradhan Mantri Fasal Bima Yojana Correct Answer:- Option-C Question97:-World Blood Donor Day is celebreated each year throughout the world on A:-`17^(th)` August`` B:-`14^(th)` June C:-`9^(th)` September D:-`20^(th)` February Correct Answer:- Option-B Question98:-National Rural Employment Guarantee Scheme was extended to the State of Jammu and Kashmir in the year A:-2007 B:-2005 C:-2006 D:-2008 Correct Answer:- Option-A Question99:-National Food Security Act came into force on A:-`23^(rd)` July, 2013 B:-`5^(th)` July, 2013 C:-`15^(th)` August, 2013 D:-`1^(st)` June, 2013 Correct Answer:- Option-B Question100:-The definition of 'Child' in the 'Protection of Women from Domestic Violence Act 2005' is A:-Any person below the age of 15 years B:-Any person below the age of 14 years C:-Any person below the age of 7 years D:-Any person below the age of 18 years Correct Answer:- Option-D