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CUET 2020

An Institute of
NET-JRF, IIT-JAM, GATE, JEST, TIFR
CUET Entrance in Physics
Physical Sciences
New Delhi

CUET – 2020 (Physics)

PART-A

1. Select the most suitable synonym of the word DETER

(A) Distract (B) Suppress (C) Discourage (D) Contaminate

2. Choose the pair which exhibit the same relationship as CUBE : DICE

(A) PAPER : THIN (B) SPHERE : SUN

(C) CLOTH : WEIGHT (D) MOUNTAIN : HEIGHT

3. Select the correct word of following sentence

Most Chinese……European first names to be their surnames

(A) Determine (B) Attempt (C) Feel (D) Assume

4. *Life* is related to death in the same way *Hope* is related to

(A) Sad (B) Despair (C) Pain (D) Cry

5. Identify the word which is opposite the meaning of TEMPORAL

(A) Devious (B) Immaculate (C) Didactic (D) Celestial

6. Choose the most appropriate set of prepositions for the blanks given in the sentence below: ……first I found the work very tiring but ……a few weeks I got used…….it.

(A) For, in, to (B) At, in, to (C) In, at, to (D) At, into, to

7. Select correct meaning of foreign expression *prime facie*

(A) On first consideration (B) A basis

(C) A record of events (D) A simple purpose

8. Identify the meaning of underlined word-

The cosmetic preparations that are used to beautifying oneself have deleterious effect

(A) Harmful (B) Beneficial (C) Lasting (D) Tremendous

9. Identify the word which carry the meaning of following sentence

Voluntary relinquishing of something valued

(A) Nihilism (B) Sabotage (C) Sacrifice (D) Scrimmage

10. Identify the word which carry the meaning of underlined idiom

The cricket fans were in the dark till the disclosure to the CBI report

(A) Innocent (B) Ignorant (C) Happy (D) Unhappy

11. The greatest possible length which is used to measure 7m, 3m, 85cm and 12m, 9cm is-

(A) 15 cm (B) 25 cm (C) 35 cm
(D) 42 cm

12. The total surface area of a cube is 96 cm2. What is it's volume?

(A) 32 cm^3 (B) 49 cm^3 (C) 64 cm^3 (D) 81 cm^3

13. The population of a town 2 years ago was 62,500. Due to migration to big cities, it decreases 4% per year. The present population of the town is

(A) 56.700 (B) 57,600 (C) 58,800 (D) 60,000

14. Depreciation applicable to an equipment is 20%. The value of this after 3 years from now will be less by

(A) 45% (B) 48.8% (C) 51.2% (D) 60%

15. A sum of money is to be distributed among A, B, C, and D in the proportion of 5: 2: 4: 3. If C gets Rs 1000 more than D. what will be the share of B?

(A) 500 (B) 1500 (C) 2000 (D) 2500

16. Ashok and Binod can do a piece of work in 20 days; Binod and Chink can do it in 15 days; and Chinku and Ashok can do it in 12 days. In how many days can Binod alone do it?

(A) 56 (B) 60 (C) 48 (D) 40

17. At what rate of compound interest per annum will a sum of Rs. 1200 become Rs. 1348.32 in two years?

(A) 6% (B) 6.5% (C) 7% (D) 7.5%

18. There is 60% increase in an amount in 6 years at simple interest. What will be the compound interest of Rs. 12000 after 3 years at the same rate?

(A) Rs. 2160 (B) Rs. 3120 (C) Rs. 6240 (D) Rs. 3972

19. If all the numbers in 32741658 are arranged in sending order from left to right, the position(s) of how many numbers will remain unchanged?

(A) One (B) Two (C) Three (D) Four

20. Complete the series:

EAC, GCE, IEG.....

(A) JGI (B) KGI (C) KGH (D) LGI

21. The Jnanpith Award is related to which of the following fields?

(A) Literature (B) History (C) Dance (D) Theater

22. Which of the following States has the largest forest cover in the country?

(A) Madhya Pradesh (B) Arunachal Pradesh (C) West Bengal (D) Andhra Pradesh

23. Which of the following is the birth place of Gautama Buddha?

(A) Kushinagar (B) Lumbini (C) Sarnath (D) Gaya

24. The theme of the National Science Day 2020 is

(A) Climate change (B) Technology and modern life

(C) Women in science (D) The future is accessible

25. The watershed between India and Myanmar is formed by the

(A) Garo hills (B) Naga hills (C) Jaintia hills (D) Khasi hills

PART-B

26. For a vector $\vec{a} = \vec{j} + \vec{k}$, $\vec{b} = 2\vec{i} + 3\vec{j} - 5\vec{k}$ and $\vec{c} = \vec{j} - \vec{k}$, the vector product $\vec{a}$ x ($\vec{b}$ x $\vec{c}$) is-

(A) In the same direction as $\vec{b}$

(B) In the same direction opposite to $\vec{b}$

(C) In the same direction as $\vec{c}$

(D) In the same direction opposite to $\vec{c}$

27. The value of partial differential $\frac{\partial^2 f}{\partial y \partial z}$ of the function f (x,y,z) = $-5x^3y^2 - 6x^2yz + 8xy^3z^2 - 2yz^5$ is equal to

(A) $-10x^3 + 48xyz^2$

(B) $-10x^3y - 6x^2z + 24xy^2z^2 - 2z^5$

(C) $-30x^2y - 12xz + 24y^2z^2$

(D) $-6x^2 + 48xy^2z - 10z^4$

28. Given that f(3) = 6, f'(3) = 8, f''(3) = 11 and other higher order derivatives of f(x) in Taylor's theorem are zero at x = 3, and assuming the function and all its derivatives exist and are continuous between x = 3 and x = 7, then value of f(7) is equal to

(A) 38.00 (B) 79.50

(C) 126.00 (D) 323.50

29. Which of the following complex numbers is equivalent to $\frac{3-5i}{8+2i}$? here i = -$\sqrt{1}$

(A) $\frac{3}{8} - \frac{5i}{2}$ (B) $\frac{3}{8} + \frac{5i}{2}$ (C) $\frac{7}{24} - \frac{23i}{34}$ (D) $\frac{7}{24} + \frac{23i}{34}$

30. The value of the gradient of $t = x^2y + e^z$ at point P (1, 5, 2) is equal to

(A) $\vec{i} + 10\vec{j} + 0.135\vec{k}$ (B) $10\vec{i} + \vec{j} + 0.135\vec{k}$

(C) $\vec{i} + 0.135\vec{j} + 10\vec{k}$ (D) $10\vec{i} + 0.135\vec{j} + \vec{k}$

31. The letter x and y represents rectangular coordinates. The conversion of equation $x^2 + y^2 - 4x = 0$ in polar coordinates (r, θ) will be

(A) $r = 4sin\theta$ (B) $r = 4\,cos\theta$

(C) $rcos2\theta = 4sin\theta$ (D) $rsin2\theta = 4cos\theta$

32. The areal velocity of the planet in a central force field is-

(A) Zero (B) Conserved (C) Infinity (D) Not Conserved

33. Consider an object with a velocity $\vec{v}$ in a frame of reference which rotate with a constant angular velocity $\vec{w}$. The Coriolis force experienced by the object is

(A) Along $\vec{v}$ (B) Along $\vec{w}$

(C) Perpendicular to both $\vec{v}$ and $\vec{w}$ (D) Always directed towards the axis of rotation

34. Two particle of equal mass move towards each other with velocities 2v and v, respectively. The magnitude of the velocity of Centre of mass will be

(A) v (B) v/3 (C) v/2 (D) Zero

35. The mass per unit length of a rod of 2m length varies as $\rho = 3x$ kg/m. The moment of inertia in kg m^2 of the rod about a perpendicular axis passing through the tip of the rod at x = 0) is

(A) 18 (B) 14 (C) 12 (D) 8

36 A thin lens of refractive index 1.5 is kept inside a liquid of refractive index 4/3. If the focal length of the lens in air is 10 cm, then the focal length inside the liquid will be

(A) 10 cm (B) 30 cm (C) 40 cm (D) 50 cm

37. Three sinusoidal waves have the same frequency with amplitude A, A/2 and A/3 while their initial phase angles are 0, $\pi/2$ and π respectively. The amplitude of the resultant wave will be-

(A) 11A/6 (B) 2A/3 (C) 5A/6 (D) 7A/6

38. A light damped harmonic oscillator with natural frequency ω_0 is driven by a periodic force of frequency ω. The amplitude of oscillation is maximum when

(A) ω is slightly lower than ω_0

(B) $\omega = \omega_0$

(C) ω is slightly higher than ω_0

(D) The force is in phase with the displacement

39. A train passes through a station with a constant speed. A stationary observer at the station platform measures the tone of the train whistle as 484 Hz when it approaches the station and 442 Hz when it leaves the station. If sound velocity in air is 330 m/s, then the tone of the whistle and the speed of the train are, respectively

(A) 462 Hz, 54 km/h (B) 463 Hz, 52 km/h

(C) 463 Hz, 56 km/h (D) 464 Hz, 56 km/h

40. A stationary wave is produced in a string of length 1.25 meters. If there nodes and two antinodes are produced in the string, then the wavelength of the wave is

(A) 2.50 meters (B) 3.75 meters (C) 5 meters (D) 1.25 meters

41. An unpolarized light falls on a flat material with an angle of incidence as 60°. The reflected light is found to be completely polarized. The velocity of the refracted ray inside the material is

(A) $\sqrt{3}$ x 10^8 m/s (B) $(3/\sqrt{2})$ x 10^8 m/s

(C) 0.5 x 10^8 m/s (D) 3 x 10^8 m/s

42. A point charge Q is located at the centre of the cube of edge length a. The electric flux through one face of the cube will be-

(A) Q/ε_0 (B) $Q/6\varepsilon_0$ (C) $6Q/\varepsilon_0$

(D) $Q/2\varepsilon_0$

43. A point charge q is rotated along a circle in the electric field generated by another point charge Q. The work done by the electric field on the rotating charge in one complete revolution is

(A) Positive

(B) Negative

(C) Zero

(D) Zero if the charge Q is at the centre and nonzero otherwise

44. In a series LCR circuit on increasing the value of capacitance four times, the value of inductance in order to keep the resonant frequency unchanged, will be

(A) 2L (B) L (C) L/2

(D) L/4

45. The charge Q is divided into two parts q and (Q-q) so that the force between the charges is maximum at any separation. Then q is equal to

(A) 2Q/3 (B) Q/4 (C) Q/3

(D) Q/2

46. An oscillating voltage $V(t) = V_o \cos\omega t$ is applied across a parallel plate capacitor having a plate separation d. the displacement current density through the capacitor is

(A) $\varepsilon_0 \omega \frac{Vo \cos\omega t}{d}$ (B) $\varepsilon_o \mu_o \omega \frac{Vo \cos\omega t}{d}$

(C) $- \varepsilon_o \mu_o \omega \frac{Vo \cos\omega t}{d}$ (D) $- \varepsilon_o \omega \frac{Vo \sin\omega t}{d}$

47. A proton enters the magnetic field with a velocity at right angle to the magnetic field. The path followed by the proton will be-

(A) Helix (B) Parabola (C) Circular (D) Straight Line

48. The value of dP/P for an adiabatic expression of a gas is-

(A) dV/V (B) – dV/V (C) –γ dV/V (D) V/dV

49. Which of the following quantities is zero on an average for molecules of an ideal gas in equilibrium?

(A) Kinetic energy (B) Momentum (C) Density (D) Speed

50. Which one of the following is not a thermos-dynamical function?

(A) Enthalpy (B) Work done (C) Gibb's energy (D) Internal Energy

51. A carnot engine with sink temperature at 300 K has an efficiency of 40%. By how much should the temperature of source be increased so as to increase its efficiency by 50% of original efficiency?

(A) 750 K (B) 380 K (C) 325 K
(D) 250 K

52. Which one of the following is the formula for Gibbs free energy?

(A) H - T △S (B) H – T (C) H - S
(D) T △S

53. A gas molecule of mass m moving with velocity v makes five elastic collision per seconds with a wall of container. The change in its momentum per second will be-

(A) Zero (B) mv (C) 5 mv (D) 10 mv

54. Pauli's Exclusion principle states that two electrons in the same orbit have

(A) Same spin (B) Different spin (C) Opposite spins (D) Vertical spins

55. The energy released by the nuclear bomb which destroyed Hiroshima was equivalent to 12.4 kilotons of TNT. This energy is equivalent to 9 x 1026 MeV. The mass which was converted into energy in this explosion was

(A) 12.4 kg (B) 6.2 kg (C) 1.6 kg (D) 1.6 x 10^{-3} kg

56. According to Bohr's atomic model, the angular momentum of electron in n^{th} orbit is equal to an integral multiple of

(A) $2\pi/h$ (B) $h/2\pi$ (C) h/π (D) $nh/2\pi$

57. The process in which an excited nucleus decays without emitting alpha , beta or Gamma-rays, is known as

(A) Photo electric effect (B) Compton Effect

(C) Inversion conversion (D) Pair production

58. A semiconducting device is connected in a series circuit with battery and a resistance. A current is found to pass through the circuit if the polarity of the battery is reversed, the current drops to almost zero. The device may be

(A) A p-type semiconductor (B) A n-type semiconductor

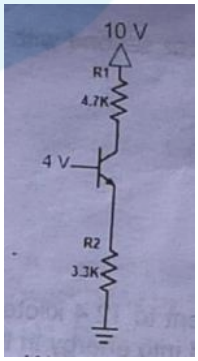
(C) A p-n junction (D) An intrinsic semiconductor

59. Which of the following gate corresponds to the truth table given as

A	B	Y
1	1	0
1	0	1
0	1	1
0	0	1

(A) XOR (B) NOR (C) OR (D) NAND

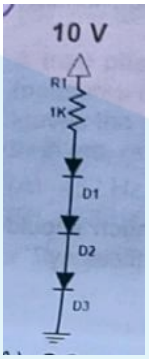
60. Assuming a diode drop of 0.7 V, the current through the resistance R1 in the following circuit is:



(A) 9.3 mA (B) 7.9 mA (C) 10 mA

(D) 0 A

61. Assuming a β of 100, the voltage at the collector in the following circuit is



(A) 3.3 V (B) -5.3 V (C) 5.3 V (D) -3.3 V

62. At what speed should an object move so that it's length appears to be half of it's proper length?

(A) 2.6 x 10^8 m/s (B) 3 x 10^8 m/s

(C) 3.4 x 10^8 m/s (D) 6.8 x 10^8 m/s

63. Which of the following conditions guarantee that a set of wave functions are mutually orthogonal and normalized?

(A) $\int \psi i \psi i$

64. A half-life of a certain element is 3 days. The decay constant of the element is

(A) 2.67 x 10^{-6} s^{-1} (B) 2.67 x 10^{-7} s^{-1}

(C) 3 x 10^{-8} s^{-1} (D) 3 x 10^{-7} s^{-1}

65. The eigen value of the matrix $\begin{bmatrix} cos\theta & sin\theta \\ sin\theta & cos\theta \end{bmatrix}$ are

(A) 0 and 1 (B) $cos\theta, sin\theta$ (C) $e^{\pm i\theta}$ (D) $cos\theta, -sin\theta$

66. The series $\sum_{n=2}^{\infty} \frac{1}{n^2-1}$ is-

(A) Convergent (B) Divergent (C) Zero (D) Oscillatory

67. The Fourier transform of a Gaussian is a

(A) Sinc function (B) Constant (C) Gaussian (D) Exponential

68. The solution of differential equation $\frac{dN}{dt}$ = -kN^2, where k is constant, is of the form

(A) $N(t) = No\ sin\ (kt)$ (B) $N(t) = No$ (1 + Nok/t)

(C) $N(t) = No\,(\,1 + Nok/t\,)^{-1}$

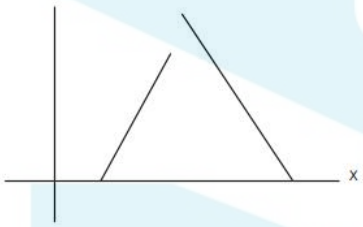
(D) $N(t) = No\,(\,1 + Nokt\,)$

69. The ground state energy of 3D quantum mechanical harmonic oscillator is

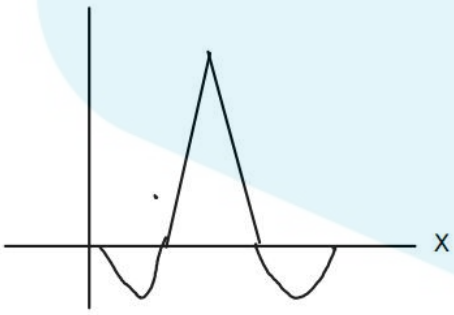
(A) 0 (B) $\frac{5}{2}\hbar\omega$ (C) $\frac{1}{2}\hbar\omega$

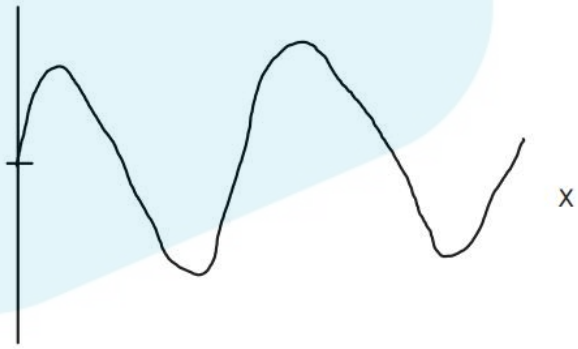
(D) $\frac{3}{2}\hbar\omega$

70. Which of the following is acceptable wave function ?

A. 

B. 

C. 

D. 

71. The Lorents force states-

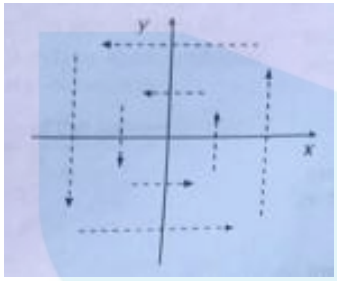
(A) F = Q [E + (v x B)]

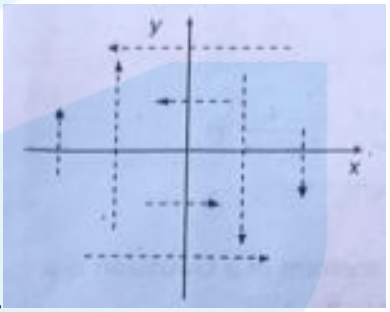
(B) F = Q [B + (v x E)]

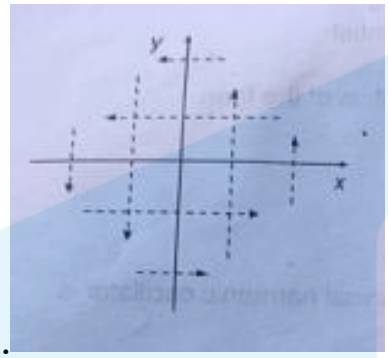
(C) F = Q [v + (E x B)]

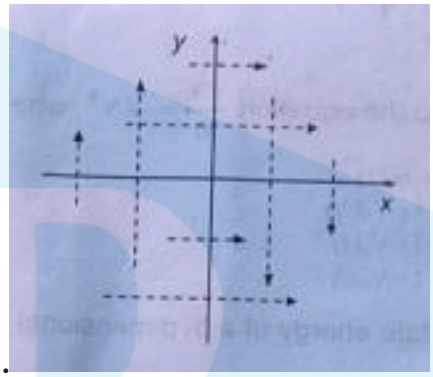
(D) F = Q [E + (B x v)]

72. Which of the following figures approximately represents the vector field $-y\vec{i} + y\vec{j}$?

A. 

B. 

C. 

D. 

73. Two spring of spring constant k_1 and k_2 are connected in series with one end fixed such that they hang vertically. To the other end, an object of mass m is attached. The angular frequency of oscillation of small amplitude about the mean position is-

(A) $\sqrt{\frac{k1 + k2}{m\ (k1k2)}}$ (B) $\sqrt{\frac{m(k1 + k2)}{(k1k2)}}$ (C) $\sqrt{\frac{k1\ k2}{m\ (k1 + k2)}}$ (D) $\sqrt{\frac{k1 + k2}{(k1k2)}}$

74. A body of mass m is suspended from a weighing balance which is in turn hanged from the roof of a rocket moving vertically upwards with constant acceleration a. Assuming the constant acceleration due to gravity g due to earth find the weight of the body as measured by the balance.

(A) mg (B) ma (C) m (g-a) (D) m (g + a)

75. A mass of 5kg is suspended from a vertical massless spring of spring constant 500 N/m. The mass is displaced downward by 0.03 m and release. The frequency of oscillation of the mass is,

(A) 2π (B) $1/2\pi$ (C) $5/\pi$ (D) 5π

76. The dimension of the surface tension is-

(A) ML^{-1} (B) ML^{-2} (C) MT^{-1} (D) MT^{-2}

77. Which one of the following correctly describes Bernoulli's theorem for incompressible fluids?

(A) $\frac{P}{\rho g} + \frac{v^2}{2g} + h = 0$ (B) $\frac{P}{\rho g} + \frac{v^2}{2g} + h =$ constant

(C) $\frac{P}{\rho g} - \frac{v^2}{2g} + h =$ constant (D) $\frac{P}{\rho g} - \frac{v^2}{2g} - h =$ constant

78. The position coordinates of an object of mass m are given by $x = \cos(\omega t)$, $y = \sin(\omega t)$, z = constant. The z component angular momentum is given by:

(A) mωx (B) mω (C) mωz

(D) mωy

79. A gas in equilibrium at temperature T and volume V. It expands to a volume V', .

Case 1: The expansion is adiabatic and reversible; the final temperature $T_1 < T$

Case 2: The expansion is adiabatic and irreversible, at the end of the process, if we wait long enough the gas equilibrates and attains a temperature T_2. Then

(A) $T < T_2$ (B) $T < T_2 < T$

(C) $0 \leq T_2 \leq T_1$ (D) $0 \leq T_2 \leq \infty$

80. The number of photons ($\lambda = 6639$ Å) emitted per second by a light emitting diode of 60 % efficiency and 1 Watt power consumption is

(A) 6×10^7 (B) 6630 (C) 6×10^{34}

(D) 2×10^{28}

81. The function $f(x) = \begin{cases} x^2 - 2 \ for - \infty \leq x < 1 \\ \alpha x - 1 for \ 1 < x < \infty \end{cases}$ is continuous at x = 1 if α is equal to

(A) -1 (B) 0 (C) 1

(D) 2

82. The vector $\begin{pmatrix}1\\1\\1\end{pmatrix}$ is an eigenvector of the matrix $\begin{pmatrix}1 & -2 & 3\\-2 & 3 & 1\\3 & 1 & -2\end{pmatrix}$ with an eigenvalue,

(A) 0 (B) 1 (C) 2

(D) 3

83. A is a 3 x 3 matrix with eigenvalues 1, -2, 3. The eigenvalue of the matrix A^2 are

(A) 1, -2, 3 (B) 1, 4, 9 (C) 2, -4, 9

(D) 1, -4, 9

84. The tangent line to the curve $y = \exp(x^2)$, at $x = 0$ has a slope,

(A) zero (B) unity (C) e

(D) 1/e

85. The direction of motion of an electromagnetic wave is given by

(A) $\vec{B}$ X $\vec{E}$ (B) $\vec{E}$ X $\vec{B}$ (C) $\vec{E}$

(D) $\vec{B}$

86. Consider coordinate transformation u = x + 2y and v = 2x – y. We have du dv = k dx dy. The value of k is

(A) -5 (B) 5 (C) 3

(D) 4

87. The relation between speed of light c, the permeability of vacuum Ɛ and permittivity of vacuum μ is given by

(A) $c = \mu\varepsilon$ (B) $c = 1/\mu\varepsilon$ (C) $c = 1/\sqrt{\mu\varepsilon}$

(D) $c = \mu/\varepsilon$

88. Let $\vec{A}(x,y,z) = \hat{x}Ax(x,y,z) + \hat{y}Ay(x,y,z) + \hat{z}Az(x,y,z)$ denote a vector field and ∇ is the del operator given by $\hat{x}\frac{\partial}{\partial x} + \hat{y}\frac{\partial}{\partial y} + \hat{z}\frac{\partial}{\partial z}$. Then $\nabla.(\nabla X \vec{A})$ is

(A) $\sqrt{A_x^2 + A_y^2 + A_z^2}$ (B) Ax + Ay + Az

(C) zero (D) AxAy + AyAz + AzAx

89. Consider a matrix $A = \begin{bmatrix} 1 & 1 & 1 & 1 \\ 1 & 1 & 1 & 1 \\ 1 & 1 & 1 & 1 \\ 1 & 1 & 1 & 1 \end{bmatrix}$. The eigenvalue of A are

(A) 4, 1, 1 ,1 (B) 1, 2, 3, 4 (C) 4, 0, 0, 0

(D) 0, 1, 2, 3

90. Three identical and independent dice are thrown. The probability that the outcomes add to 13 is

(A) 7/72 (B) 23/216 (C) 17/108

(D) 7/54

91. The sum $\sum_{n=2}^{\infty} n\, x^n$, where | x | < 1, converges to

(A) $\frac{x}{(1-x)^2}$ (B) $\frac{x}{(1-x)}$ (C) $\frac{1}{(1-x)^2}$

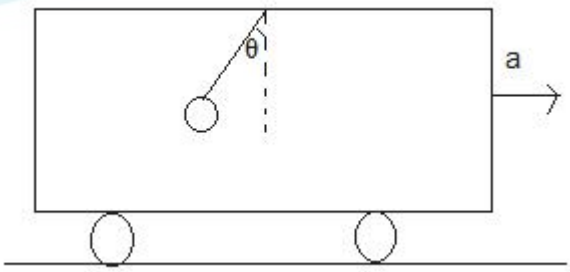
(D) $\frac{1}{(1-x)}$

92. Let $f(x) = \frac{1}{x^2-9}$ be a real function of a real variable. Taylor expansion of f (x) about x = 0 converges for

(A) $-\infty \leq x \leq +\infty$ (B) $-3 \leq x \leq 3$

(C) all values of x on the real line except x = ± 3 (D) x < -3 and +3 < x

93. You are sitting in a closed compartment of a train moving with a uniform velocity toward east. There is a mass m suspended from the



ceiling by a string, constituting a pendulum. A pendulum is hanging vertically down; it is not oscillating. The train accelerates towards east. The magnitude of acceleration is a = **17.32 m/s²** and it remains constant. You notice that the pendulum is deflected by an angle θ clockwise (i.e. towards west), from the vertical and stays inclined. Take acceleration due to gravity as g = **10 m/s²**. The magnitude of θ in radians is-

(A) π/12 (B) π/6 C) π/4 (D) π/3

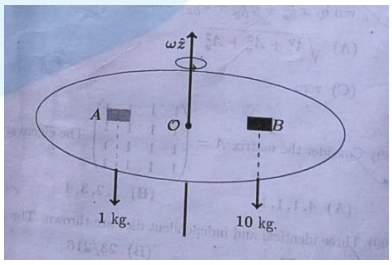
94. A tinny planet is moving round the sun in its solar system. The radius of its circular orbit 10^5 km. It takes T = 10^3 days to go round one. T is called the period of the planet. If the radius of the circular orbit of the planet is 10^4 km, it's period will be

(A) 1000 days (B) 31.6 days (C) 3.16 days (D) 100 days

95. For an ideal gas, $(\frac{\partial U}{\partial V})$ at constant T is

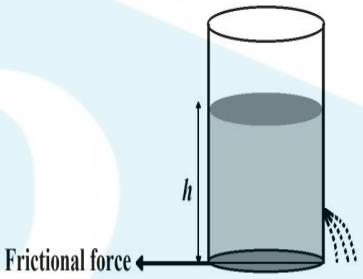
(A) > 0 (B) = 0 (C) 3/2 NK_B (D) NK_B

96. A circular platform is rotating about its axis passing through the centre. Two object A and B of masses 1 kg and 10 kg respectively are placed on the platform at a distance 1 m from the center. The coefficient of friction of the surface is μ = 0.1. The platform starts rotating from rest slowly picking up angular velocity with time. The time dependent angular velocity ω is given by ω (t) = α t where α = 1 radians/minutes². Let t_A, t_B denotes the times measured in minutes, at which the objects A and B strat moving radially outwards. The pair (t_A, t_B) is-



(A) (60, 60) (B) (6, 60) (C) (60, 6) (D) (30, 30)

97. A cylinder vessel of inner radius R is filled with water upto some height, see the adjoining figure. Y ou punch a small circular hole of radius r << R through the side of the cylinder, at 20 cm below the top of the water level. Take g= 10 m/s^2 The speed of water emerging from the hole, I units of m/s equals



(A) 2s (B) 1s (C) 1.41s (D) 4s

98. Which of the following statements is true A vector is not changed if it is-

(A) Rotated through an arbitrary angle (B) Cross multiplied by a unit vector

(C) Multiplied by an arbitrary scalar (D) Moved parallel to itself

99. Which of the following is not a – Maxwell relations

(A) $\left(\frac{\partial T}{\partial V}\right)_S = -\left(\frac{\partial P}{\partial S}\right)_V$ (B) $\left(\frac{\partial T}{\partial P}\right)_S = -\left(\frac{\partial V}{\partial S}\right)_P$

(C) $\left(\frac{\partial P}{\partial T}\right)_V = -\left(\frac{\partial S}{\partial V}\right)_T$ (D) $\left(\frac{\partial V}{\partial T}\right)_P = -\left(\frac{\partial S}{\partial P}\right)_T$

100. If angular momentum (h), velocity (c) and mass (M) are taken as fundamental units, the dimensions of the length in this system is

(A) $[h]^2[c][M]$ (B) $[h][M][C]^2$ (C) $[h][M]^{-1}[c]^{-1}$ (D) $[M][c][h]^{-1}$