MHT-CET PAPER 2006

Physics

1)The moment of inertia of a solid sphere about an axis passing through centre of gravity is $\frac{2}{5}MR^2$,then its radius of gyration about a parallel axis at a distance 2R from first axis is –(CET-2006)

a) 5R   b) $\sqrt{\frac{22}{5}}R$ c) $\frac{5}{2}R$ d) $\sqrt{\frac{12}{5}}R$

2. Two particles, execute SHM of the same amplitude and frequency along the same straight line. If they pass one another when going in opposite directions, each time their displacement is half their amplitude, the phase difference between them is -(CET-2006)

a)$\frac{\pi}{3}$ b) $\frac{\pi}{4}$ c) $\frac{\pi}{6}$ d) $\frac{2\pi}{3}$

3. An electric fan has blades of length 30 cm as measured from the axis of rotation. If the fan is rotating at 1200 rpm, the acceleration of a point on the tip of the blade is about   -(CET2006)

(a) 1600 ms^{-2} b) 4740 ms^{-2} c) 2370 ms^{-2} d) 5055 ms^{-2}

4. In a sports meet the timing of a 200 m straight dash is recorded at the finish point by starting an accurate stop watch on hearing the sound of starting gun fired at the starting point. The time recorded will be more accurate –(CET-2006)

a) in winter   b) in summer   c) in all seasons   d) None frequency

5. A note has a frequency 128 Hz. The frequency of a note two octaves higher than it is-(CET-2006)

a) 256 Hz   b) 64 Hz   c) 32 Hz   d) 512 Hz

6. Kepler's second law states that the straight line joining the planet to the sun sweeps out equal areas in equal times. This statement is equivalent to saying that -(CET-2006)

a) total acceleration is zero

b) tangential acceleration is zero

c) longitudinal acceleration is zero

d) radial acceleration is zero

7. A closed vessel is maintained at a constant temperature. It is first evacuated and then vapour is injected into it continuously. The pressure of the vapour in the vessel -(CET-2006)

a) increases continuously

b) first increases and then remains constant

c) first increases and then decreases

d) None of the above

8. It is seen that in proper ventilation of building, windows must be opened near the bottom and the top of the walls, so as to let pass -(CET-2006)

a) in hot near the roof and cool air out near the bottom

b)out hot air near the roof

c) in cool air near the bottom and hot air our near the roof

d) in more air

9. Newton's law of cooling holds good only, if the temperature difference between the body and the surroundings is -(CET-2006)

a) less than 10°C   b) more than 10^0 C   c) less than 100°C   d) more than 100°C

10. A rectangular block is 5cm×5cm× 10 cm in size. The block is floating in water with 5 cm side vertical. If it floats with 10 cm side vertical, what change will occur in the level of water ? -(CET-2006)

a) No change   b) It will rise   c) It will fall   d) It may rise or fall depending on the density of block

11. Three capillaries of length L, L/2 and L/3 are connected in series. Their radii are r, r/2 and r/3 respectively. Then, if stream-line flow is to be maintained and the pressure across the first capillary is p, then the   -(CET -2006)

a) pressure difference across the ends of second capillary is 8p

b) pressure difference across the third capillary is 43p

c) pressure difference across the ends of the second capillary is 16p

d) pressure difference across the third capillary is 56p

12. The increase in pressure required to decrease the 200 L volume of a liquid by 0.004% (in kPa) is (Bulk modulus of the liquid -=2100 MPa) –(CET-2006)

a) 8.4   b) 84   c) 92.4   d) 168

13. There is no change in the volume of a wire due to change in its length on stretching. The Poisson's ratio of the material of the wire is   -(CET-2006)

a) 0.50   b) -0.50   c) 0.25   d)-0.25

14. A slab of mass m is released from a height ho from the top of a spring S' of force constant k.

The maximum compression x of the spring is given by the equation -(CET-2006)

a) $mgh_0 = \left(\frac{1}{2}\right) kx^2$

b) $mg(ho - x) = \left(\frac{1}{2}\right) kx^2$

c) $mgho = \frac{1}{2} k (ho + x)^2$

d) $mg(h_0 + x) = \left(\frac{1}{2}\right) kx^2$

15. An engineer claims to have made an engine delivering 10 kW power with fuel consumption of 1 g/s. The calorific value of fuel is 2 kcal/g. This claim is-(CET-2006)

a) valid   b) invalid   c) dependent on engine design   d) dependent on load

16. A block of wood is floating in water with fraction x of the total volume immersed inside. If water is now heated from 0°C to 10°C, the floating fraction x will -(CET-2006)

(a) increase

b) decrease

c) remain same

d) first decrease and then Increase

17. A perfectly reflecting mirror has an are 1 cm^2. Light energy is allowed to fall on it for 1 h at the rate of 10W/cm². The force that t on the mirror is -(CET-2006)

a) 3.35×10^{-8} N

b) 6.7×10^{-8}N

c) 1.34×10^{-7} N

d) 2.4×10^{-4} N

18. In Young's experiment when sodium light of wavelength 5893 $\mathring{A}$ is used, then 62 fringes are seen in the field of view. Instead, if violet light of wavelength 4358 $\mathring{A}$ is used, then the number of fringes that will be seen in the field of view will be –(CET-2006)

a) 54   b) 64   c) 74   d) 84

19. In a Fresnel biprism experiment, the two positions of lens give separation between the slits as 16 cm and 9 cm, respectively. What is the actual distance of separation? (CET-2006)

a) 12.5 cm   b) 12 cm   c) 13 cm   d) 14 cm

20. A parallel plate capacitor is charged to 60 μC. Due to a radioactive source, the plate loses charge at the rate of 1.8 * 10 ^ - 8 C/s. The magnitude of displacement current is –(CET-2006)

a) 1.8×10^{-8} C / s

b) 3.6×10^{-8} C/s

c) 4.1×10^{-11} C / s

d) 5.7×10^{-12} C / s

21. If the plates of a parallel plate capacitor are not equal in area, then quantity of charge –(CET-2006)

 a) on the plates will be same but nature of charge will differ

b) on the plates as well as nature of charge will be different

c) on the plates will be different but nature of charge will be same

d) as well as nature of charge will be same

22. Is it possible that any battery has some constant value of emf, but the potential difference between the plates is zero ? -(CET-2006)

a) Not possible

b) Yes, if another identical battery is joined in series

c) Yes, if another identical battery is joined in opposition

d) Yes, possible, if another similar battery is joined in parallel

23.A galvanometer has a resistance of 3663Ω. A shunt S & is connected across it such that (1/34) of the total current passes through the galvanometer. Then the value of shunt is -(CET-2006)

 a) 3663Ω   b) 111Ω   c) 107.7Ω   d) 3555.3Ω

24.To decrease the range of an ammeter,its resistance need to be increased.An ammeter has resistance R $_0$ and range I.which of the following resistance can be connected in series with it to decrease its range to I/n? –(CET-2006)

a)$\frac{R_0}{n}$ b)$\frac{R_0}{(n-1)}$ c) $\frac{R_0}{(n+1)}$ d)None of these

25. To get maximum current through a resistance of 2.50Ω,one can use m rows of cells, each row having n cells. The internal resistance of each cell is 0.5Ω. What are the values of n and m, if the total number of cells is 45? –(CET-2006)

a) m = 3, n = 15

b)m=5,n=9

c) m = 9, n = 5

d) m = 15 n = 3

26. Two short magnets have equal pole strengths but one is twice as long as the other. The shorter magnet is placed 20 cm in tan A position from the compass needle. The longer magnet must be placed on the other side of the magnetometer for no deflection at a distance equal to –(CET-2006)

a) 20 cm

b) 20× $(2)^{1/3}$ cm

c) 20× $(2)^{2/3}$ cm

d)20× $(2)^{3/3}$ cm

27. The magnetism of a magnet is due to –(CET-2006)

a) the earth

b) cosmic rays

c) the spin motion of electrons

d) pressure of big magnet inside the earth

28. A circuit has a self-inductance of 1H and carries a current of 2 A. To prevent sparking, when the circuit is switched off, a capacitor which can withstand 400 V is used. The least capacitance of the capacitor connected across the switch must be equal to -(CET-2006)

a) 50 μF   b) 25μF   c) 100 μF   d) 12.5 μF

29. A step down transformer, transforms a supply line voltage of 2200 V into 220 V. The primary coil has 5000 turns. The efficiency and power transmitted by the transformer are 90% and 8 kW respectively. Then the power supplied is – (CET-2006)

(a) 9.89 kW   b) 8.89 kW   c) 88.9 kW   d) 889kW

30. In an AC circuit, the current lags behind the voltage by π /3. The components of the circuit are -(CET-2006)

a) R and L   b) L and C   c) R and C   d) only R

31. A body is just being revolved in a vertical circle of radius R with a uniform speed. The string breaks when the body is at the highest point. The horizontal distance covered by the body after the string breaks is   -(CET-2006)

a) 2R b) R   c) R $\sqrt{2}$ d) 4R

32. A body is projected upwards with a velocity of 4 ×11.2km / s from the surface of earth. What will be the velocity of the body when it escapes from the gravitational pull of earth ? –(CET-2006)

a) 11×2km/s

b) 2 × 11.2km / s

c) 3 × 11.2km / s

d) $\sqrt{15}$ × 11.2km / s

33. If a force 10 $\hat{\imath}$ +15 $\hat{\jmath}$ +25 $\hat{k}$ acts on a system and gives an acceleration 2 $\hat{\imath}$ +3$\hat{\jmath}$ -5 $\hat{k}$ to the centre of mass of the system, the mass of the system is   -(CET-2006)

a) 5 units

b) $\sqrt{38}$ units

c) 5 $\sqrt{38}$units

d) given data is not correct

34. A pendulum bob earriers a negative charge-q A positive charge +q is held at the point of support. Then, the time period of the bob is (CET-2006)

a) greater than $2\pi \sqrt{\dfrac{L}{g}}$

b) less than $2\pi \sqrt{\dfrac{L}{g}}$

c) equal to $2\pi \sqrt{\dfrac{L}{g}}$

d) equal to $2\pi \sqrt{\dfrac{2L}{g}}$

35. At a certain instant a stationary transverse wave is found to have maximum kinetic energy. The appearance of string at that instant is -(CET-2006)

a) sinusoidal shape with amplitude $\dfrac{A}{3}$

b) sinusoidal shape with amplitude $\dfrac{A}{2}$

c) sinusoidal shape with amplitude A

d) straight line

36. Two strings with mass per unit length of 25 g/cm and 9 g/cm are joined together in series. The reflection coefficient for the vibration waves are –(CET-2006)

a) $\dfrac{9}{25}$ b) $\dfrac{3}{5}$ c) $\dfrac{1}{16}$ d) $\dfrac{9}{16}$

37. Some gas at 300 K is enclosed in a container. Now, the container is placed on a fast moving train. While the train is in motion, the temperature of the gas -(CET-2006)

a) rises above 300 K

b) falls below 300 K

c) remains unchanged

d) becomes unsteady

38. We find that the temperature of air decreases as one goes up from the earth's surface because -(CET-2006)

a) the atmospheric pressure drops with height

b) the earth which radiates in the infrared region is the main heat source and temperature drops as we go away from it

c) the density of air drops with height and the air therefore cannot hold stronger as we go up

d) winds are stronger as we go up

39. Two protons are placed 1 Å apart. If they are released what will be the kinetic energy of each proton they are at large separation?   -(CET-2006)

a) 2.56×10^{-19} J

b) 11.52×10^{-19} J

c) 23.04×10^{-19} J

d) 2.56×10^{-28} J

40. If n_R and n_V denote the number of photons emitted by a red bulb and violet bulb of equal power in a given time, then   -(CET-2006)

a) $n_R = n_V$

b) $n_R > n_V$

c) $n_R < n_V$

d) $n_R >= n_V$

41. The radio transmitter operates on a wavelength of 1500 m at a power of 400 kW. The energy of radio photon (in joule) is -(CET-2006)

a) 1.32×10^{-24} J

b) 1.32×10^{-28} J

c) 1.32×10^{-26} J

d) 1.32×10^{-32} J

42. At the time of total solar eclipse, the spectrum of solar radiation will have -(CET-2006)

a) a large number of dark Fraunhofer lines

b) a smaller number of dark Fraunhofer lines

c) no lines at all

d) all Fraunhofer lines changed into bright coloured lines

43. Two nucleons are at a separation of 1 fermi. The net force between them is F_1, if both neutrons, F_2 if both are protons and F_3 if one is a proton and the other is a neutron -(CET-2006)

a) $F_1 > F_2 > F_3$

b) $F_2 > F_1 > F_3$

c) $F_1 = F_3 > F_2$

b) $F_1 > F_2 > F_3$

d) $F_1 = F_2 > F_3$

44. The material used for making thermioni cathode must have -(CET-206)

a) low work function and low melting point

b) low work function and high melting point

c) high work function and high melting point

d) high work function and low melting point

45. On increasing the reverse bias to a large value in a p-n junction, diode current –(CET-2006)

a) increases slowely

b) remains fixed

c) suddenly increases

d) decreases slowly

46. The part of a transistor which is heavily dopped to produce a large number of majority carriers is –(CET-2006)

a) base   b)emitter   c) collector   d) None of these

47. A potential difference is applied across the end of a metallic wire. If the potential difference doubled, the drift velocity will -(CET-2006)

a) be doubled   b) be halved   c) be quadrupled   d) remain unchanged

48. The mass number of nucleus is -(CET-2006)

a) sometimes equal to its atomic number

b) sometimes less than and sometimes more than its atomic number

c) always less than its atomic number

d) always more than its atomic number

49. The depletion layer in a p-n junction diode is 10 ^ - 6 m wide and its knee potential is 0.5 V, then the inner electric field in the depletion region is -(CET-2006)

a) 5×10^6 V / m

b) 5×10^5 V / m

c) 5×10^5 V / m

d) 5×10^{-1} V / m

50. Which of the following generates a plane wavefront ? -(CET-2006)

a) a-rays   b) ß-rays   c) y-rays   d) None of these

Answer

NO	Answer	No	Answer	No	Answer	No	Answer	No	Answer
1	B	11	A	21	A	31	A	41	B
2	D	12	B	22	C	32	B	42	D
3	B	13	B	23	B	33	D	43	C
4	B	14	D	24	D	34	C	44	B
5	B	15	B	25	A	35	D	45	C
6	B	16	D	26	B	36	C	46	B
7	B	17	B	27	C	37	A	47	A
8	C	18	D	28	B	38	B	48	A
9	A	19	B	29	B	39	B	49	C
10	A	20	A	30	A	40	B	50	D

Chemistry

1. The ionic conductance Ba^{2+} and Cl^- are respectively 127 and 76 ohm^{-1} cm^2 at infinite dilution. The equivalent conductance (in ohm^{-1} cm^2) of $BaCl_2$ at infinite dilution will be –(CET-2006)

a) 139.5 b) 203   c) 279   d) 101.5

2. Which of the following is known as dead burnt ? -(CET-2006)

a) Gypsum   b) Plaster of paris   c) Anhydrite   d) None of these

3 . Pnicogens are the elements of group   -(CET-2006)

a) 15 b) 13   c) VIII   d) zero

4. An organic compound 'A' having molecular formula $C_2 H_3 N$ on reduction gave another compound B, upon treatment with nitrous acid 'B' gave ethyl alcohol. On warming with chloroform and alcoholic KOH, it formed an offensive smelling compound C'. The compound 'C' is

a) $CH_3 CH_2 NH_2$

b) $CH_3CH_2N \underset{=}{\rightarrow} C$

c) $CH_3 C \equiv N$

d) $CH_3 CH_2 NOH$

5. Identify the wrong statement

a) Salicylic acid is a monobasic acid

b) Methyl salicylate is an ester

c) Salicylic acid gives violet colour with neutral ferric chloride as well as brisk effervescence with sodium bicarbonate

d) Methyl salicylate does not occur in mineral oils

6. In a closed container, a liquid is stirred with a paddle to increase the temperature. Which of the following is true? -(CET-2006)

a) $\Delta E = W \neq 0, q = 0$

b) $\Delta E = W = q \neq 0$

c) $\Delta E = 0$ $W = q \neq 0$

d) $W = 0$ $\Delta E = q \neq 0$

7. Which of the following is diamagnetic in nature? –(CET-2006)

a) $[Fe (CN)_6]^{3-}$

b) $NiCI_4^{2-}$

c) $[Ni (CO)_4]$

d) $[MnCl_4]^{2-}$

8. If an allotropic form changes slowly to a stable form. It is called –(CET-2006)

a) enantiotropy

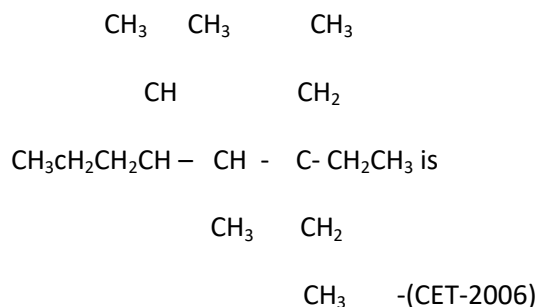b) dynamic allotropy

c) monotropy

d) None of the above

9. IUPAC name of the compound

CH₃   CH₃   CH₃

CH   CH₂

$CH_3CH_2CH_2CH - CH - C- CH_2CH_3$ is

CH₃   CH₂

CH₃   -(CET-2006)

a) 5-methyl-4-iso propyl-6, 6' diethyloctane

b) 3,3-dimethyl, 3-ethyl-5-isopropyl octane

c) 3,3-diethyl-4-methyl-5-(1,1-dimethyl) octane

d) 3,3-diethyl-4-methyl-5-(1'-methylethyl) octane

10. Consider the following carbocations, - (CET_2006)

I) $C_6 H_5 \overset{+}{\underset{C}{}}H_2$

II) $C_6H_5CH_2\overset{+}{\underset{C}{}}H_2$

(III) $C_6 H_5 CHCH_3$

IV) $C_6 H_5 \overset{+}{\underset{C}{}} (CH_3)_2$

The correct sequence of the stability of these is - (CET-2006)

a) II < I < III < IV

b) II < III <I< IV

c) III<I<II<IV

d) IV < III <I< II

11. The amount of energy released when 20 mL of 0.5 M NaOH are mixed with 100 mL of 0.1 M HCl is x kJ. The heat of neutralisation is (in kJ mol⁻¹). –(CET-2006)

a) -100 x   b) -50 x   c) +100 x   d) +50 x

12. The number of antibonding electron pairs in O_2^{2-} molecular ion on the basis of molecular orbital theory is -(CET-2006)

a) 2   b) 3   c) 4   d) 5

13. Apatite is an ore of

a) fluorine

b) chlorine

c) bromine

d) iodine

14. Two organic compounds (A) and (B) both containing only carbon and hydrogen, on quantitative analysis gave the same percentage composition by weight

$C=\left(\frac{12}{13}\right) \times 100\%$ $H= \left(\frac{1}{13}\right) \times 100\%$

A decolourises bromine water but B does not. A and B respectively are

a) $C_2 H_2$ and $C_6 H_6$

b) $C_6 H_6$ and $C_2 H_2$

c) $C_2 H_4$ and $C_2 H_6$

d) $C_2 H_2$ and $C_2 H_6$

15. The number of meso forms in the following compound is -(CET-2006)

$HOOC-CH(CH_3)-CH(OH)-CH(CI)$

   $CH(OH)CH(CH_3) COOH$
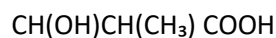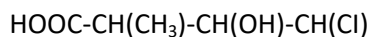
  a) 3   b) 4 c) 8   d) 16

16. Which of the following electrolytes is least effective in causing flocculation of ferric hydroxide sol? -(CET-2006)

a) $K_3 [Fe (CN)_6]$

b) $K_2 CrO_4$

c) KBr

d) $K_2 SO_4$

17. The standard molar heat of formation of ethane, CO_2 and water (l) are -21.1,-94.1 and -68.3 kcal respectively. The standard molar heat of combustion of ethane will be -(CET-2006)

a) -372 kcal b) 162 kcal   c) -240 kcal   d) 183.5 kcal

18. Which of the following forms vortex ring ? -(CET-2006)

a) $P_2 O_5$ b) PH_3 c) NH_3 d) $P_4 O_{10}$

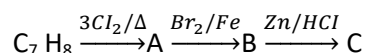19. What the product formed when acetylene reacts with hypochlorous acid ? –(CET-2006)

a) CH_3COCl

b) $ClCH_2CHO$

(c) $Cl_2 CHCHO$

d) $ClCH_2 COOH$

20. The compound 'C' in the following reaction is

$C_7 H_8 \xrightarrow{3Cl_2/\Delta} A \xrightarrow{Br_2/Fe} B \xrightarrow{Zn/HCl} C$

a) o-bromotoluene

b) m-bromotoluene

c) p-bromotoluene

d) 3-bromo-2, 4, 6-trichlorotoluene

21. Which of the following is isostructural with CO_2? –(CET-2006)

(a) $N_2 O$ b) NO_2 c) N_2O_5 d)NO

22. As the number of -OH groups increases in hypophosphorus acid, phosphorus acid and phosphoric acid, the acidic strength -(CET-2006)
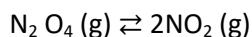
a) increases

b) decreases

c) remains nearly same

d) remains appropriately same

23. The pH of a buffer solution containing equal molal concentration of a weak base and its chloride(K_b for weak base = 2×10^{-5}) is -(CET-2006)

a) 5 b) 9   c) 4.7   d) 9.3

24. Consider the following equilibrium in a closed container -(CET-2006)

$N_2 O_4$ (g) $\rightleftarrows$ $2NO_2$ (g)

 At a fixed temperature, the volume of the reaction container is halved. For this change which of the following statement holds true regarding the equilibrium constant (K_p) and degree of dissociation (a)? –(CET-2006)

a) Neither K_p nor a changes

b) Both K_p and a changes

 c) K_p changes but a does not

d) K_p does not change but a changes

25. How many grams of dibasic acid (mol, wt. 200 should be present in 100 ml. of the aqueous solution to give 0.1 N? -(CET-2006)

a) 10 g   b)20 g   c) 2 g d) 1 g

26. At STP, a container has 1 mole of Ar, 2 moles of CO_2 3 moles of O_2 and 4 moles of N_2. Without changing the total pressure if one mole of O_2 is

removed, the partial pressure of O_2 is -(CET-2006)

a) changed by about 16%

b) halved

c) changed by 26%

d) unchanged

27. In a compound C, H and N are present in 9:1:3.5 by weight. If molecular weight of the compound is 108, then the molecular formula of the compound is -(CET-2006)

 a) $C_2 H_6 N_2$

b) C_3H_4N

c) $C_6 H_8 N_2$

d) $C_9 H_{12}N_3$

28. What amount of bromine will be required to convert 2 g of phenol into 2, 4, 6-tribromo phenol? –(CET-2006)

a) 4.00   b) 6.00   c) 10.22   d) 20.44

29. Compound (A) (molecular formula $C_3 H_8 O$) is treated with acidified potassium dichromate to form a product B (molecular formula $C_3 H_6 o$) 'B' forms a shining silver mirror on warming with ammoniacal silver nitrate. 'B' when treated with ammoniacal silver nitrate. 'B' when treated with an aqueous solution of $H_2NCONHNH_2$ HCl and sodium acetate gives a product 'C'. Identify the structure of'C'. –(CET-2006)

a) $CH_3 CH_2 CH=NNHCONH_2$

b) $(CH_3)2C=NNHCONH_2$

c) $(CH_3)2C=NCONHNH_2$

d) $CH_3 CH_2 CH=NCONHNH_2$

30. The decreasing order of basic characters of the three amines and ammonia is -(CET-2006)

a) $NH_3 > CH_3NH_2 > C_2H_5 NH_2 > C_6 H_5 NH_2$

b) $C_6 H_5 NH_2 > CH_3NH_2 > NH_3 > C_6H_5NH_2$

c) $C_6H_5 NH_2 > C_2H_5 NH_2 > CH_3 NH_2 > NH_3$

 (d) $CH_3 NH_2 >C_2 H_5 NH_2 > C_6H_5 NH_2 > NH_3$

31.The energy of hydrogen atom in its ground state is - 13.6eV. The energy of the level corresponding to the quantum number s n = 5 is -(CET-2006)

a) -5.4 eV   b) -0.54 eV   c) -2.72 eV   d) -0.85 V

32.A metallic element has a cubic lattice. Each edge of the unit cell is 2 $\mathring{A}$. The density of the metal is2.5 g cm^{-3}. The unit cells in 200 g of metal are   -(CET-2006)

a) 1×10^{24}

b) 1×10^{20}

c) 1×10^{22}

d) 1×10^{25}

33.The decomposition temperature is maximum for -(CET-2006)

a) $MgCO_3$ b) $CaCO_3$ (c) $BaCO_3$ d) $SrCO_3$

34. Tincture of iodine is –(CET-2006)

a) solution of iodine in CCl_4

b) solution of iodine in ethanol

c) KIO_3

d) CHI_3

35. What is the amount of urea dissolved per litre. if aqueous solution is isotonic with 10%

cane sugar solution (mol. wt. of urea = 60) ? _(CET-2006)

a) 200 g/L

b)19.2 g/L

c) 17.54 g/L

d) 16.7 g/L

36. The reduction electrode , E of 0.1 M solution of M $^+$ (E_{RP} =-2.36 V) is -(CET-2006)

a) -4.82V

b)-2.41 V

c) +2.41 V

d)None of these

37. Conjugate acid of $S_2 O_8^{2-}$ is -(CET-2006)

a) $H_2S_2O_8$ b) H_2SO_4 c)$HS_2O_8^-$ d) HSO_4^-

38. To dissolve argentite ore which of the following is used?-(CET-2006)

a) Na[Ag (CN) $_2$]

b)NaCN

c) NaCl

d) HCl

39. Benzene diazonium chloride on treatment with hypo phosphorus acid and water in presence of Cu$^+$ catalyst produce -(CET-2006)

a) benzene

b) toluene

c) aniline

d) chlorobenzene

40. Thomas slag is -(CET-2006)

a) Ca_3 $(PO_4)_2$ $2H_2O$

b) Ca_3 $(PO_4)_2$ $CaSiO_3$

c) $MgSiO_3$

d) $CaSiO_3$

41. If 50% of a radioactive substance dissociates in 15 min, then the time taken by substance to dissociate 99% will be –(CET-2006)

a) 50 min

b)100 min

c) 99 min

d) 150 min

43. The equilibrium constant of a reaction is 300. If the volume of reaction flask is tripled, the equilibrium constant is-(CET-2006)

a) 300   b) 600   c) 900   d) 100

44. Benzaldehyde on refluxing with aqueous alcoholic KCN produce –(CET-2006)

a) cyanobenzene

b) cyanohydrin

c) benzoyl cyanide

d) benzoin

45. The CO_2 gas does not follow gaseous laws at all ranges of pressure and temperature because -(CET-2006)

a) it is triatomic gas

b) its internal energy is quite high

c) there is attraction between its molecules

d) it solidify at low temperature

46. Which of the following fraction of coal tar distillation is obtained at 270°-360° C? -(CET-2006)

a) Light oil

b)Middle oil

c) Green oil

d) Heavy oil

47. A 0.01 M ammonia solution is 5% ionised, its pH will be -(CET-2006)

a) 11.80

b)10.69

c) 7.22

d) 12.24

48. In clatherates of xenon with water, the nature of bonding between xenon and water molecule is -(CET-2006)

a) dipole induced dipole interaction

b) coordinate

c) hydrogen bonding

d) covalent

49. The freezing point of a 0.05 molal solution of a non-electrolyte in water is -(CET-2006)

a) -0.093° C

b)1.86⁰ C

c) 0.93° C

d) 0.093°C

50. Which of the following reagents will be fruitful for separating a mixture of nitrobenzene and aniline ? -(CET-2006)

a) Aq. $NaHCO_3$

b) H_2O

c) Aq. HCl

d) Aq. NaOH

answer

No	Answer	No	Answer	No	Answer	No	Answer	No	Answer
1	B	11	A	21	A	31	A	41	B
2	D	12	B	22	C	32	D	42	D
3	B	13	B	23	B	33	C	43	C
4	B	14	D	24	D	34	B	44	B
5	D	15	B	25	A	35	C	45	C
6	B	16	D	26	B	36	B	46	B
7	B	17	B	27	C	37	C	47	A
8	C	18	D	28	B	38	B	48	A
9	A	19	B	29	B	39	A	49	C
10	A	20	A	30	A	40	B	50	D

Mathematics-

1.The value of $\int_{-\pi}^{\pi} sin^3x\, cos^2x$ dx is equal to – (CET-2006)

a) 1   b) 2   c) 3   d) 0

2.$\frac{\vec{a}.(\vec{b}\times\vec{c})}{\vec{b}.(\vec{c}\times\vec{a})} + \frac{\vec{b}.(\vec{a}\times\vec{b})}{\vec{a}.(\vec{b}\times\vec{c})}$ is equal to   -(CET-2006)

a) 1   b) 2   c) 0   d) ∞

3. $\int \sqrt{\frac{x-1}{x+1}}$ dx is equal to   -(CET-2006)

a) $2\sqrt{x^2 + 1} + sin^{-1}x + c$

b) $\sqrt{x^2 - 1} - sin^{-1}$ x+c

c) $2\sqrt{x^2}-1+ sin^{-1}x + c$

d) $\sqrt{\frac{x^2-1}{2}} + sin^{-1}x + c$

4. The solution of the differential equation (1 + y²) $tan^{-1}x$ dx + y(1 + x²)dy = 0 is   -(CET-2006)

a) $log\left(\frac{tan^{-1}x}{x}\right)$ + y (1+x²)=c
b) $log(1 + y^2) + (tan^{-1}x)^2$ = c
c) $log(1 + x^2) + log(tan^{-1}y) + c$
d)$(tan^{-1}x) (1 + y^2)$ +c=0

5. The angle between the lines represented by the equation 2x² + 3xy - 5y² = 0 is -(CET-2006)

a)$\frac{\pi}{3}$ b)$\frac{\pi}{2}$ c) $tan^{-1}\left(\frac{12}{5}\right)$ d) $tan^{-1}\left(-\frac{7}{3}\right)$

6. The negation of the statement "he is rich and happy'' is given by -(CET-2006)

a) he is not rich and not happy
b) he is not rich or not happy
c) he is rich and happy
d) he is not rich and happy

7. The value of $\int_{-1}^{1} log\left(\frac{x-1}{x+1}\right)$ dx is -(CET-2006)

a) 1   b) 2   c) 0   d) 4

8. If A(a)=$\begin{bmatrix} cos\,a & sin\,a \\ -sin\,a & cos\,a \end{bmatrix}$,then the matrix $A^2(a)$ is -(CET-2006)

a) A (2a)   b) A(a)   c) A(3a)   d) A(4a)

9. The value of $\left(\frac{\Delta^2}{E}\right) x^2$ at the interval h=1 is -(CET-2006)

a) 0   b)1   c) 2   d) 4

10. Considering four sub-intervals ,the value of $\int_0^4 2^x$ dx by Simpson's rule is -(CET-2006)

a) $\frac{64}{8}$ b)$\frac{65}{3}$ c)$\frac{62}{12}$ d)$\frac{61}{8}$

11.If given constraints are 5x +4y≥ 2, x≤ 6,y≤ 7,then the maximum value of the function z=x + 2y is

a) 13   b) 14   c) 15   d) 20

12. $lim_{x\to0} \frac{a^x+a^{-x}-2}{x^2}$ is equal to -(CET-2006)

a) $(log\,a)^2$ b) log a   c) 0   d) None of these

13. $lim_{x\to2} \frac{f(x)-f(2)}{x-2}$ is equal to   -(CET-2006)

a) f′(2)   b) f (2)   c) −f′(2)   d) None of these

14. If f′ (x) = x+$\frac{1}{x}$, then value of f (x) is -(CET-2006)

a) $x^2 + log\,x + c$ b)$\frac{x^2}{2} + log$ x +c   c) $\frac{x}{2} + log\,x + c$ d) None of these

15.If f (0) =1, f(1)=5, f(2)=11 ,then the equation of polynomial of degree two is -(CET-2006)

a)$x^2 + 1 = 0$

b) $x^2 + 3x + 1 = 0$

c)$x^2 - 2x + 1 = 0$

d) None of these

16. The maximum value of $\frac{log\,x}{x}$ is -(CET-2006)

a) 0   b)2   c) 1/e   d) -1

17. A bag contains 5 blue balls and unknown number of red balls, two balls are drawn at random.The probability of both of them are blue is $\frac{5}{14}$,then the number of red balls are -(CET-2006)

a) 3 b) 2   c) 4   d) 5

18.If y=$5^x x^5$,then $\frac{dy}{dx}$ is -(CET-2006)

a)$5^x(x^5 \log 5 - 5x^4)$

b)$x^5 \log 5 - 5x^4$
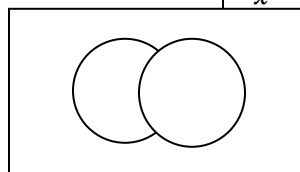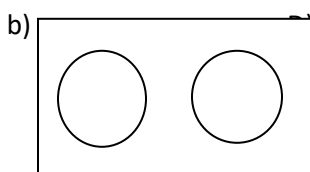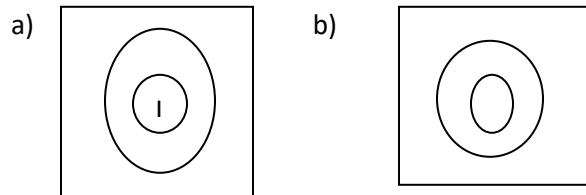
c) x^5 log 5+5x^4

d) $5^x(x^5 log5 + 5x^4)$

19. A line touches the circle $x^2 + y^2 = 2$ and the parabola y^2=8x,then equation of tangent is -(CET-2006)

a) y=x+3   b) y=x+2   c) y=x+4   d) y=x+1

20. The two circles $x^2 + y^2 - 2x + 6y + 6 = 0$ and $x^2 + y^2 - 5x + 6y + 15 = 0$ touch each other -(CET-2006)

a) externally   b) internally   c) coincide   d) None of these

21. some triangles are not isosceles. Identify the Venn diagram

a)   b)

b)

22. If A (3,5),B(-5,-4),C (7,10) are the vertices of a parallelogram ,taken in the order, then the coordinates of the fourth vertex are -(CET-2006)

a) (10,19) b) (15,19)   c) (19,10) d) (19 ,15)

23.If the pairs of lines x^2- 2nxy-y^2 =0 and x^2-2mxy-y^2 =0 are such that one of them represents the bisectors of the angles between the other ,then   -(CET-2006)

a) $\frac{1}{n}+\frac{1}{m}$=0   b) $\frac{1}{n}\frac{1}{m}$=0   c) nm -1=0   d) nm+1=0

24.The image of the origin with reference to the line 4x+3y-25=0,is   -(CET-2006)

 a) (-8,6)   b) (8,6)   c) (-3,4)   d) (8,-6)

25.The lines 2x-3y=5 and 3x-4y =7 are diameters of a circle having area 154 sq unit. Then,the equation of the circle is -(CET-2006)

a) $x^2 + y^2 + 2x - 2y = 62$

b) $x^2 + y^2 + 2x - 2y = 47$

c)$x^2 + y^2 - 2x + 2y = 47$

d)$x^2 + y^2 - 2x + 2y = 62$

26.If the equation of tangent to the circle $x^2 + y^2 - 2x + 6y - 6 = 0$ Parallel to 3x-4y+7=0 is 3x-4y+k=0, then the values of k are -(CET-2006)

a) 5,-35   b) -5,35 c) 7,-32   d) -7,32

27.The iocus of a point which moves so that the ratio of the length of the tangents to the circles $x^2 + y^2 + 4x + 3 = 0$ and $x^2 + y^2 - 6x + 0$ is 2:3 , is -(CET-2006)

$x^2 + 5y^2 - 60x + 7 = 0$

$x^2 + 5y^2 + 60x - 7 = 0$

c) $5x^2 + 5y^2 - 60x - 7 = 0$

d) $5x^2 + 5y^2 + 60x + 7 = 0$

28. The foci of the ellipse $\frac{x^2}{16}+\frac{y^2}{b^2}$=1 and the hyperbola $\frac{x^2}{144} - \frac{y^2}{81} = \frac{1}{25}$ coincide. Then , the value of b^2 is -(CET-2006)

a) 1   b) 5   c) 7   d) 9

29. suppose s and s' are foci of the ellipse $\frac{x^2}{25}+\frac{y^2}{16}$=1.If P is a variable point on the ellipse and if Δ is area of the triangle PSS', then the maximum value of Δ is –(CET-2006)

a) 8   b) 12   c) 16   d) 20

30.The equation of the hyperbola in the standard from (with transverse axis along the x-axis) having the length of the latusrectum=9 unit and eccentricity=$\frac{5}{4}$,is -(CET-2006)

a) $\frac{x^2}{16} - \frac{y^2}{16} = 1$ b) $\frac{x^2}{36} - \frac{y^2}{27}$=1

c) $\frac{x^2}{64} - \frac{y^2}{36}$=1   d) $\frac{x^2}{36} - \frac{y^2}{64}$=1

31.If $|\vec{a}| = |\vec{b}| $=1 and $| \vec{a} + \vec{b} | = \sqrt{3}$, then the value of (3$\vec{a}$ - 4 $\vec{b}$) .(2 $\vec{a}$ + 5 $\vec{b}$) is –(CET-2006)

a) -21   b)- $\frac{21}{2}$ c) 21   d)$\frac{21}{2}$

32. A unit vector in the plane of $\hat{i}$ +2 $\hat{j}$ + $\hat{k}$ and $\hat{i}$ +$\hat{j}$+ 2$\hat{k}$ and perpendicular to 2 $\hat{i}$ + $\hat{j}$ + $\hat{k}$, is -(CET -2006)

a) $\hat{j} - \hat{k}$ b) $\frac{\hat{i}+\hat{j}}{\sqrt{2}}$ c) $\frac{\hat{j}+\hat{k}}{\sqrt{2}}$ d) $\frac{\hat{j}-\hat{k}}{\sqrt{2}}$

33. If $\vec{a}$ is perpendicular to $\vec{b}$ and $\vec{c}$, $|\vec{a}|$=2, $|\vec{b}|$=3 , $|\vec{c}|$=4 and the angle between $\vec{b}$ and $\vec{c}$ is $\frac{2\pi}{3}$, then [$\vec{a}\,\vec{b}\,\vec{c}$] is equal to   -(CET-2006)

a) $4\sqrt{3}$ b) $6\sqrt{3}$ c) $12\sqrt{3}$ d) $18\sqrt{3}$

34. If $\vec{a}$,$\vec{b}$ and $\vec{c}$ are perpendicular to $\vec{b}$ and $\vec{c}$ is $\frac{2\pi}{3}$,then [$\vec{a}\,\vec{b}\,\vec{c}$] is equal to –(CET-2006)

a) $5\sqrt{2}$ b) 50   c) $10\sqrt{2}$ d) 10

35.If a line makes angles a , β, γ with the coordinate axes,then the value of cos 2 a+cos 2β + cos 2y is

a)3   b) -2   c) 2   d)-1

36.5 boys and 5 girls are sitting in a row randomly. The probability that boys and girls sit alternately is-(CET-2006)

a) $\frac{1}{126}$ b) $\frac{1}{42}$ c) $\frac{4}{126}$ d) $\frac{6}{126}$

37. The value of f at x=0 so that function f(x)=$\frac{2^x-2^{-x}}{x}$, x $\neq$ 0 , is contiuous at x= 0, is

a) 0   b) log 2   c) 4   d) log 4

38.$\lim_{x\to0} \left\{\frac{1+\tan x}{1+sinx}\right\}^{cosec\, x}$ is equal to -(CET-2006)

a) $\frac{1}{e}$ b) 1   c) e   d)e^2

39. If y=$a^x.b^{2x-1}$, then $\frac{d^2y}{dx^2}$ is –(CET-2006)

a) $y^2.\log ab^2$ b) y.$(\log ab^2)^2$ c) y^2 d) y.$(\log a^2 b)^2$

40. If y=$tan^{-1} \left(\frac{a\cos x-b\sin x}{b\cos x+a\sin x}\right)$, then $\frac{dy}{dx}$ is equal to -(CET-2006)

a) 2   b)-1   c)$\frac{a}{b}$ d) 0