CET-2005 PHYSICS

1.The angle of banking is independent of - (CET-2005)

a) Speed of vehicle

b) radius of curvature of road

c) height of inclination

d) none of the above

2.Angular velocity of hour hand of a watch is -(CET 2005)

a) $\frac{\pi}{43200}\ rad/s$ b) $\frac{\pi}{30}\ rad/s$ c) $\frac{\pi}{21600}\ rad/s$ d) $\frac{\pi}{1800}$ rad/s

3. The simple pendulum acts as second's pendulum on earth. Its time on a planet , whose mass and dimeter are twice that of earth is -(CET 2005)

a) $\sqrt{2}\ s$ b) $2\sqrt{2}\ s$ c) 2 s d) $\frac{1}{\sqrt{2}}s$

4.The ratio of acceleration due to gravity at a height 3 R above earth's surface to the earth is (R = radius of earth) -(CET-2005)

a) $\frac{1}{9}$ b) $\frac{1}{4}$ c) $\frac{1}{16}$ d) $\frac{1}{3}$

5.The binding energy of a satellite of mass m in a orbit of radius r is (R= radius of earth, g = acceleration due to gravity) -(CET -2005)

a) $\frac{mgR^2}{r}$ b) $\frac{mgR^2}{2r}$ c) $-\frac{mgR^2}{r}$ d) $-\frac{mgR^2}{2r}$

6.Moment of inertia of a disc about an axis which is tangent and parallel to its plane is I. Then the moment of inertia of disc about a tangent, but perpendicular to its plane will be -(CET -2005)

a) $\frac{3\ I}{4}$ b)$\frac{5\ I}{6}$ c) $\frac{3\ I}{2}$ d) $\frac{6\ I}{5}$

7. By keeping moment of inertia of a boby constant, if we double the time period,then angular momentum of body -(CET2005)

a) remains constant

b) becomes half

c)double

d)quadruples

8. A simple pendulum of length l and mass(bob) m is suspended vertically .The string makes an angle θ with the vertical. The restoring force acting on the pendulum is -(CET 2005)

a) mg tan θ b) –mg sin θ c) mg sin θ d) –mg cos θ

9. The displacement of a particle performing simple harmonic motion is given by,x=8sin wt+6 cos wt, where distance is in cm and time is in second. The amplitude of motion is -(CET-2005)

a) 10 cm b) 2 cm c) 14 cm d) 3.5 cm

10. If a wire having initial diameter of 2 mm produced the longitudinal strain of 0.1 %, then the final diameter of wire is (σ =0.5) -CET 2005)

a) 2.002 mm b) 1.999 mm c) 1.998 mm d) 2.001 mm

11.The energy stored per unit volume in copper wire, which produces longitudinal strain of 0.1 % is (y= 1.1× $10^{11} N/m^2$) -(CET 2005)

a)11× $10^3\ J/m^3$ b) 5.5× $10^3 J/m^3$ c) 5.5× $10^4 J/m^3$ d) 11× $10^4 J/m^3$

12. A point mass m is suspended at the end of a massless wire of length L and cross- section area A. If y is the Young's modulus for the wire, then the frequency of oscillations for the SHM along the vertical line is

a)$\frac{1}{2\pi}\sqrt{\frac{YA}{mL}}$ b) $2\pi\sqrt{\frac{mL}{YA}}$ c) $\frac{1}{\pi}\sqrt{\frac{YA}{mL}}$ d)$\pi\sqrt{\frac{mL}{YA}}$

13.work done in forming a liguid drop of radius R is W_1 and that of radius 3R is W_2.The ratio of work done is -(CET 2005)

a) 1:3 b) 1:2 c) 1:4 d) 1:9

14. For a liquid which is rising in a capillary, the angle of contact is –(CET-2005)

a) a) obtuse b) 180^0 c) acute d) 90^0

15. Wavelength of wave is a distance between two particles which are differing in phase by -(CET-2005)

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

16.Tuning fork A of frequency 305 H_Z produces % beats/s with another tuningfork B. After filing tuning fork B,it produces 3 beats/s with A. The frequency of B before filing was –(CET 2005)

a) 300 Hz b) 313 Hz c) 310 Hz d) 308 Hz

17.The minimum phase difference between two simple harmonic oscillations,

$y_1 = \frac{1}{2}$ sin wt + $\frac{\sqrt{3}}{2}$ cos wt

$y_2 = \sin wt + \cos wt\ is$

a)$\frac{7\pi}{12}$ b)$\frac{\pi}{12}$ c) $-\frac{\pi}{6}$ d)$\frac{\pi}{6}$

18. If the length of an open organ pipe is 33.3 cm, then the frequency of fifth overtone is ($v_{sound} = 333m/s$)

a) 3000 Hz b) 1500 Hz c) 2500 Hz d) 1250 Hz

19. The temperature, at which the rms velocity of hydrogen is four times of its value at NTP is –(CET 2005)

a) 819^0C b) 1092^0C c)4368^0C d) 4095^0C

20. At constant pressure,which of the following is true?

a) c $\propto \sqrt{\rho}$ b) c $\propto \frac{1}{\rho}$ c) c$\propto \rho$ d) c $\propto \frac{1}{\sqrt{\rho}}$

21.In terms of mechanical unit , $C_p - C_v$ =… where C_p and C_V are principal specific heats.

a) R b) $\frac{R}{M}$ c) $\frac{R}{J}$ d) $\frac{R}{MJ}$

22. A black body is heated from 27 °C ratio of radiation emitted will be –(CET2005)

(a) 1:4 (b) 1:8 (c) 1:16 (d) 1:256

23. With same initial conditions, an ideal gas expands from volume V_1 to V_2 in different ways. The work done by the gas is W_1 if the process is isothermal,W_2 if isobaric and W_3if adiabatic, then –(CET 2005)

(a) $W_2 > W_1 > W_3$

(b) $W_2 > W_3 > W_1$

(c) $W_1 > W_2 > W_3$

(d) $W_1 > W_3 > W_2$

24. A body cools from 100°C to 70°C in g 8s. If the room temperature is 15°C and assuming Newton's law of cooling holds good, then time required for the body to cool from 70°C to 40^0 C is –(CET 2005)

(a) 14 s (b) 8 s (c) 10 s (d) 5s

25. What is dimensions of a in van der Waals' equation? –(CET 2005)

(a) $[M L^{-1} T^{-2}]$ (b) $[ML^5T^{-2}]$ (c) $[M L^3 T^{-2}$ (d) $[M^2 L^3 T^{-2}]$

26. Refractive index of glass with respect to medium is 4/3. If the differences between velocities of light in medium and glass is 6.25×10^7 m / s, then velocity of lighti is in medium is –(CET 2005)

(a) 2.5×10^8 m / s

(b) 0.125×10^8 m / s

(c)1.5×10^7m/s

(d) 3×10^7 m / s

27. A light wave enters from air into a medium of refractive index 4/3 If wavelength of lighti in air is 6000 Å, then the wave number of light in the medium is -(CET2005)

(a) 1.1×10^6 (b) 2.2×10^6 (c)4.4×10^6 (d) 6×10^6

28. The path difference produced by two waves is 3.75μm and the wavelength is 5000 Å. The point is -(CET 2005)

(a) uncertain (b) dark (c) partially bright (d) bright

29. In Young's double slit experiment, the distance between the slits is 1 mm and screen is 25 cm away from the slits. If the wavelength of light is 6000 Å, the fringe width on the screen is -(CET-2005)

(a) 0.15 mm (b) 0.30 mm (c) 0.24 mm (d) 0.12 mm

30. Two light rays having the same wavelength λ in vacuum are in phase initially. Then the first ray travels a path L_1 through a medium of a path of length L_2 through a medium of refractive index n_2. The atwo waves are then combined to produce interference. The phase difference between the two waves is -(CET2005)

(a) $(\frac{2\pi}{\lambda}(L_2 - L_1)$

(b) $\frac{2\pi}{\lambda}(n_1L_1 - n_2L_2)$

(c)$\frac{2\pi}{\lambda}(n_2L_1 - n_1L_2)$

(d) $\frac{2\pi}{\lambda}(\frac{L_1}{n_1} - \frac{L_2}{n_2})$

31. Unit of electric flux is -(CET 2005)

(a) Vm (b) Nm/C (c)V/m (d) C/Nm

32. Two point charges +3μC and 8 μC repel each other with a force of 40 N. If a charge of -5μ C is added to each of them, the force between will become –(CET 2005)

(a) - 10 N (b) 10 N (c) 20 N (d) – 20 N

33. A galvanometer of resistance 50 2 is connected to a battery of 3 V along with a resistance of 29502 in series. A full scale deflection of 30 divisions is obtained in the galvanometer. In order to reduce this deflection to 20 divisions the resistance in series should be -(CET 2005)

(a) 4450 Ω (b) 5050 Ω (c)5550 Ω (d) 6050 Ω

34. A current of 0.01 mA passes through the potentiometer wire of a resistivity of 10^9 Ω- cm and area of cross-section 10^{-2} cm^2. The potential gradient is -(CET 2005)

(a) 10^9 V / m (b) 10^{11} V / m (c) 10^{10} V / m (d) 10^8 V / m

35. In an ammeter, 4% of the main current is passing through the galvanometer. If shunt resistance is 5 Ω, then resistance of galvanometer will be -(CET 2005)

(a) 60 Ω (b) 240 Ω (c) 120 Ω (d) 480 Ω

36. Three moving coil galvanometers A, B and C are made of coils of three different material having torsional constant 1.8×10^{-8},2. 8×10^8 and 3.8×10^{-8} respectively. If the three galvanometers are identical in all other respect, then in which of the above cases sensitivity is maximum ? –(CET 2005)

(a) A (b) C (c) B (d) same in each case

37. Direction of magnetic field at equatorial point is -(CET 2005)

(a) parallel to $\vec{M}$

(b) perpendicular to $\vec{M}$

(c) making an angle 45 deg with $\vec{M}$

(d) antiparallel to $\vec{M}$

38. Consider a short magnetic dipole of magnetic length 10 cm. Its geometric length is -(CET 2005)

(a) 12 cm (b) 8 cm (c) 10 cm (d) 14 cm

39. In series LCR circuit, the capacitance is changed from C to 2C. The inductance should be changed from L to... to obtain same resonance frequency. –(CET 2005)

(a) 4L (b) L/2 (c) L/4 (d) 2L

40. A copper rod of length I is rotated about one end, perpendicular to the uniform magnetic field B with constant angular velocity w . The induced emf between two ends of the rod is -(CET 2005)

(a) $\frac{1}{2}\ Bwl^2$ (b) Bwl^2 (c) $\frac{3}{2}Bwl^2$ (d) 2 Bwl^2

41. The flux associated with coil changes from 1.35 Wb to 0.79 Wb within $\frac{1}{10}$ s . Then the charge produced by the earth if resistance of coil is 7 Ω is -(CET 2005)

(a) 0.08 C (b) 0.8 C (c)0.008 C (d) 8 C

42. In the induction coil, across secondary coil the output voltage is practically -(CET 2005)

(a) unidirectional, high, intermittent

(b) unidirectional, low, intermittent

(c) unidirectional, high, constant

(d) unidirectional, low, constant

43. An electron is accelerated from rest to potential V. The final velocity of electron is -(CET 2005)

(a) $\sqrt{\frac{eV}{2M}}$ (b) $\sqrt{\frac{4eV}{m}}$ (c) $\sqrt{\frac{eV}{m}}$ (d) $\sqrt{\frac{2eV}{m}}$

44. An electron projected in a perpendicular uniform magnetic field of 3×10^{-3} T moves in a circle of radius 4 mm. The linear momentum of electron (in kg-m/s) is -(CET 2005)

(a) 1.92×10^{-21} (b) 1.2×10^{-24} (c) 1.92×10^{-24} (d) 1.2×10^{-21}

45. Wavelength of first line in Lyman series is λ. The wavelength of first line in Balmer series is –(CET 2005)

(a) $\frac{5}{27}\lambda$ (b) $\frac{36}{5}\lambda$ (c) $\frac{27}{5}\lambda$ (d) $\frac{5}{36}\lambda$

46. If 8 g of a radioactive substance decays into 0.5 g in 1 h, then the half-life of the substance is -(CET 2005)

(a) 45 min (b) 15 min (c) 10 min (d) 30 min

47. Maximum energy is evolved during which of the following transitions? –(CET 2005)

(a) n = 1 to n = 2

(b) n = 2 n = 6

(c) n = 2 n = 1

(d) n = 6 n = 2

48. If control grid is made negative, then the plate current will -(CET 2005)

(a) increase

(b) remain constant

(c) decrease

(d) cannot say from given data

49. Frequency of given AC signal is 50Hz. When it is connected to a half-wave rectifier, the number of output pulses given by rectifier within 1 s is -(CET 2005)

(a) 50 (b) 100 (c) 25 (d) 150

50. Which of the following is correct, about doping in a transistor ? –(CET 2005)

(a)Emitter is lightiy doped, collector is heavily doped and base is moderately doped

(b) Emitter is lightly doped, collector is moderately doped and base is heavily doped

(c) Emitter is heavily doped, collector is lightly doped and base is moderately doped

(d) Emitter is heavily doped, collector is moderately doped and base is lightly doped

Answer

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

Chemistry

1.In which of the following compound sp^2 hybridisation is absent ? –(CET 2005)

a) CH ≡ C – CH = CH_2

b) CH ≡ C $-CH_2 - CH_3$

c)$CH_3 - CH = CH_2$

d)$CH_2 = CH - CH_2 - CH_3$

2. How many present in valence shell of oxygen in water molecule ? –(CET-2005)

(a) 4 (b) 1 (c) 2 (d) 3

3. C-Cl bond is stronger than C-I bond, because -(CET2005)

(a) C-Cl bond is more ionic than C-I

(b) C-Cl bond is polar covalent bond

(c) C-Cl bond is more covalent than C-I

(d) C-Cl bond length is longer than C - I

4. Number of unpaired electrons in sulphur is -(CET2005)

(a) 2 (b) 6 (c) 8 (d) 1

5. How many structural isomers are possible for $C_4 H_9 Cl$? –(CET 2005)

(a) 2 (b) 4 (c) 8 (d) 10

6. Which of the following compound is optically active ? –(CET 2005)

(a) 1-butanol

(b) Isopropyl alcohol

(c)Acetaldehyde

(d) 2-butanol

7. 2-propanol + NaBr $\xrightarrow{Reflux}$ X. What is X? -(CET 2005)

(a) 2-bromopropane

(b) Propane

(c) Propene

(d) Propanone

8. The conversion of propene to propanol is… type of reaction -(CET2005)

(a) hydrogenation

(b) hydration

(c) hydrolysis

(d) dehydrogenation

9. 100 mL of 0.01 M solution of NaOH is diluted to 1 dm^3.what is the pH of the diluted solution ?-(CET2005)

(a)12 (b) 11 (c)2 (d) 3

10. Relation between hydrolysis constant and Relatiiation constant are given. Which is the correct formula for MgCl2? -(CET 2005)

(a) K_h=$\frac{K_w}{K_a}$

(b) $K_h = \frac{K_w}{K_b}$

(c) $K_h = \frac{K_w}{K_a \times K_b}$

(d) $K_w = \frac{K_h}{K_b}$

11. Calculate pOH of 0.001 M NH_4 OH when it is 1% dissociated in the solution.-(CET 2005)

(a) 5 (b) 2.96 (c) 9.04 (d) 11.04

12. Heat of neutralisation will be minimum for which of the following combination? -(CET 2005)

(a)NaOH+H_2SO_4

(b) $NH_4OH + CH_3COOH$

(c)NaOH +HCl

(d) NaOH + CH_3 COOH

13. The values of dissociation constant of bases are given below. Which is the weakest base? -(CET 2005)

(a) 1.8×10^{-5}

(b) 4.8×10^{-10}

(c)7.2×10^{-11}

(d) 7.07×10^{-7}

14. 2 moles of helium gas expanded isothermally and irreversible at 27°C from volume 1 dm^3 to 1 dm^3 at constant pressure of 100 kPa. Calculate the work done. –(CET 2005)

(a) 99900 kJ (b) 99900 J (c) 34464.65 kJ (d) 34464.64 J

15. Heat of formation of SO_2 is -298 KJ. What is the heat of combustion of 4g of S? –(CET 2005)

(a) +37 kJ (c) + 298 kJ

(b) -37.15 kJ (d) 18.6 kJ

16. Complete the following chemical reaction RCOOH $\frac{P_2O_5}{\Delta} >$ -(CET 2005)

(a) acid anhydride

(b) ketone

(c) aldehyde

(d) ester

17. Bond energy of hydrogen gas is - 433 kJ. How much is the bond dissociation energy of 0.5 mole of hydrogen gas ? -(CET2005)

(a) - 433 kJ (b) + 433 kJ (c) - 216 kJ (d) + 216 kJ

18. Which of the following unit cell having maximum number of atoms? -(CET 2005)

(a) BCC (b) HCP (c) FCC (d) Cubic

19. Among 3rd row elements atomic size is maximum for -(CET 2005)

(a) sodium (b) argon (c) magnesium (d) chlorine

20. Which one of the following has lowest bond dissociation energy ? -(CET 2005)

(a) Cl – Cl (b) F-F (c) Br-Br (d) I-I

21. Acetaldoxime on reduction with Na / C_2H_5OH gives -(CET 2005)

(a) 2-propanol (c) acetaldehyde

(b) ethyl amine (d) ethanol

22. Sulphur colloid prepared by -(CET 2005)

(a) mechanical dispersion

(b) oxidation

(c) electrical dispersion

(d) reduction

23. Propanal and propanone are -(CET 2005)

(a) functional isomers

(b) enantiomers

(c) chain isomers

(d) structural isomers

24. When F_2 reacts with hot and concentrated alkali, then following will be obtained -(CET 2005)

(i) OF_2 (ii) O_2 (iii) H_2O (iv) NaF -(CET 2005)

(a) (i),(ii) and (iv)

(b) (ii), and (iii)

(c) (ii),(iii) and (iv)

(d) All of the above

25. In the preparation of amorphous silicon, HF is used to remove -(CET 2005)

(a) Mg (b) SiO_2 (c) Si (d) None of these

26. CH 3 Br+KCN(alc) $\rightarrow$ X $\frac{Reduction}{Na/C_2H_5OH}$ > Y

What is Y in the series ? -(CET 2005)

(a) CH_3CN (b) C_2H_5CN (c) $C_2H_5NH_2$

27. $CaCl_2$ is used as -(CET 2005)

(a) disinfectant (b)desiccating agent (c) medicine (d) None of these

28. Formula for agate is -(CET 2005)

(a) $Na_2 SiO_3$ (b) $K_2O.SiO_2.AI_2O_3$ (c)SiO_2 (d) CaF_2

29. Colour of colloids depends on which of the following factors ? -(CET 2005)

(a) Size (b) Mass (c) charge (d) Nature

30. Williamson's synthesis is used for the preparation of -(CET 2005)

(a) acid (b) ester (c) ether (d) alcohol

31. In 1-butene number of o-bonds is -(CET 2005)

(a) 8 (b) 10 (c) 11 (d) 12

32. Raffinose is -(CET 2005)

(a) trisaccharide

(b) disaccharide

(c) monosaccharide

d) polysaccharide

33.Name the compounds used in preparation of nylon-66. –(CET 2005)

a)ε - caprolactum

(b) hexamethylene diamine and adipic acid

(c) dimethyl terephthalate

(d) hexamethylene diamine

34. The process used in conversion of triolein to tristearin is -(CET 2005)

(a) hydrolysis

(b)hydration

(c) hydrogenation

(d) dehydrogenation

35. Acetonitrile on reduction gives -(CET 2005)

(a) propanamine

(b) methanamine

(c)ethanamine

(d) None of these

36. 2, 4, 6-trinitro phenol is -(CET 2005)

a) tear gas (b) picric acid (c)chloropicrin (d) All of these

37. By combining the two calcium salts of carboxylic acids we are preparing 2-butanone. Find the correct pair of the following -(CET 2005)

(a) calcium formate + calcium propanoate

(b) calcium acetate + calcium propanoate

(c) calcium acetate + calcium acetate

(d) calcium formate + calcium acetate

38. Which of the following can be used to differentiate between aldehyde and ketone ? -(CET 2005)

(a) Ammoniacal AgNO3

(b) Ammoniacal AgNO3 in presence of tartarate ion

(c) I_2 in the presence of base

(d) Ammoniacal $AgNO_3$ in the presence of citrate ion

39. When any radioactive element emits ß particle, some product is obtained. They both are -(CET 2005)

(a) isotopes

(b) isobars

(c)isomers

(d) isotones

40. Electrical field is used to deflect -(cET 2005)

(a) a and ß particles

(b) a and y particles

(c) a, ß and y particles

(d) ß and y particles

41. The oxidation potential values of A, B, C and D are-0.03 V, + 0.108 V, -0.07 V and + 0.1 V respectively. The non-spontaneous cell reaction takes place between -(CET 2005)

(a) A and B

(b) B and D

(c) D and A

(d) B and C

42. Na is used in reduction of Zn salt because -(CET 2005)

(a) E^0zn(oxi) > E^0 Na(oxi)

(b) E^0 Zn(red) < E^0 Na(red)

(c) E^0 Zn(oxi) <E^0 Na(oxi)

(d) both (a) and (b)

43. Reduction potentials of A, B, C and D are 0.8 V, 0.79 V, 0.34 V and -2.37 V respectively.Which element displaces all the other three elements ? -(CET 2005)

(a) B (b) A (c) D (d) C

44. Methyl amine reacts with methyl iodide. For completion of reaction, how many moles of methyl iodide are required?

(a) 1 (b) 2 (c) 3 (d) 4

45. Acetonitrile $\xrightarrow{Hydrolysis}$? -(CET 2005)

(a) acetic acid

(b) propionic acid

(c)formic acid

(d) None of these

46 . In an isothermal process - (CET 2005)

(a) q = 0 and ΔE = 0

(b) q ≠0 and ΔE = 0

(c) q = 0 and Δ E ≠0

(d) q ≠0 and ΔE = 0

47. IUPAC name of

$CH_3 - CH - CH_2 - CH - COOH\ is$ -(CET 2005)

C_2H_5 CH_3

(a) 2, 2-diethyl pentanoic acid

(b) 2, 4-dimethyl hexanoic acid

(c) 2-methyl-4-ethyl pentanoic acid

(d) 4-ethyl-2-methyl pentanoic acid

48. Minimum work is obtained when 1 kg of ... gas expanded under 500 kPa to 200 kPa pressure at 0°C. –(CET 2005)

(a) chlorine

(b) oxygen

(c)nitrogen

(d) methane

49. The product obtained on fusion of $BaSO_4$ and Na_2CO_3 is -(CET 2005)

(a) $BaCO_3$

(b) BaO

(c) $Ba(OH)_2$

(d) $BaHSO_4$

50. A 5 molar solution of H_2SO_4 is diluted from 1 L to 10 L. What is the normality of the solution? - (CET 2005)

(a) 0.25 N

(b) 1 N

(c) 2 N

(d) 7 N

Answer

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

Mathematics

1. $x \xrightarrow{lim} 0 \left[\frac{8\sin x + x\cos x}{3\tan x + x^2}\right]$ is equal to -(CET 2005)

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

2. Equation of a circle passing through the origin and making intercept by the line 4x +3y=12 – (CET2005)

   (a)$x^2 + y^2 + 3x + 4y = 0$

   (b)$x^2 + y^2 + 3x - 4y = 0$

   (c) $x^2 + y^2 - 3x + 4y = 0$

   (d)$x^2 + y^2 - 3x - 4y = 0$

3.$x \xrightarrow{lim} 0 \left[\frac{8\sin x + x\cos x}{3\tan x + x^2}\right]$ is equal to -(CET 2005)

a)$\frac{1}{2\sqrt{a}}$ b) $\frac{1}{4\sqrt{a}}$ c)$\frac{1}{3\sqrt{a}}$ d)$\frac{2}{\sqrt{a}}$

4.A=$\begin{bmatrix} 1 & 2 \\ 3 & 2 \\ -1 & 0 \end{bmatrix}$, B= $\begin{bmatrix} 1 & 3 & 2 \\ 4 & -1 & 3 \end{bmatrix}$, then order of AB is -(CET 2005)

a) 2× 2 b) 3× 3 c) 1× 3 d) 3× 2

5.x $\xrightarrow{lim}$ o$\left[(1+3x)^{1/x}\right]$=k, then for continuity at x→ 0 -(CET 2005)

X=0, k is

a) 3 b) -3 c) e^3 d) e^{-3}

6. Distance between foci is 8 and distance between directrices is 6 of hyperbola,then length of latudrectum is -(CET-2005)

a) $4\sqrt{3}$ b) $\frac{4}{\sqrt{3}}$ c) $\sqrt{\frac{3}{4}}$ d)None of these

7. If y= $\sqrt{\sin x + \sqrt{\sin x + \sqrt{\sin x + \cdots \infty}}}$, then (2y-1) $\frac{dy}{dx}$ is equal to –(CET 2005)

a) sin x b) –cos x c) cos x d) –sin x

8. If vectors $\hat{\imath} + \hat{\jmath} + \hat{k}$,$\hat{\imath} - \hat{\jmath} + \hat{k}$ and 2 $\hat{\imath}$+3 $\hat{\jmath} + \lambda\,\hat{k}$ are coplanar , then λ is equal to –(CET 2005)

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

9.$\frac{d}{dx}$ [sec $\{cos^{-1}\left(\frac{x}{8}\right)\}$] is equal to -(CET 2005)

a)$\frac{1}{8}$ b)-$\frac{1}{8}$ c)$\frac{8}{x^2}$ d)$-\frac{8}{x^2}$

10.In the standard from of an ellipse sum of the focal distances of a point is –(CET 2005)

a) 1 (b) -2a (c) 2a (d) None of these

11. If f (x)= $\sqrt{1+cos^2(x^2)}$, then f' $\left(\frac{\sqrt{\pi}}{2}\right)$ is -(CET 2005)

(a)$\frac{\sqrt{\pi}}{6}$ (b)-$\sqrt{\frac{\pi}{6}}$ (c)$\frac{1}{\sqrt{6}}$ (d)$\frac{\pi}{\sqrt{6}}$

12. If A + I = $\begin{bmatrix}3 & -2\\4 & 1\end{bmatrix}$ then (A + I)(A - I) is equal to -(CET 2005)

(a)$\begin{bmatrix}-5 & -4\\8 & -9\end{bmatrix}$ (b) $\begin{bmatrix}-5 & 4\\-8 & 9\end{bmatrix}$

(c)$\begin{bmatrix}5 & 4\\8 & 9\end{bmatrix}$ (d) $\begin{bmatrix}-5 & -4\\-8 & -9\end{bmatrix}$

13. If y= a $\sin^3\theta$ and x = a $\cos^3\theta$ then at $\theta = \frac{\pi}{3}$, $\frac{dy}{dx}$ is equal to -(CET 2005)

(a) $\frac{1}{\sqrt{3}}$ (b) - $\sqrt{3}$ (c)$\frac{-1}{\sqrt{3}}$ (d) $\sqrt{3}$

14. Given $\vec{a} \perp \vec{b}$, $|\vec{a}|$=1 and if ($\vec{a}$ + 3$\vec{b}$)*(2 $\vec{a}$ - $\vec{b}$)=-10, then | | $\vec{b}$| is equal to -(CET2005)

(a) 1 (b) 3 (c) 2 (d) 4

15. Which of the following is not a statement in logic? -(CET 2005)

1. Earth is planet

2. Plants are living objects

3. $\sqrt{-3}$ is a rational number

4. $x^2 - 5x + 6 < 0$ when x ∈ - R

(a) 1 (b) 3 (c) 2 (d) 4

16. nth derivative of (x + 1) ^ prime prime is equal to -(cET 2005)

(a) (n - 1)!

(b) (n + 1)

(c) n!

(d) n $[(n + 1)]^{n-1}$

17. Maximum value sin θ + cos θ in [0, $\frac{\pi}{2}$] is -(CET 2005)

(a) $\sqrt{2}$ (b) 2 (c) 0 (d) - $\sqrt{2}$

18. z = 30x + 20y, x + y <= 8, x + 2y >= 4, 6x + 4y >= 12, x >= 0, y >= 0 has -(CET 2005)

(a) unique solution

(b) infinitely many solution

(c) minimum at (4, 0)

(d) minimum 60 at point (0, 3)

19. If x + y = 8 then maximum value of x^2 y is -(CET 2005)

(a) $\frac{2048}{9}$ (b) $\frac{2048}{81}$ (c) $\frac{2048}{3}$ (d) $\frac{2048}{27}$

20. Three coins are tossed, then what is the probability that at least two heads appears on upper face? -(CET 2005)

(a) $\frac{5}{8}$ (b) 40 (c) $\frac{8}{5}$ (d) None of these

21. $\int \frac{dx}{x+\sqrt{x}}$ is equal to -(CET 2005)

(a) $\frac{1}{2}$ log(1 + $\sqrt{x}$) + c

(b) 2 log(1 + $\sqrt{x}$) + c

(c) $\frac{1}{4}$ log(1 + $\sqrt{x}$) + c

(d) 3 log(1 + $\sqrt{x}$) + c

22. $\sim$[p $\leftrightarrow$ q] is -(CET 2005)

(a) tautology

(b) contradiction

(c) neither (a) nor (b)

(d) either (a) or (b)

23. The value of $\int \frac{x^2}{1+x^6}$ dx is -(CET2005)

(a) x^3 + c

(b)$\frac{1}{3}\tan^{-1}(x^3)+c$

(c)log (1+x^3)

(d) None of these

24. What are the DR's of vector paralle to (2,-1,1) and (3, 4, - 1) -(CET 2005)

(a) (1, 5 - 2)

(b)(-2,-5,2)

(c) (-1, 5, 2)

(d) (- 1, - 5, - 2)

25.$\int(1-\cos x)\,coses^2$ x dx is equal to -(CET 2005)

(a) tan$\frac{x}{2}$+ c

(b) –cot $\frac{x}{2}$ +c

(c) 2tan $\frac{x}{2}$ + c

(d) -2 cot $\frac{x}{2}$ + c

26. If A = $\begin{bmatrix}1 & -1\\ 2 & -1\end{bmatrix}$ $and\ B=\begin{bmatrix}1 & a\\ 4 & b\end{bmatrix}$ and $(A+B)^2 = A^2+B^2$. Then, a and b are respectively (CET 2005)

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

27. $\int\frac{\cos x}{\sqrt{1+\sin x}}$is equal to -(CET 2005)

(a) sin$\frac{x}{2}$ – cos $\frac{x}{2}$ + c

(b) sin$\frac{x}{2}$ + cos$\frac{x}{2}$ + c

(c) 2[sin $\frac{x}{2}$ - cos$\frac{x}{2}$] + c

(d) 2[sin$\frac{x}{2}$+ cos $\frac{x}{2}$] + c

28. [$\vec{a}+\vec{b}$ $\vec{b}+\vec{c}$ $\vec{c}+\vec{a}$]=[$\vec{a}\ \vec{b}\ \vec{c}$] , then -(CET 2005)

(a) $[\vec{a}\vec{b}\vec{c}]$=1

(b) $\vec{a}, \vec{b}, \vec{c}$ are coplanar

(c) $\left[\vec{a}\vec{b}\vec{c}\right]$ =-1

(d) $\vec{a}, \vec{b}, \vec{c}$ are mutually perendicular

29. $\int_1^3 \frac{\cos(\log x)}{x}$ is equal to -(CET 2005)

(a) 1

(b) cos(log 3)

(c) sin(log 3)

(P) $\frac{\pi}{4}$

30. Angle between the tangents to the parabola y^2= 8x from the point (6, 7) is -(CET 2005)

(a) $\tan^{-1}\frac{1}{4}$ (b) $\tan^{-1}(1)$ (C) $\tan^{-1}\left(\frac{1}{2}\right)$ (d) None of these

31. integrate (sin x + cos x)/(sqrt(1 + sin 2x)) dx from 0 to pi / 2 is equal to –(CET 2005)

(a) $-\frac{\pi}{2}$ (b)$\frac{\pi}{4}$ (c) $\frac{\pi}{2}$ (d)π

32. Probility P(A) = 0.7, P(B) = 0.4, p (A ∩ B)=0.3 then P(A ∩ B') is equal to -(CET 2005)

(a) 0.1 (b) 0.3 (c) 0.2 (d) 0.4

33.$\int_1^2 e^x \left(\frac{1}{x} - \frac{1}{x^2}\right)$dx is equal to -(CET 2005)

a) e-$\frac{e^2}{2}$ (b) $\frac{e^2}{2}$-e (c)$\frac{e^2}{2} + e$ (d) $\frac{e^2}{2}$-2

34. If the equation $4x^2 + hxy + y^2 = 0$ represent coincident lines, then h is equal to -(CET 2005)

(a) 1 (b) 3 (c) 2 (d) 4

35. If y=a sin (5x +c),then

(a) $\frac{dy}{dx} = 5y$ (b) $\frac{dy}{dx} = -5y$ (c) $\frac{d^2y}{dx^2} = -25y$ (d) $\frac{d^2y}{dx^2} = 25\ y$

34. If the equation $4x^2$ + hxy + y^2= 0 represent coincident lines, then h is equal to –(CET 2005)

(a) 1 (b) 3 (c) 2 (d) 4

35. If y = a sin(5x + c) then -(CET 2005)

(a) $\frac{dy}{dx}$= 5y (b) $\frac{dy}{dx} = -5y$ (c) $\frac{d^2y}{dx^2}$ = - 25y (d) $\frac{d^2y}{dx^2}$ = 25y

36. If A = $\begin{bmatrix} 2 & -1 & 1 \\ -2 & 3 & -2 \\ -4 & 4 & -3 \end{bmatrix}$ then A^2 is equal to -(CET 2005)

(a) null matrix

(b) itself A

(c) unit matrix

(d) scalar matrix

37. Solution of $\frac{dy}{dx} = 3^{x+5}$ is -(CET2005)

(a) $3^{x+y} = c$

(b) $3^x + 3^y = c$

(c) $3^{x-y} = c$

(d) $3^x + 3^{-y} = c$

38. Area of rhombus is....., where diagonals are $\vec{a}$ = 2$\hat{\imath}$-3$\hat{\jmath}$ + 5$\hat{k}$ and $\vec{b}$=-$\hat{\imath}$ + $\hat{\jmath}$ + $\hat{k}$ -(CET 2005)

(a)$\sqrt{21.5}$

(b) $\sqrt{31.5}$

(c) $\sqrt{28.5}$

(d) $\sqrt{38.5}$

39. Degree and order of the differential equation $\frac{d^2y}{dx^2} = \left(\frac{dy}{dx}\right)^2$ are respectively –(CET 2005)

(a) 1,2 (b) 2,1 (c) 2,2 (d) 1,1

40. Angle between tangents drawn to circle $x^2 + y^2 = 20$ from the point (6, 2) is -(CET 2005)

(a) $\frac{\pi}{2}$ (b) π (c) $\frac{\pi}{4}$ (d) 2π

41. If f(x) = a ,a ∈ R, then –(CET 2005)

(a) ∇ f(x) = 0 (b) ∇ f(x) = a (c) ∇ f(x) = 2a (d) ∇ $f(x) = a^2$

42. If events mutually exclusive and P(A) = $\frac{1}{3}$, P(B) = $\frac{1}{3}$, P(C) = $\frac{1}{4}$,then (A' ∩ B^ ∩ C' prime) is equal to –(CET 2005)

(a) ¼ (b) 1/12 (c) 1/3 (d) 5/12

43. If f(1) = 10 f(2) = 14 then using Newton's forward formula f(1.3) is equal to –(CET 2005)

(a) 12.2 (b) 11.2 (c) 10.2 (d) 15.2

44. The fessible region of LPP is a convex polygon and its two consecutive vertices gives optimum solution the LPP has -(CET 2005)

(a) only one and finite solution

(b) no solution

(c) two solutions

(d) None of the above

45. If $f(x) = x^3 - 9x + 1$ and $x_0 = 3$ then using Newton Raphson method, first iteration is

(a) $\frac{53}{18}$ (b) $\frac{53}{9}$ (c) $\frac{35}{18}$ (d) $\frac{35}{9}$

46. Let ABCD be a parallelogram whose diagonals intersect at Pand O be the origin, then $\overrightarrow{OA}$ + $\overrightarrow{OB}$ + $\overrightarrow{OC}$ + $\overrightarrow{OD}$ equals –(CET 2005)

(a)$\overrightarrow{OP}$ (b) 2 $\overrightarrow{OP}$ (c) 3 $\overrightarrow{OP}$ (d) 4 $\overrightarrow{OP}$

47. $\Delta^2 y_0$ is equal to -(CET 2005)

(a) $2y_2 - 2y_1 - y_0$

(b) $y_2 - 2y_1 - y_0$

(c) $2y_2 - 2y_1 + y_0$

(d) $y_2 - 2y_1 + y_0$

48. $3x \geq 8$ has solution in -(CET 2005)

(a) Ist and IInd quadrant

(b) IIIrd and IVth quadrant

(c) IInd and IIIrd quadrant

(d) Ist and IVth quadrant

49.Δ^2 ($3e^x$) is equal to -(CET 2005)

(a) $3e^x$ (b) $3(h - 1)e^x$ (c) $3 (e^h - 1)^2 e^x$ (d) None of these

50. $\sim[(p \wedge q) (\sim p \vee \sim q)]$ is -(CET 2005)

(a) tautology

(b) contradiction

(c) neither (a) nor (b)

(d) either (a) or (b)

Answer

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