FIITJEE PET – I (REG_2ND YEAR)
MAINS_SET–A
DATE: 09.06.2018

Time: 3 hours   **Maximum Marks: 360**
INSTRUCTIONS:

Instructions to the Candidates

1.   This Test Booklet consists of **90 questions**.

       Use **Blue/Black ball Point Pen only** for writing particulars and bubbling of OMR.

2.   For each correct answer **4 Marks** will awarded and for each wrong answer **1 Mark** will be deducted.

3.   Attempt all questions.

4.   In case you have not darkened any bubble you will be awarded 0 mark for that question.

5.   Use of calculator/logarithmic table is not permitted.

Don't write / mark your answers in this question booklet.
If you mark the answers in question booklet, you will not be allowed to continue the exam.

NAME: ⬚⬚⬚⬚⬚⬚⬚⬚⬚⬚⬚⬚⬚⬚⬚⬚⬚⬚⬚⬚⬚⬚⬚⬚

ENROLLMENT NO.: ⬚⬚⬚⬚⬚⬚⬚⬚⬚⬚⬚

1. The coefficient of x^7 in the expansion of $(1 - x - x^2 + x^3)^6$ is
   (A) −144   (B) 132   (C) 144   (D) −132

2. The coefficient of x^n in expansion of $(1 + x)(1 - x)^n$ is
   (A) $(n - 1)$ (B) $(-1)^{n-1} n$ (C) $(-1)^{n-1}(n - 1)^2$ (D) $(-1)^n (1 - n)$

3. Which term of $\left(\sqrt{\dfrac{x}{3}} + \dfrac{3}{2x^2} \right)^{10}$ is independent of x

   (A) 2   (B) 3   (C) 4   (D) 7

4. The term independent of x $(x > 0, x \neq 1)$ in the expansion of $\left[\dfrac{(x+1)}{\left(x^{2/3} - x^{1/3} + 1\right)} - \dfrac{(x-1)}{\left(x - \sqrt{x}\right)} \right]^{10}$ is

   (A) 105   (B) 210   (C) 315   (D) 420

5. The sum of the rational terms in the expansion of $\left(\sqrt{2} + 3^{1/5} \right)^{10}$ is
   (A) 41   (B) 230   (C) 520   (D) none of these

6. If the coefficients of rth term and $(r + 1)^{th}$ term in the expansion of $(1 + x)^{20}$ are in the ratio 1 : 2, then r =
   (A) 6   (B) 7   (C) 8   (D) 9

7. If the coefficients of x^3 and x^4 in the expansion of $(1 + ax + bx^2) (1 - 2x)^{18}$ in powers of x are both zero, then (a, b) is equal to
   (A) $\left(14, \dfrac{272}{3} \right)$ (B) $\left(16, \dfrac{272}{3} \right)$ (C) $\left(16, \dfrac{251}{3} \right)$ (D) $\left(14, \dfrac{251}{3} \right)$

8. The numerically greatest term of $(3x + 2y)^{11}$ when $x = \dfrac{2}{3}$, $y = \dfrac{3}{4}$ is
   (A) $^{10}C_5 \times 486$ (B) $-^{10}C_5 \times 486$ (C) $^{11}C_5 \times 486$ (D) $-^{11}C_5 \times 486$

9. The value of the greatest term in $\sqrt{3} \left(1 + \dfrac{1}{\sqrt{3}} \right)^{20}$ is

   (A) $\dfrac{^{20}C_6}{25}$ (B) $\dfrac{^{20}C_7}{27}$ (C) $\dfrac{^{15}C_6}{23}$ (D) none of these

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Space for rough work

10. The coefficient of the middle term in the binomial expansion in powers of x of $(1 + \alpha x)^4$ and of $(1 - \alpha x)^6$ is the same if $\alpha =$

(A) $-\dfrac{5}{3}$ (B) $\dfrac{3}{5}$ (C) $-\dfrac{3}{10}$ (D) $\dfrac{10}{3}$

11. The number of nonzero terms in the expansion of $\left(8 + 2\sqrt{5}\right)^{101} - \left(8 - 2\sqrt{5}\right)^{101}$ is

(A) 101   (B) 50   (C) 51   (D) 204

12. If $\left(4 + \sqrt{15}\right)^n = I + F$ when I, n are positive integers, $0 < F < 1$, then $(I + F)(I - F) =$

(A) 0   (B) 1   (C) –1   (D) 2

13. If the coefficient of $(2r + 4)^{th}$ term is equal to the coefficient of $(r - 2)^{th}$ term in the expansion of $(1 + x)^{18}$, then $r =$

(A) 2   (B) 4   (C) 6   (D) 8

14. The coefficient of x^{24} in the expansion of $(1 + x^2)^{12} (1 + x^{12}) (1 + x^{24})$ is

(A) $^{12}C_6$ (B) $^{12}C_6 + 2$ (C) $^{12}C_6 + 4$ (D) $^{12}C_6 + 6$

15. The greatest binomial coefficient of $(2x^{1/3} + 3x^{-7/2})^{31}$ is equal to the coefficient of x^k in the expansion of $(1 + x)^{31}$. Then $k =$

(A) 13, 14   (B) 14, 15   (C) 15, 16   (D) 16, 17

16. If the fourth term in the expansion of $\left(\sqrt{x^{\frac{1}{(\log x + 1)}}} + x^{\frac{1}{12}} \right)^6$ is equal to 200 and $x > 1$, then $x =$

(A) 100   (B) 10   (C) 1   (D) $\dfrac{1}{\sqrt{10}}$

17. If T_r denotes the rth term in the expansion of $\left(x + \dfrac{1}{y} \right)^{23}$, then

(A) $T_{12} = T_{13}$ (B) $x^2 T_{13} = T_{12}$ (C) $T_{12} = xy \cdot T_{13}$ (D) $T_{12} + T_{13} = 25$

18. The coefficient of x^{50} in the expansion of $S = (1 + x)^{1000} + (1 + x)^{999} + 3x^2 (1 + x)^{998} + \ldots + 1001x^{1000}$ is

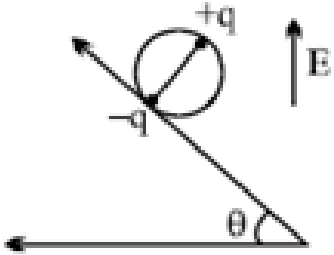(A) $^{1000}C_{50}$ (B) $^{1001}C_{50}$ (C) $^{1002}C_{50}$ (D) 2^{1001}
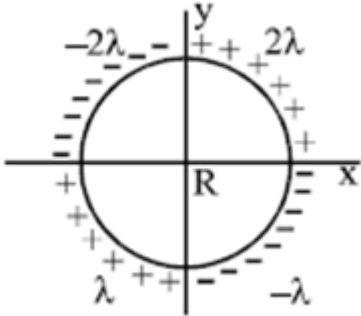

Space for rough work

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19. If the sum of middle terms is S in the expansion of $\left(2a - \dfrac{a^2}{4} \right)^9$, then the value(s) of S is/are

(A) $\left(\dfrac{63}{32} \right) a^{14} (8+a)$ (B) $\left(\dfrac{63}{32} \right) a^{13} (8+a)$ (C) $\left(\dfrac{63}{32} \right) a^{14} (8-a)$ (D) $\left(\dfrac{63}{32} \right) a^{13} (8-a)$

20. The positive value of a so that the coefficients of x^5 and x^{15} are equal in the expansion of $\left(x^2 + \dfrac{a}{x^3} \right)^{10}$

(A) $\dfrac{1}{2\sqrt{3}}$ (B) $\dfrac{1}{\sqrt{3}}$ (C) 1 (D) $2\sqrt{3}$

21. The coefficient of x^m in $(1+x)^p + (1+x)^{p+1} + \ldots + (1+x)^n$, $p \le m \le n$ is
(A) $^{n+1}C_{m+1}$ (B) $^{n-1}C_{m-1}$ (C) ^nC_m (D) $^nC_{m+_1}$

22. The value of x, for which the 6th term in the expansion of $\left\{ 2^{\log_2 \sqrt{\left(9^{x-1}+7\right)}} + \dfrac{1}{2^{(1/5)} \log_2 \left(3^{x-1}+1\right)} \right\}^7$ is 84 is

equal to
(A) 4 (B) 3 (C) –2 (D) 1

23. The coefficient of $a^8 b^4 c^9 d^9$ in the expansion of $(abc + abd + acd + bcd)^{10}$ is

(A) 10 ! (B) $\dfrac{10!}{8!4!9!9!}$ (C) 2520 (D) None of these

24. The greatest value of the term independent of x, as α varies over R, in the expansion of $\left(x\cos\alpha + \dfrac{\sin\alpha}{x} \right)^{20}$ is

(A) $^{20}C_{10}$ (B) $^{20}C_{15}$ (C) $^{20}C_{19}$ (D) $^{20}C_{10} \left(\dfrac{1}{2} \right)^{10}$

25. The number of rational terms in the expansion of $\left(\sqrt[4]{5} + \sqrt[5]{4} \right)^{36}$ is..........
(A) 1 (B) 2 (C) 3 (D) 4

26. The coefficient of x^5 in $(1+x^2)^5 (1+x)^4$ is
(A) 120 (B) 30 (C) 60 (D) 55

Space for rough work

27. The term independent of x in the expansion of $(1 + x + 2x^3)\left(\dfrac{3x^2}{2} - \dfrac{1}{3x}\right)^9$ is

(A) 1/3   (B) 1/4   (C) 17/54   (D) 19/54

28. If $\left(6\sqrt{6} + 14\right)^{2n+1}$ = R and F = R – [R], where [R] denotes the greatest integer less than or equal to R, then RF =

(A) 4^{2n+1} (B) 4^{2n-1} (C) 20^{2n+1} (D) 20^{2n-1}

29. The middle term of $(1 – 3x + 3x^2 – x^3)^{2n}$ is

(A) $^{6n}C_{3n}(–x)^{3n}$ (B) $^{2n}C_n(–x)^{3n}$ (C) $^{5n}C_{2n}(–x)^{3n}$ (D) $^{4n}C_{3n}(–x)^{3n}$

30. Number of term in expansion of $(x + y + z)^{12}$ is

(A) 91   (B) 96   (C) 98   (D) none of these

31. In a certain region of space, the potential is given by : $V = k\left[2x^2 - y^2 + z^2\right]$. The electric field at the point (1,1,1) has magnitude =

(A) $k\sqrt{6}$ (B) $2k\sqrt{6}$ (C) $2k\sqrt{3}$ (D) $4k\sqrt{3}$

32. A wheel having mass m has charges +q and –q on diametrically opposite point. It remains in equilibrium on a rough inclined plane in the presence of uniform vertical electric field E =

(A) $\dfrac{mg}{q}$ (B) $\dfrac{mg}{2q}$

(C) $\dfrac{mg\tan\theta}{2q}$ (D) None

33. Two particles X and Y, of equal mass and with unequal positive charges, are free to move and are initially far away from each other, With Y at rest, X begins to move towards it with initial velocity u. After a long time, finally

(A) X will stop, Y will move with velocity u
(B) X and Y will both move with velocities u/2 each
(C) X will stop, Y will move velocity <u
(D) both will move with velocities < u/2.

Space for rough work

34. Two equal negative charges are fixed at the points [0,a] and [0,-a] on the y –axis . A positive charge Q is released from rest at the point [2a,0] on the x – axis. The charge Q will
    (A) execute simple harmonic motion about the origin
    (B) move to the origin and remain at rest
    (C) move to infinity
    (D) execute oscillatory but not simple harmonic motion

35. The charge per unit length of the four quadrant of the ring is $2\lambda, -2\lambda, \lambda$ and $-\lambda$ respectively. The electric field at the centre is

    (A) $-\dfrac{\lambda}{2\pi\varepsilon_0 R}\hat{i}$

    (B) $\dfrac{\lambda}{2\pi\varepsilon_0 R}\hat{j}$

    (C) $\dfrac{\sqrt{2}\lambda}{4\pi\varepsilon_0 R}\hat{i}$

    (D) None

36. The equation of a an equipotential line in electric field is y = 2x, then the electric field strength vector at (1,2) may be
    (A) $4\hat{i}+3\hat{j}$ (B) $4\hat{i}+8\hat{j}$ (C) $8\hat{i}+4\hat{j}$ (D) $-8\hat{i}+4\hat{j}$

37. Two point charges placed at a distance r in air exert a force F on each other. The value of distance R at which they experience force 4F when placed in a medium of dielectric constant K = 16 is :
    (A) r   (B) r/4   (C) r/8   (D) 2r

38. Two point charges of the same magnitude and opposite sign are fixed at points A and B. A third small point charge is to be balanced at point P by the electrostatic force due to these two charges. The point P:
    (A) lies on the perpendicular bisector of line AB
    (B) is at the mid point of line AB
    (C) lies to the left of A
    (D) none of these.

Space for rough work

39. If a positively charged pendulum is oscillating in a uniform electric field as shown in Figure. Its time period of SHM as compared to that when it was uncharged.
    (A) Will increase
    (B) Will decrease
    (C) Will not change
    (D) Will first increase then decrease
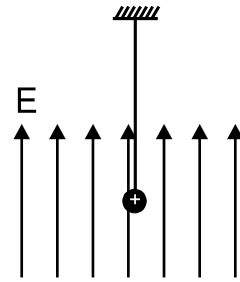
40. The variation of potential with distance r from a fixed point is shown in Figure. The electric field at r = 5 cm, is:
    (A) (2.5) V/cm   (B) (–2.5) V/cm
    (C) (–2/5) V/cm   (D) (2/5) V/cm
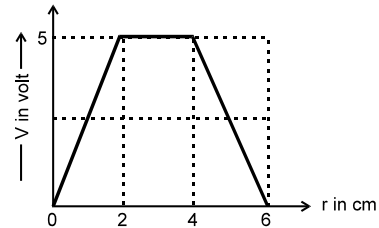
41. You are given an arrangement of three point charges q, 2q and xq separated by equal finite distances so that electric potential energy of the system is zero. Then the value of x is :
    (A) –2/3   (B) –1/3   (C) 2/3   (D) 3/2

42. An equipotential surface and a line of force :
    (A) never intersect each other   (B) intersect at 45º
    (C) intersect at 60º   (D) intersect at 90º

43. The potential difference between points A and B in the given uniform electric field is :

    (A) Ea   (B) $E\sqrt{a^2 + b^2}$

    (C) Eb   (D) $Eb / \sqrt{2}$
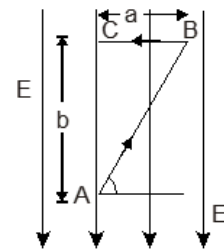
44. The dimensional formula of potential is
    (A) ML2T-2Q-1   (B) MLT-2Q-1
    (C) MT-2Q-2   (D)ML2T-1Q-1

Space for rough work

45.   Figure represents a square carrying charges +q, +q, –q, –q
        at its four corners as shown. Then the potential will be zero
        at points
        (A) A, B, C, P and Q
        (B) A, B and C
        (C) A, P, C and Q
        (D) P, B and Q
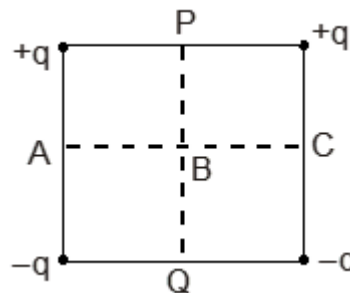
46.   Charge 2Q and –Q are placed as shown in figure. The point at which
        electric field intensity is zero will be:
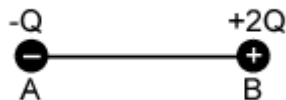
        (A) Somewhere between –Q and 2Q
        (B) Somewhere on the left of –Q
        (C) Somewhere on the right of 2Q
        (D) Somewhere on the right bisector of line joining –Q and 2Q

47.   Two charges are placed as shown the medium has dielectric
        constant $=\epsilon_r$

        (A) Force on q_1 is $\dfrac{k}{\epsilon_r}\dfrac{q_1q_2}{r^2}$

        (B) Force on q_2 is $\dfrac{kq_1q_2}{r^2}$
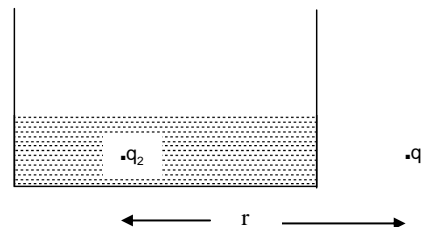
        (C) Force experienced by both charges is equal in magnitude
        (D) Both charges will apply equal and opposite force on each
        other

Space for rough work

48.   In which of the following cases, Equilibrium of charge placed at centre is stable (given the direction of oscillation)?

+q   -Q   +q

(A)

-q   -Q   -q

(B)

None

-q   -Q   -q
        (C)

(D)
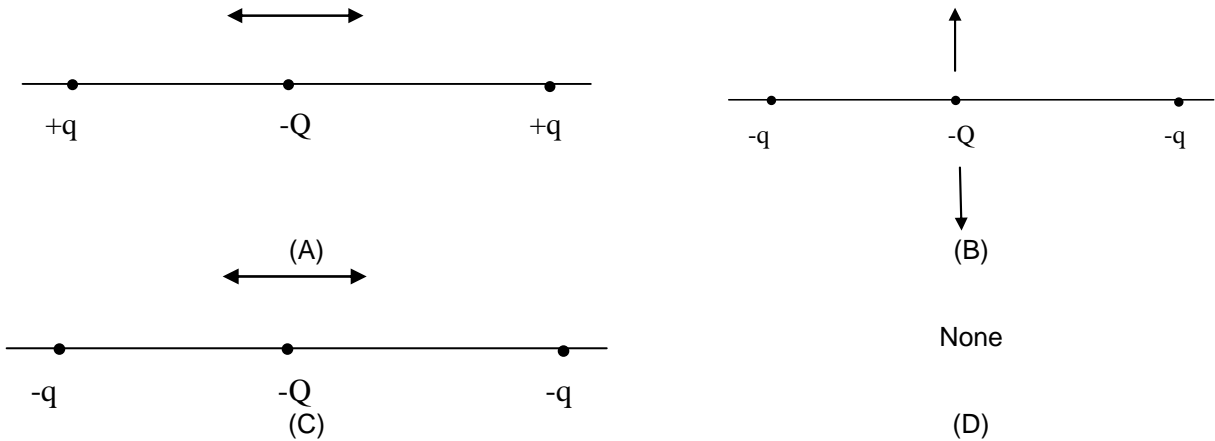
49.   Find the force on 6.5 C charge placed at (3,1,5) due to -2C charge placed at (0,5,-7)

(A) $\dfrac{k}{13}\left(3\hat{i}+4\hat{j}-12\hat{k}\right)$

(B) $\dfrac{-k}{169}\left(3\hat{i}-4\hat{j}+12\hat{k}\right)$

(C) $\dfrac{k}{\sqrt{13}}\left(-3\hat{i}+4\hat{j}-12\hat{k}\right)$

(D) $\dfrac{k}{169}\left(3\hat{i}-4\hat{j}+12\hat{k}\right)$

50.   Two spheres of mass m each and charge q are suspended as shown in fig (i). Another pair of charges q and -3q of same mass m are suspended as shown in fig (ii). X and Y are point below O and O' such that OB and O'C are perpendicular to BX and CY respectively. The ratio $\dfrac{BX}{CY}$ equals.

(A) 9   (B) 1/9
(C) 3   (D) 1/3
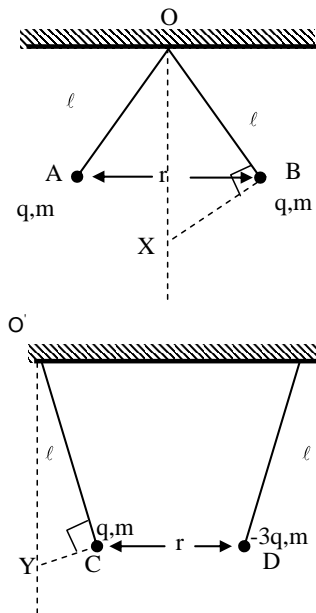
Space for rough work

51.   If the charge –q is projected as shown in figure, in the given constant Electric field, What will be its most likely path.

(A)

(B)

(C)

(D)
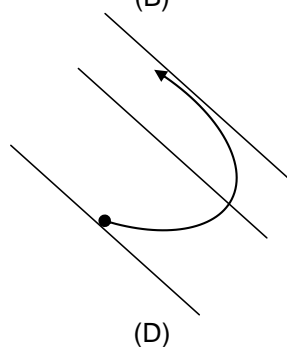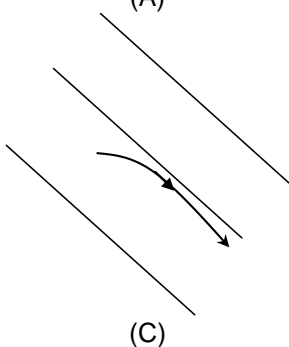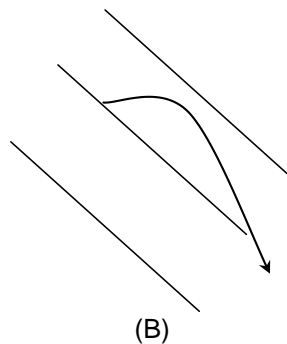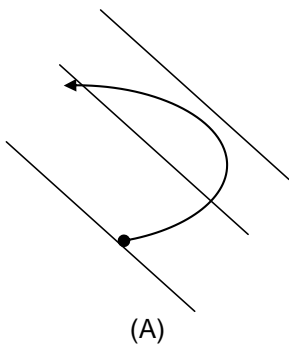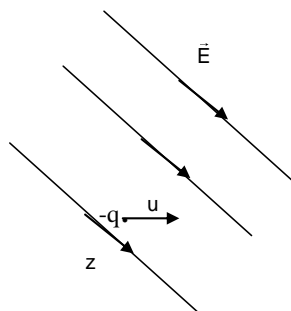
52.   Two small identical spheres having charges $+10\mu C$ and $-90\mu C$ attract each other with a force of F Newton. If they are kept in contact and then separated by the same distance, the new force between them is

(A) F/6   (B) 16F   (C) 16F/9   (D) 9F

Space for rough work

53. A ring of charge(uniformly distributed) with radius 0.5 m having a 0.02 m gap, carries a charge of +1 C. The field at the center is
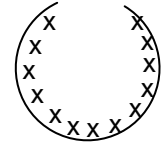
    (A) 2.31×10^4 N/C   (B) 2.31×10^8 N/C

    (C) 1.6×10^4 N/C   (D) 1.6×10^8 N/C

54. Two metal sphere of same mass are suspended from a common point by a light insulating string. The length of each string is same. The spheres are given electric charges +q on one end and +4q on the other. Which of the following diagram best shows the resulting positions of spheres?(Neglect mass of the charges)

    (A)   (B)   (C)   (D)
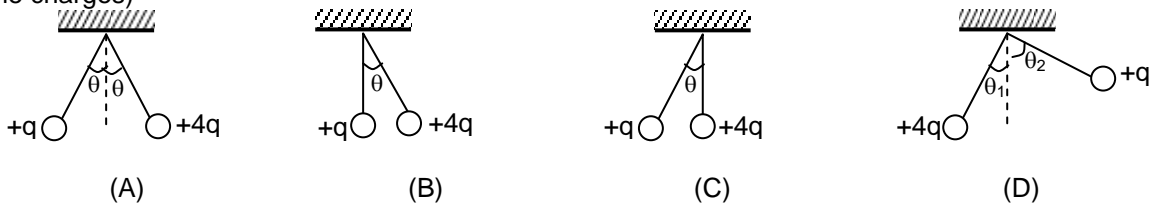
55. Four charges equal to –Q are placed at the four corners of a square and a change q is at its centre. If the system is in equilibrium, the value of q is

    (A) $-\dfrac{Q}{4}(1+2\sqrt{2})$ (B) $\dfrac{Q}{4}(1+2\sqrt{2})$ (C) $-\dfrac{Q}{2}(1+2\sqrt{2})$ (D) $\dfrac{Q}{2}(1+2\sqrt{2})$

56. Infinite charges of magnitude q each are lying at x = 1, 2, 4, 8 ………. metre on axis. The value of intensity of electric field at point x = 0 due to these charges will be

    (A) 12×10^9 qN/C   (B) zero   (C) 6×10^9 qN/C   (D) 4×10^9 qN/c

57. Two charges each equal to $\eta q\left(\eta^{-1} < \sqrt{3}\right)$ are placed at the corners of an equilateral triangle of side a. The electric field at the third corner is E_3 where $(E_0 = q/4\pi\varepsilon_0 a^2)$
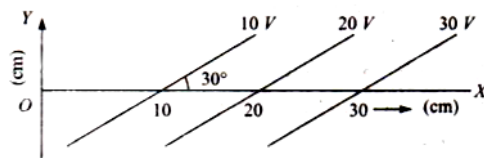
    (A) $E_3 = E_0$ (B) $E_3 < E_0$ (C) $E_3 > E_0$ (D) None

58. A non – conducting ring of radius 0.5 m carries a total charge of 1.11×10^{-10} C distributed non – uniformly on its circumference producing an electric field $\vec{E}$ every where in space. The value of the line integral $\int_{\ell=\infty}^{\ell=0} -\vec{E}\,\overrightarrow{d\ell}$ ($\ell = 0$ being centre of the ring) in volt is

    (A) +2   (B) –1   (C) –2   (D) Zero

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59. Equipotential surfaces are shown in figure. Then the electric filed strength will be

(A) 100 Vm^{-1} along X – axis

(B) 100 Vm^{-1} along Y – axis

(C) 200 Vm^{-1} at angle 120^0 with X –axis

(D) 50Vm^{-1} at an angle 120^0 with X –axis

60. A body of mass one gram and carrying a charge 10^{-8} C passes through two points P and Q. The electrostatic potential at Q is zero volt. The velocity of the body at Q is 0.2 ms^{-1} and at P is $\sqrt{0.028}$ ms^{-1}. The potential at P is

(A) 150 V   (B) 300 V   (C) 600 V   (D) 900 V

61. Which of the following alcohol is less soluble among the following

(A) Methanol   (B) Ethanol   (C) Propanol   (D) Butanol

62. Which of the following does not give alcohol as a product

(A) $CH_3 - CH = CH - CHO \xrightarrow{\text{NaBH}_4}$

(B) $R - I \xrightarrow{\text{aq.NaOH}}$

(C) $Ph - CH_2 - NH_2 \xrightarrow{\text{aq. NaNO}_2/\text{HCl}}$

(D) $R - Mgx \xrightarrow{H_3O^{(+)}}$

63. Alcohol with high B.P among the following

(A) n – butanol

(B) Isobutanol

(C) 2°–butanol

(D) n–pentanol

64. $Ph - CH(OH) - CH_3$ can be prepared by

(A) $Ph - CHO + CH_3MgCl$

(B) $CH_3CHO + PhMgBr$

(C) $Ph - CH(CH_3)MgCl + O_2$

(D) All

65. $CH_3 - CO - OC_2H_5 \xrightarrow{\text{Na}/C_2H_5OH} ?$

(A) CH_3CH_2OH

(B) C_3H_7OH

(C) CH_3OH

(D) both b & C

Space for rough work

66.   Ethene $\xrightarrow[\text{Ag}/\Delta]{\text{O}_2}$ A $\xrightarrow[\Delta]{\text{dil. HCl}}$ B. B = ?
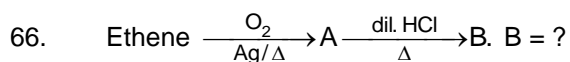
(A) Ethanol   (B) Ethene, 1, 2 diol
(C) Ethanal   (D) Epoxyethane

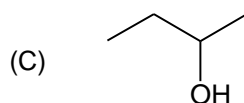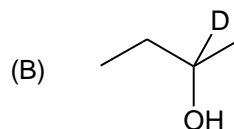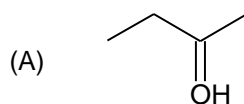67.   Which of the following is the best method to convert 3–methyl but–1–ene to 3–methyl but–2–ol
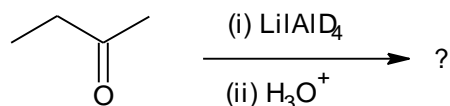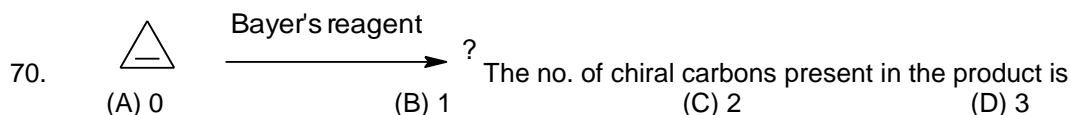(A) ACH   (B) HBO   (C) OMDM   (D) All

68.

(A)   (B)

(C)   (D)   Any of these

69.

(A)   (B)

(C)   Et–OH   (D)   Both b & c

70. $\xrightarrow{\text{Bayer's reagent}}$? The no. of chiral carbons present in the product is
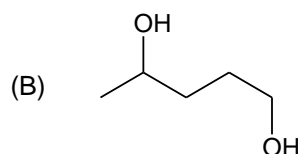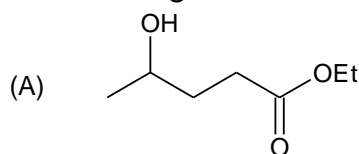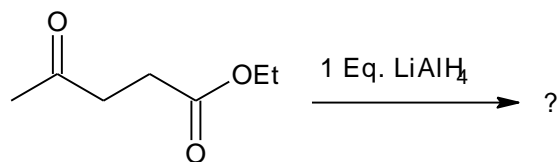
(A) 0   (B) 1   (C) 2   (D) 3

Space for rough work

71. Which of the following plyhydric alcohol
   (A) Ethanol (B) Glycol (C) Sabitol (D) All

72. How many of the following are 1° alcohol
   1. Benzyl alcohol 2. allyl alcohol 3. Isobutanol
   4. Cyclohexanol 5. Methanol
   (A) 3 (B) 4 (C) 5 (D) 2

73. Which of the following statement is correct regarding boiling point of alcohols.
   (A) It is directly proportional to molecular weight
   (B) It is directly proportional to no. of OH groups
   (C) It is Inversely proportional branching for same molecular weight
   (D) All

74.
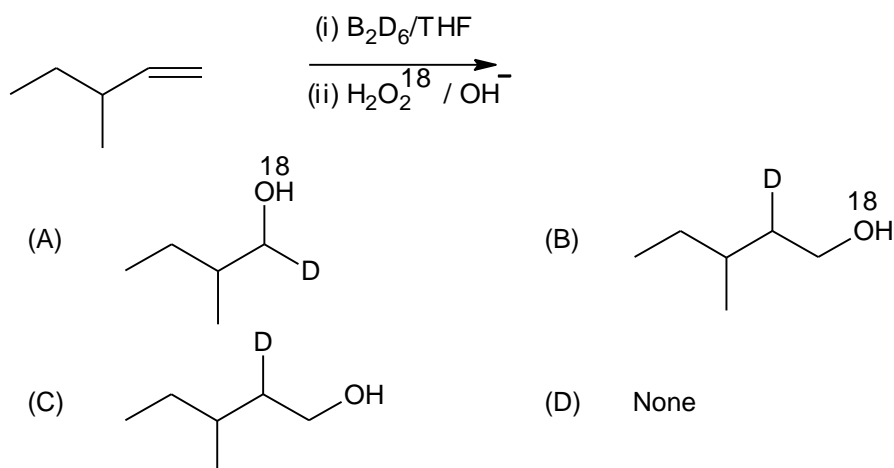
$$\xrightarrow[\text{(ii) } H_2O_2^{18} \text{ / } OH^-]{\text{(i) } B_2D_6/THF}$$

(A)

(B)

(C)

(D) None

75. Ethyl alcohol is a commercial alcohol and is made unfit for drinking by adding

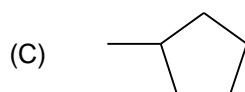   (A) $CuSO_4$ (B) (C) both a & b (D) acetone

Space for rough work

76. $R-NH_2 \xrightarrow{HNO_2} R-OH$. Here – R could be
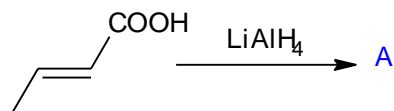
(A)

(B) $-CH_2-CH_3$

(C)
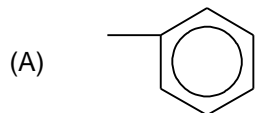
(D) All

77.

The no. of hydrogens added in the product A is equal to
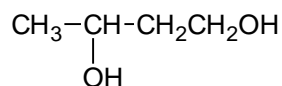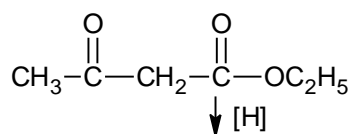
(A) 6   (B) 4   (C) 2   (D) 5

78.

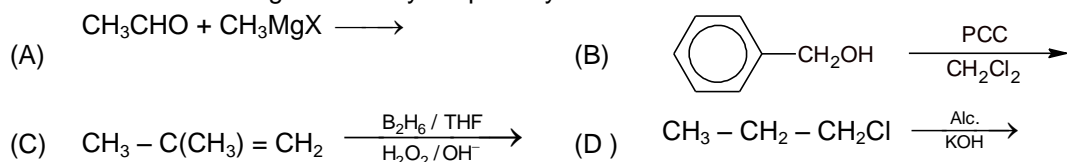The reducing agent suitable for above transformation is

(A) $NaBH_4$ (B) $LiAlH_4$ (C) $H_2/Ni, \Delta$ (D) Both B & C

Space for rough work

79. Which of the following reactions yield primary alcohol?

(A) $CH_3CHO + CH_3MgX \longrightarrow$

(B) $\xrightarrow[CH_2Cl_2]{PCC}$

(C) $CH_3 - C(CH_3) = CH_2 \xrightarrow[H_2O_2/OH^-]{B_2H_6 \,/\, THF}$

(D) $CH_3 - CH_2 - CH_2Cl \xrightarrow[KOH]{Alc.}$

80. How many Isomeric alcohols with molecular formula $C_4H_{10}O$ are chiral in nature ?
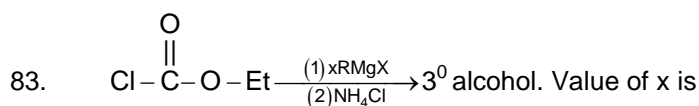   (A) 1   (B) 2   (C) 3   (D) 4

81. Epoxides react with Grignard reagent to form
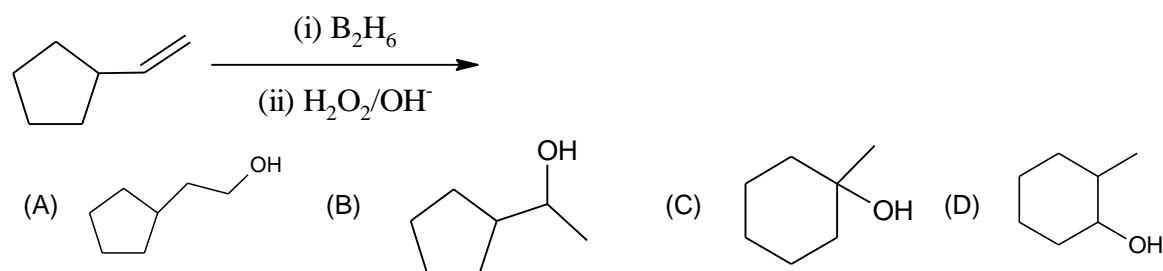   (A) 1° alcohols   (B) 2° alcohols   (C) 3° alcohols   (D) Any of these

82. Which of the following reacts with excess methyl magnesium bromide followed by acid hydrolysis to produce 2,3,3 - trimethyl -2- pentanol ?
    (A) $CH_3 - C(CH_3)_2 .COOCH_3$ (B) $CH_3CH_2C(CH_3)_2 CHO$
    (C) $CH_3.CH_2C(CH_3)_2 .COOH$ (D) $CH_3.CH_2C(CH_3)_2 CO_2CH_3$

83. $Cl - \overset{\overset{O}{\|}}{C} - O - Et \xrightarrow[(2)NH_4Cl]{(1)\,xRMgX} 3^0$ alcohol. Value of x is

    (A) 2   (B) 3   (C) 4   (D) 5

84.

$$\xrightarrow[\text{(ii) } H_2O_2/OH^-]{\text{(i) } B_2H_6}$$

(A) (B) (C) (D)

Space for rough work

85. Which of the following reduction methods is not suitable for preparing an alcohol?
(A) $CH_3COC_2H_5 + NaBH_4 \rightarrow$
(B) $CH_3COOC_2H_5 + Na/EtOH \rightarrow$
(C) $CH_3CH_2COCl + LiAlH_4 \rightarrow$
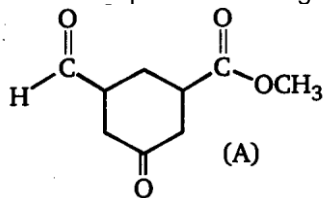(D) $CH_3COOH + H_2 \xrightarrow{Ni}$

86. In the reaction,
$CH_3 - CH = CH - CHO \xrightarrow{X} CH_3 - CH = CH - CH_2OH$ the reagent 'x' is
(A) H_2 / Pt
(B) $NaBH_4$
(C) HI / P
(D) PCC in CH_2Cl_2

87. Predict the product when given compound reacts with LiAlH₄

(A)

(A)

(B)

(C)

(D)

Space for rough work

88.

$$\xrightarrow{\text{NaBH}_4}$$ (X) Product (X) is :

(A)

(B)

(C)

(D)
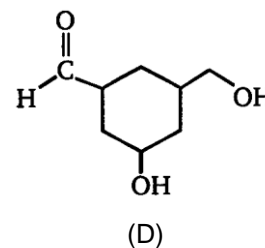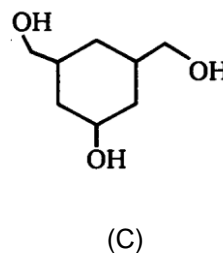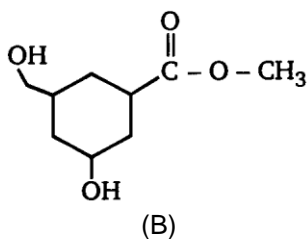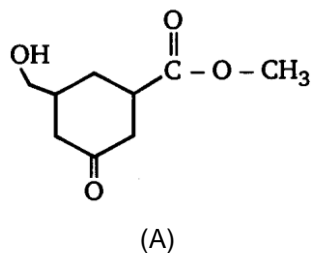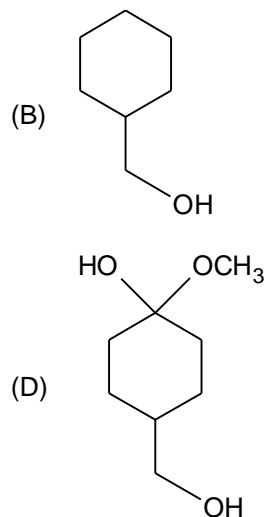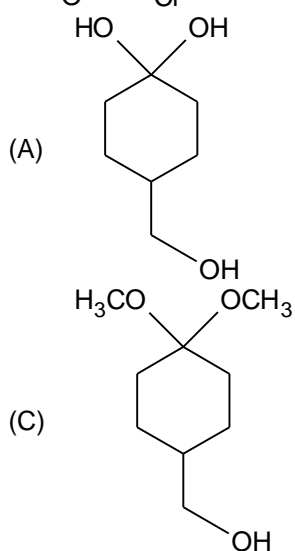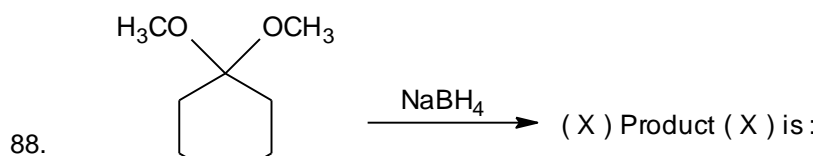
89.   Lower alcohols are soluble in water because,
       (A) the structure is water like   (B) it doesn't form precipitate with water
       (C) it is polar   (D) it forms H. bond with water

90.   How many isomers of $C_5H_{11}OH$ will be primary alcohols?
       (A) 6   (B) 4   (C) 2   (D) 3

Space for rough work

FIITJEE PET – I (REG_2ND YEAR)
MAINS_SET–A_ANSWERS
DATE: 09.06.2018

MATHEMATICS

1.	A	2.	D	3.	B	4.	B
5.	A	6.	B	7.	B	8.	C
9.	B	10.	C	11.	C	12.	B
13.	C	14.	B	15.	C	16.	B
17.	C	18.	Bonus	19.	D	20.	A
21.	A	22.	D	23.	Bonus	24.	D
25.	B	26.	C	27.	C	28.	C
29.	A	30.	Bonus				

PHYSICS

31.	B	32.	B	33.	A	34.	D
35.	A	36.	D	37.	B	38.	D
39.	C	40.	A	41.	B	42.	D
43.	C	44.	A	45.	B	46.	B
47.	D	48.	C	49.	B	50.	C
51.	D	52.	C	53.	B	54.	A
55.	B	56.	A	57.	C	58.	A
59.	C	60.	C				

CHEMISTRY

61.	D	62.	D	63.	D	64.	D
65.	A	66.	B	67.	C	68.	B
69.	A	70.	C	71.	C	72.	A
73.	D	74.	B or C	75.	C	76.	D
77.	C	78.	D	79.	C	80.	B
81.	D	82.	D	83.	B	84.	A
85.	D	86.	B	87.	C	88.	C
89.	Bonus	90.	B				

FIITJEE PET – I (REG_2ND YEAR)
MAINS_SET–B
DATE: 09.06.2018

Time: 3 hours   **Maximum Marks: 360**
INSTRUCTIONS:

Instructions to the Candidates

1.   This Test Booklet consists of **90 questions**.

        Use **Blue/Black ball Point Pen only** for writing particulars and bubbling of OMR.

2.   For each correct answer **4 Marks** will awarded and for each wrong answer **1 Mark** will
        be deducted.

3.   Attempt all questions.

4.   In case you have not darkened any bubble you will be awarded 0 mark for that question.

5.   Use of calculator/logarithmic table is not permitted.

Don't write / mark your answers in this question booklet.
If you mark the answers in question booklet, you will not be allowed to continue the exam.

NAME: ⬜⬜⬜⬜⬜⬜⬜⬜⬜⬜⬜⬜⬜⬜⬜⬜⬜⬜⬜⬜⬜⬜⬜

ENROLLMENT NO.: ⬜⬜⬜⬜⬜⬜⬜⬜⬜⬜⬜

1. The coefficient of x^m in $(1 + x)^p + (1 + x)^{p+1} + ... + (1 + x)^n$, $p \le m \le n$ is
   (A) $^{n+1}C_{m+1}$ (B) $^{n-1}C_{m-1}$ (C) ^nC_m (D) $^nC_{m+\_1}$

2. The value of x, for which the 6th term in the expansion of $\left\{ 2^{\log_2 \sqrt{(9^{x-1}+7)}} + \dfrac{1}{2^{(1/5)} \log_2 (3^{x-1}+1)} \right\}^7$ is 84 is

   equal to
   (A) 4   (B) 3   (C) –2   (D) 1

3. The coefficient of $a^8 b^4 c^9 d^9$ in the expansion of $(abc + abd + acd + bcd)^{10}$ is

   (A) 10 !   (B) $\dfrac{10!}{8!4!9!9!}$ (C) 2520   (D) None of these

4. The greatest value of the term independent of x, as α varies over R, in the expansion of

   $\left(x\cos\alpha + \dfrac{\sin\alpha}{x} \right)^{20}$ is

   (A) $^{20}C_{10}$ (B) $^{20}C_{15}$ (C) $^{20}C_{19}$ (D) $^{20}C_{10} \left(\dfrac{1}{2}\right)^{10}$

5. The number of rational terms in the expansion of $\left(\sqrt[4]{5} + \sqrt[5]{4} \right)^{36}$ is..........
   (A) 1   (B) 2   (C) 3   (D) 4

6. If the fourth term in the expansion of $\left(\sqrt{x^{\frac{1}{(\log x+1)}}} + x^{\frac{1}{12}} \right)^6$ is equal to 200 and x > 1, then x =

   (A) 100   (B) 10   (C) 1   (D) $\dfrac{1}{\sqrt{10}}$

7. If T_r denotes the rth term in the expansion of $\left(x + \dfrac{1}{y} \right)^{23}$, then
   (A) $T_{12} = T_{13}$ (B) $x^2 T_{13} = T_{12}$ (C) $T_{12} = xy \cdot T_{13}$ (D) $T_{12} + T_{13} = 25$

8. The coefficient of x^{50} in the expansion of $S = (1 + x)^{1000} + (1 + x)^{999} + 3x^2 (1 + x)^{998} + ... + 1001x^{1000}$ is
   (A) $^{1000}C_{50}$ (B) $^{1001}C_{50}$ (C) $^{1002}C_{50}$ (D) 2^{1001}

Space for rough work

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9. If the sum of middle terms is S in the expansion of $\left(2a - \dfrac{a^2}{4}\right)^9$, then the value(s) of S is/are

(A) $\left(\dfrac{63}{32}\right)a^{14}(8+a)$ (B) $\left(\dfrac{63}{32}\right)a^{13}(8+a)$ (C) $\left(\dfrac{63}{32}\right)a^{14}(8-a)$ (D) $\left(\dfrac{63}{32}\right)a^{13}(8-a)$

10. The positive value of a so that the coefficients of x^5 and x^{15} are equal in the expansion of $\left(x^2 + \dfrac{a}{x^3}\right)^{10}$

(A) $\dfrac{1}{2\sqrt{3}}$ (B) $\dfrac{1}{\sqrt{3}}$ (C) 1   (D) $2\sqrt{3}$

11. The coefficient of x^7 in the expansion of $(1 - x - x^2 + x^3)^6$ is
(A) −144   (B) 132   (C) 144   (D) −132

12. The coefficient of x^n in expansion of $(1 + x)(1 - x)^n$ is
(A) $(n - 1)$ (B) $(-1)^{n-1}\,n$ (C) $(-1)^{n-1}(n-1)^2$ (D) $(-1)^n(1-n)$

13. Which term of $\left(\sqrt{\dfrac{x}{3}} + \dfrac{3}{2x^2}\right)^{10}$ is independent of x

(A) 2   (B) 3   (C) 4   (D)

14. The term independent of x $(x > 0, x \neq 1)$ in the expansion of $\left[\dfrac{(x+1)}{\left(x^{2/3} - x^{1/3} + 1\right)} - \dfrac{(x-1)}{\left(x - \sqrt{x}\right)}\right]^{10}$ is

(A) 105   (B) 210   (C) 315   (D) 420

15. The sum of the rational terms in the expansion of $\left(\sqrt{2} + 3^{1/5}\right)^{10}$ is

(A) 41   (B) 230   (C) 520   (D) none of these

16. The coefficient of x^5 in $(1 + x^2)^5(1 + x)^4$ is
(A) 120   (B) 30   (C) 60   (D) 55

17. The term independent of x in the expansion of $(1 + x + 2x^3)\left(\dfrac{3x^2}{2} - \dfrac{1}{3x}\right)^9$ is

(A) 1/3   (B) 1/4   (C) 17/54   (D) 19/54
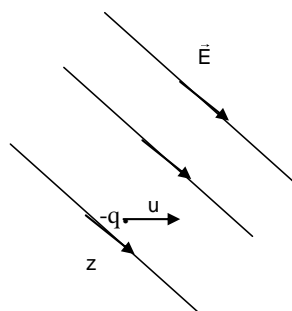
Space for rough work

18. If $\left(6\sqrt{6}+14\right)^{2n+1} = R$ and $F = R - [R]$, where $[R]$ denotes the greatest integer less than or equal to R, then RF =
   (A) 4^{2n+1} (B) 4^{2n-1} (C) 20^{2n+1} (D) 20^{2n-1}

19. The middle term of $(1 - 3x + 3x^2 - x^3)^{2n}$ is
   (A) $^{6n}C_{3n}(-x)^{3n}$ (B) $^{2n}C_n(-x)^{3n}$ (C) $^{5n}C_{2n}(-x)^{3n}$ (D) $^{4n}C_{3n}(-x)^{3n}$

20. Number of term in expansion of $(x + y + z)^{12}$ is
   (A) 91   (B) 96   (C) 98   (D) none of these

21. The number of nonzero terms in the expansion of $\left(8+2\sqrt{5}\right)^{101}-\left(8-2\sqrt{5}\right)^{101}$ is
   (A) 101   (B) 50   (C) 51   (D) 204

22. If $\left(4+\sqrt{15}\right)^n = I + F$ when I, n are positive integers, $0 < F < 1$, then $(I + F)(I - F) =$
   (A) 0   (B) 1   (C) –1   (D) 2

23. If the coefficient of $(2r + 4)^{th}$ term is equal to the coefficient of $(r - 2)^{th}$ term in the expansion of $(1 + x)^{18}$, then r =
   (A) 2   (B) 4   (C) 6   (D) 8

24. The coefficient of x^{24} in the expansion of $(1 + x^2)^{12} (1 + x^{12}) (1 + x^{24})$ is
   (A) $^{12}C_6$ (B) $^{12}C_6 + 2$ (C) $^{12}C_6 + 4$ (D) $^{12}C_6 + 6$

25. The greatest binomial coefficient of $(2x^{1/3} + 3x^{-7/2})^{31}$ is equal to the coefficient of x^k in the expansion of $(1 + x)^{31}$. Then k =
   (A) 13, 14   (B) 14, 15   (C) 15, 16   (D) 16, 17

26. If the coefficients of rth term and $(r + 1)^{th}$ term in the expansion of $(1 + x)^{20}$ are in the ratio 1 : 2, then r=
   (A) 6   (B) 7   (C) 8   (D) 9

27. If the coefficients of x^3 and x^4 in the expansion of $(1 + ax + bx^2) (1 - 2x)^{18}$ in powers of x are both zero, then (a, b) is equal to
   (A) $\left(14,\dfrac{272}{3}\right)$ (B) $\left(16,\dfrac{272}{3}\right)$ (C) $\left(16,\dfrac{251}{3}\right)$ (D) $\left(14,\dfrac{251}{3}\right)$

Space for rough work

FIITJEE (Hyderabad Classes) Limited. 5-9-14/B, Saifabad, (Opp. Secretariat) Hyderabad. 500 063. Ph: 040-66777000 – 03 Fax: 04066777004
FIITJEE Limited. 22–97, Plot No.1, (Opp. Patel Kunta) Huda Park, Vijaynagar Colony, Kukatpally, Hyderabad. 500 072. Ph : 040–64601123
FIITJEE Limited. Plot No. 39A, (Opp. Sashi Hospital), Gaddiannaram, Dilsukhnagar, Hyderabad, 5000036. Ph: 040–64569509.

28. The numerically greatest term of $(3x + 2y)^{11}$ when $x = \dfrac{2}{3}$, $y = \dfrac{3}{4}$ is

    (A) $^{10}C_5 \times 486$　　　　(B) $-^{10}C_5 \times 486$　　　　(C) $^{11}C_5 \times 486$　　　　(D) $-^{11}C_5 \times 486$

29. The value of the greatest term in $\sqrt{3}\left(1 + \dfrac{1}{\sqrt{3}}\right)^{20}$ is

    (A) $\dfrac{^{20}C_6}{25}$　　　　(B) $\dfrac{^{20}C_7}{27}$　　　　(C) $\dfrac{^{15}C_6}{23}$　　　　(D) none of these

30. The coefficient of the middle term in the binomial expansion in powers of x of $(1 + \alpha x)^4$ and of $(1 - \alpha x)^6$ is the same if $\alpha =$

    (A) $-\dfrac{5}{3}$　　　　(B) $\dfrac{3}{5}$　　　　(C) $-\dfrac{3}{10}$　　　　(D) $\dfrac{10}{3}$

31. If the charge –q is projected as shown in figure, in the given constant Electric field, What will be its most likely path.
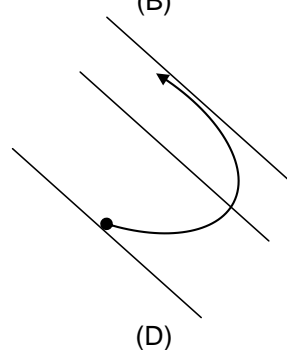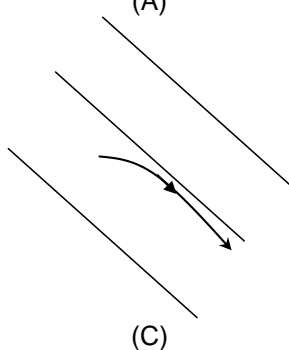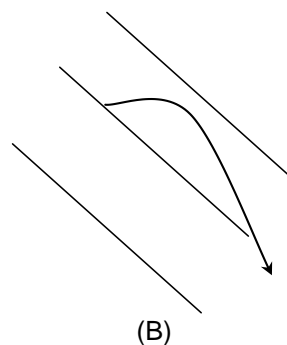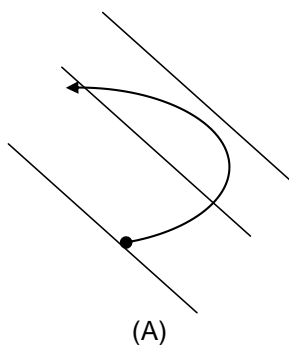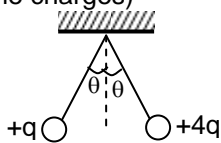

Space for rough work

32. Two small identical spheres having charges +10μC and –90μC attract each other with a force of F Newton. If they are kept in contact and then separated by the same distance, the new force between them is

    (A) F/6 (B) 16F (C) 16F/9 (D) 9F

33. A ring of charge(uniformly distributed) with radius 0.5 m having a 0.02 m gap, carries a charge of +1 C. The field at the center is

    (A) 2.31×10^4 N/C (B) 2.31×10^8 N/C

    (C) 1.6×10^4 N/C (D) 1.6×10^8 N/C
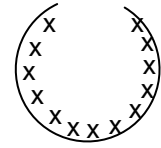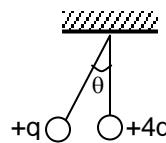

34. Two metal sphere of same mass are suspended from a common point by a light insulating string. The length of each string is same. The spheres are given electric charges +q on one end and +4q on the other. Which of the following diagram best shows the resulting positions of spheres?(Neglect mass of the charges)
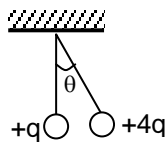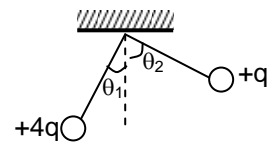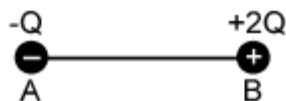

    (A)   (B)   (C)   (D)

35. Four charges equal to –Q are placed at the four corners of a square and a change q is at its centre. If the system is in equilibrium, the value of q is

    (A) $-\dfrac{Q}{4}(1+2\sqrt{2})$ (B) $\dfrac{Q}{4}(1+2\sqrt{2})$ (C) $-\dfrac{Q}{2}(1+2\sqrt{2})$ (D) $\dfrac{Q}{2}(1+2\sqrt{2})$

Space for rough work

36. Charge 2Q and –Q are placed as shown in figure. The point at which electric field intensity is zero will be:

   -Q   +2Q
   A   B

   (A) Somewhere between –Q and 2Q
   (B) Somewhere on the left of –Q
   (C) Somewhere on the right of 2Q
   (D) Somewhere on the right bisector of line joining –Q and 2Q

37. Two charges are placed as shown the medium has dielectric constant $=\epsilon_r$

   (A) Force on q_1 is $\dfrac{k}{\epsilon_r}\dfrac{q_1 q_2}{r^2}$

   (B) Force on q_2 is $\dfrac{k q_1 q_2}{r^2}$
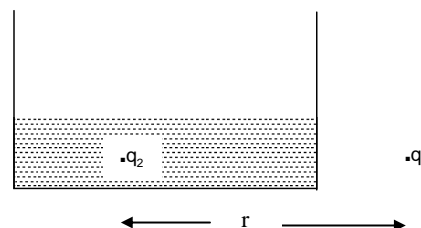
   (C) Force experienced by both charges is equal in magnitude
   (D) Both charges will apply equal and opposite force on each other

38. In which of the following cases, Equilibrium of charge placed at centre is stable (given the direction of oscillation)?

   +q   -Q   +q

   (A)

   -q   -Q   -q

   (B)

   -q   -Q   -q
            (C)

   None

   (D)

Space for rough work

39. Find the force on 6.5 C charge placed at (3,1,5) due to -2C charge placed at (0,5,-7)

   (A) $\dfrac{k}{13}\left(3\hat{i}+4\hat{j}-12\hat{k}\right)$ (B) $\dfrac{-k}{169}\left(3\hat{i}-4\hat{j}+12\hat{k}\right)$

   (C) $\dfrac{k}{\sqrt{13}}\left(-3\hat{i}+4\hat{j}-12\hat{k}\right)$ (D) $\dfrac{k}{169}\left(3\hat{i}-4\hat{j}+12\hat{k}\right)$

40. Two spheres of mass m each and charge q are suspended as shown in fig (i). Another pair of charges q and -3q of same mass m are suspended as shown in fig (ii). X and Y are point below O and $O^{'}$ such that OB and $O^{'}C$ are perpendicular to BX and CY respectively. The ratio $\dfrac{BX}{CY}$ equals.

    (A) 9   (B) 1/9
    (C) 3   (D) 1/3
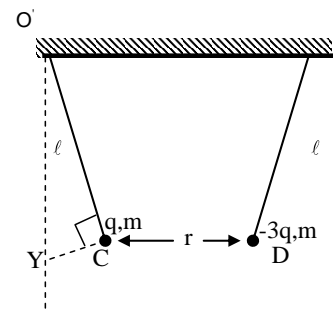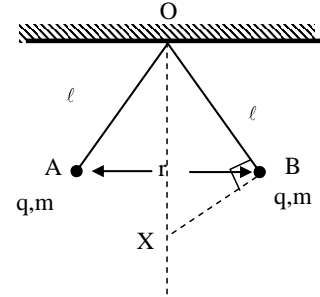
41. In a certain region of space, the potential is given by : $V = k\left[2x^{2}-y^{2}+z^{2}\right]$. The electric field at the point (1,1,1) has magnitude =

    (A) $k\sqrt{6}$ (B) $2k\sqrt{6}$ (C) $2k\sqrt{3}$ (D) $4k\sqrt{3}$

Space for rough work

42. A wheel having mass m has charges +q and –q on diametrically opposite point. It remains in equilibrium on a rough inclined plane in the presence of uniform vertical electric field E =

    (A) $\dfrac{mg}{q}$ (B) $\dfrac{mg}{2q}$

    (C) $\dfrac{mg\tan\theta}{2q}$ (D) None
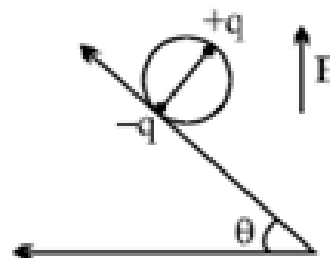
43. Two particles X and Y, of equal mass and with unequal positive charges, are free to move and are initially far away from each other, With Y at rest, X begins to move towards it with initial velocity u. After a long time, finally
   (A) X will stop, Y will move with velocity u
    (B) X and Y will both move with velocities u/2 each
    (C) X will stop, Y will move velocity <u
    (D) both will move with velocities < u/2.

44. Two equal negative charges are fixed at the points [0,a] and [0,-a] on the y –axis . A positive charge Q is released from rest at the point [2a,0] on the x – axis. The charge Q will
    (A) execute simple harmonic motion about the origin
    (B) move to the origin and remain at rest
    (C) move to infinity
    (D) execute oscillatory but not simple harmonic motion

45. The charge per unit length of the four quadrant of the ring is $2\lambda, -2\lambda, \lambda$ and $-\lambda$ respectively. The electric field at the centre is

    (A) $-\dfrac{\lambda}{2\pi\varepsilon_0 R}\hat{i}$ (B) $\dfrac{\lambda}{2\pi\varepsilon_0 R}\hat{j}$

    (C) $\dfrac{\sqrt{2}\lambda}{4\pi\varepsilon_0 R}\hat{i}$ (D) None
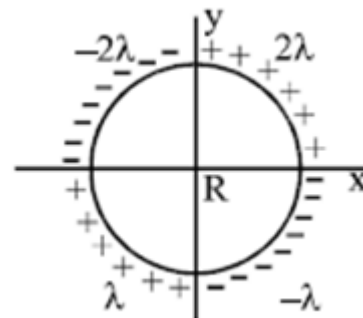
Space for rough work

46. Infinite charges of magnitude q each are lying at x = 1, 2, 4, 8 ………. metre on axis. The value of intensity of electric field at point x = 0 due to these charges will be
    (A) 12×10^9 qN/C
    (B) zero
    (C) 6×10^9 qN/C
    (D) 4×10^9 qN/c

47. Two charges each equal to $\eta q \left(\eta^{-1} < \sqrt{3} \right)$ are placed at the corners of an equilateral triangle of side a. The electric field at the third corner is E_3 where $(E_0 = q/4\pi\varepsilon_0 a^2)$
    (A) $E_3 = E_0$
    (B) $E_3 < E_0$
    (C) $E_3 > E_0$
    (D) None

48. A non – conducting ring of radius 0.5 m carries a total charge of 1.11×10^{-10} C distributed non – uniformly on its circumference producing an electric field $\vec{E}$ every where in space. The value of the line integral $\int_{\ell=\infty}^{\ell=0} -\vec{E}\overrightarrow{d\ell}$ ($\ell = 0$ being centre of the ring) in volt is
    (A) +2
    (B) –1
    (C) –2
    (D) Zero

49. Equipotential surfaces are shown in figure. Then the electric filed strength will be

    (A) 100 Vm^{-1} along X – axis
    (B) 100 Vm^{-1} along Y – axis
    (C) 200 Vm^{-1} at angle 120^0 with X –axis
    (D) 50Vm^{-1} at an angle 120^0 with X –axis

50. A body of mass one gram and carrying a charge 10^{-8} C passes through two points P and Q. The electrostatic potential at Q is zero volt. The velocity of the body at Q is 0.2 ms^{-1} and at P is $\sqrt{0.028}$ ms^{-1}. The potential at P is
    (A) 150 V
    (B) 300 V
    (C) 600 V
    (D) 900 V

51. You are given an arrangement of three point charges q, 2q and xq separated by equal finite distances so that electric potential energy of the system is zero. Then the value of x is :
   (A) –2/3
    (B) –1/3
    (C) 2/3
    (D) 3/2

Space for rough work

FIITJEE (Hyderabad Classes) Limited. 5-9-14/B, Saifabad, (Opp. Secretariat) Hyderabad. 500 063. Ph: 040-66777000 – 03 Fax: 04066777004
FIITJEE Limited. 22–97, Plot No.1, (Opp. Patel Kunta) Huda Park, Vijaynagar Colony, Kukatpally, Hyderabad. 500 072. Ph : 040–64601123
FIITJEE Limited. Plot No. 39A, (Opp. Sashi Hospital), Gaddiannaram, Dilsukhnagar, Hyderabad, 5000036. Ph: 040–64569509.

52.   An equipotential surface and a line of force :
       (A) never intersect each other   (B) intersect at 45⁰
       (C) intersect at 60⁰   (D) intersect at 90⁰

53.   The potential difference between points A and B in the given uniform
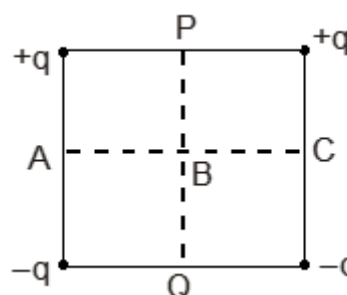   electric field is :

       (A) Ea   (B) E $\sqrt{a^2 + b^2}$

       (C) Eb   (D) Eb / $\sqrt{2}$
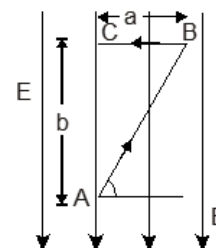
54.   The dimensional formula of potential is
       (A) ML2T-2Q-1   (B) MLT-2Q-1
       (C) MT-2Q-2   (D)ML2T-1Q-1

55.   Figure represents a square carrying charges +q, +q, –q, –q
       at its four corners as shown. Then the potential will be zero
       at points
       (A) A, B, C, P and Q
       (B) A, B and C
       (C) A, P, C and Q
       (D) P, B and Q

56.   The equation of a an equipotential line in electric field is y = 2x, then the electric field strength vector
   at (1,2) may be
       (A) $4\hat{i} + 3\hat{j}$ (B) $4\hat{i} + 8\hat{j}$ (C) $8\hat{i} + 4\hat{j}$ (D) $-8\hat{i} + 4\hat{j}$
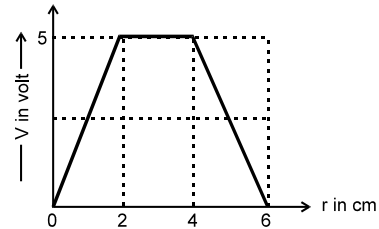

Space for rough work

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57. Two point charges placed at a distance r in air exert a force F on each other. The value of distance R at which they experience force 4F when placed in a medium of dielectric constant K = 16 is :
(A) r   (B) r/4   (C) r/8   (D) 2r

58. Two point charges of the same magnitude and opposite sign are fixed at points A and B. A third small point charge is to be balanced at point P by the electrostatic force due to these two charges. The point P:
(A) lies on the perpendicular bisector of line AB
(B) is at the mid point of line AB
(C) lies to the left of A
(D) none of these.

59. If a positively charged pendulum is oscillating in a uniform electric field as shown in Figure. Its time period of SHM as compared to that when it was uncharged.
(A) Will increase
(B) Will decrease
(C) Will not change
(D) Will first increase then decrease
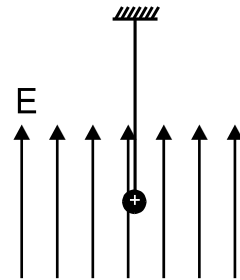
60. The variation of potential with distance r from a fixed point is shown in Figure. The electric field at r = 5 cm, is:
(A) (2.5) V/cm   (B) (–2.5) V/cm
(C) (–2/5) V/cm   (D) (2/5) V/cm

61. Epoxides react with Grignard reagent to form
(A) 1° alcohols   (B) 2° alcohols   (C) 3° alcohols   (D) Any of these
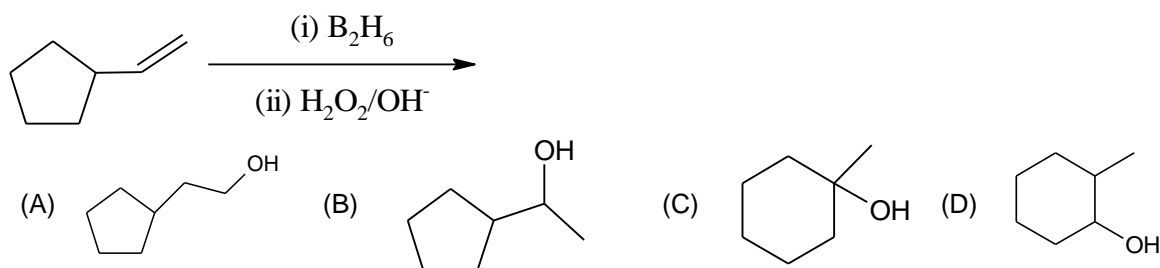

Space for rough work

62. Which of the following reacts with excess methyl magnesium bromide followed by acid hydrolysis to produce 2,3,3 - trimethyl -2- pentanol ?

    (A) $CH_3 - C(CH_3)_2 .COOCH_3$

    (B) $CH_3CH_2C(CH_3)_2 CHO$

    (C) $CH_3.CH_2C(CH_3)_2 .COOH$

    (D) $CH_3.CH_2C(CH_3)_2 CO_2CH_3$

63.
$$Cl - \overset{\overset{O}{\|}}{C} - O - Et \xrightarrow[(2)NH_4Cl]{(1) xRMgX} 3^0 \text{ alcohol. Value of x is}$$

    (A) 2   (B) 3   (C) 4   (D) 5

64.

$$\xrightarrow[\text{(ii) } H_2O_2/OH^-]{\text{(i) } B_2H_6}$$

    (A)   (B)   (C)   (D)

65. Which of the following reduction methods is not suitable for preparing an alcohol?

    (A) $CH_3COC_2H_5 + NaBH_4 \rightarrow$

    (B) $CH_3COOC_2H_5 + Na/EtOH \rightarrow$

    (C) $CH_3CH_2COCl + LiAlH_4 \rightarrow$

    (D) $CH_3COOH + H_2 \xrightarrow{Ni}$

66. $R - NH_2 \xrightarrow{HNO_2} R - OH$. Here – R could be

    (A)   (B) $-CH_2-CH_3$

    (C)   (D)   All

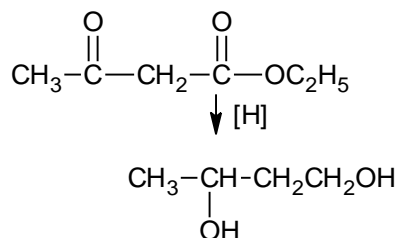*Space for rough work*

67.
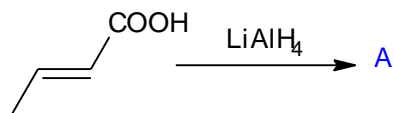
The no. of hydrogens added in the product A is equal to
(A) 6   (B) 4   (C) 2   (D) 5
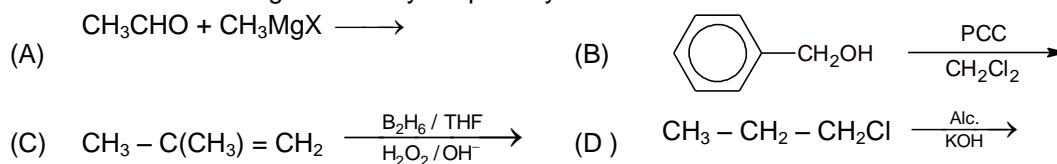
68.

The reducing agent suitable for above transformation is
(A) $NaBH_4$ (B) $LiAlH_4$ (C) $H_2/Ni, \Delta$ (D) Both B & C

69. Which of the following reactions yield primary alcohol?

(A) $CH_3CHO + CH_3MgX \longrightarrow$

(B)

(C) $CH_3 - C(CH_3) = CH_2 \xrightarrow[\;H_2O_2\,/\,OH^-\;]{B_2H_6\,/\,THF}$

(D) $CH_3 - CH_2 - CH_2Cl \xrightarrow[KOH]{Alc.}$
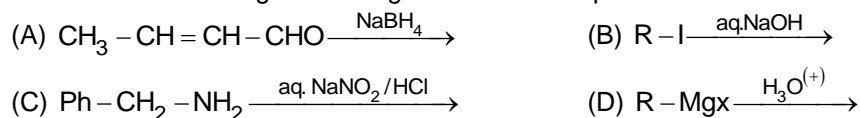
70. How many Isomeric alcohols with molecular formula $C_4H_{10}O$ are chiral in nature ?
(A) 1   (B) 2   (C) 3   (D) 4

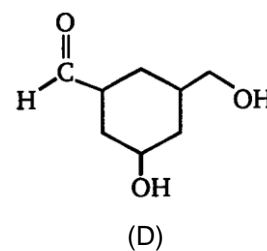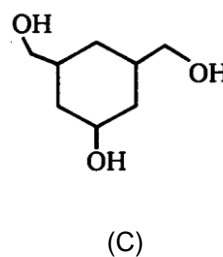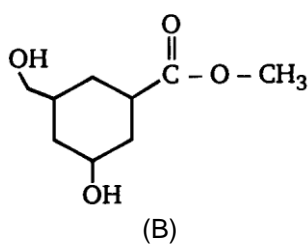71. Which of the following alcohol is less soluble among the following
(A) Methanol   (B) Ethanol   (C) Propanol   (D) Butanol

72. Which of the following does not give alcohol as a product

(A) $CH_3 - CH = CH - CHO \xrightarrow{NaBH_4}$ (B) $R - I \xrightarrow{aq.NaOH}$

(C) $Ph - CH_2 - NH_2 \xrightarrow{aq.\; NaNO_2\,/\,HCl}$ (D) $R - Mgx \xrightarrow{H_3O^{(+)}}$

Space for rough work
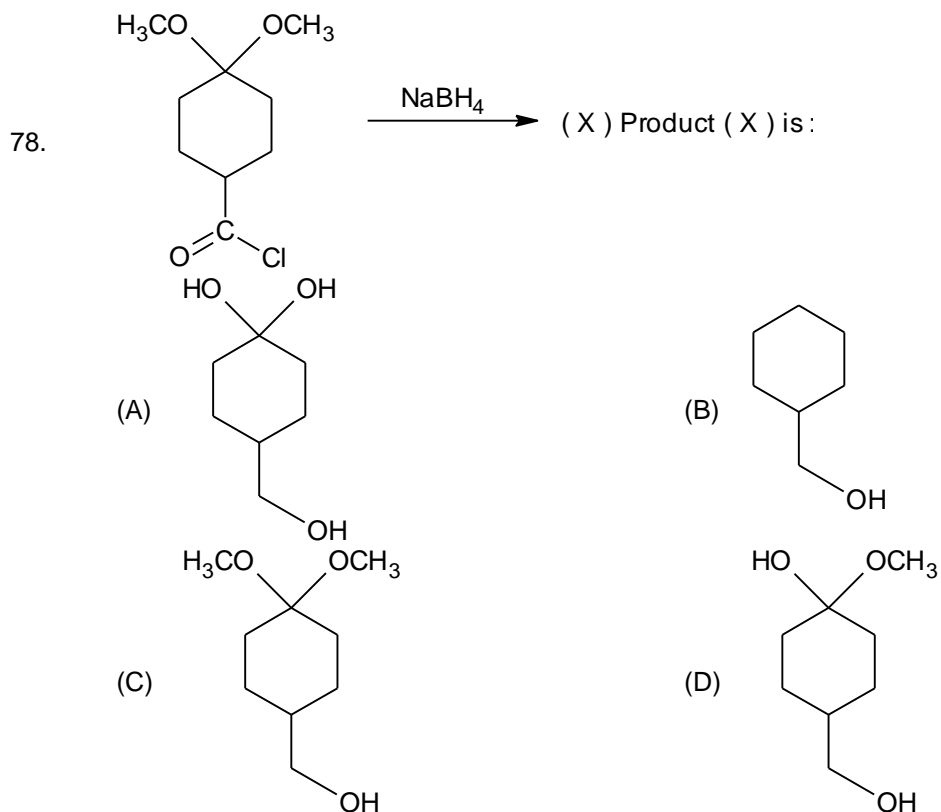
73.   Alcohol with high B.P among the following
        (A) n – butanol   (B) Isobutanol
        (C) 2°–butanol   (D) n–pentanol

74. $Ph-CH(OH)-CH_3$ can be prepared by
        (A) $Ph-CHO+CH_3MgCl$ (B) $CH_3CHO+PhMgBr$
        (C) $Ph-CH(CH_3)MgCl+O_2$ (D) All

75. $CH_3-CO-OC_2H_5 \xrightarrow{Na/C_2H_5OH} ?$
        (A) CH_3CH_2OH (B) C_3H_7OH
        (C) CH_3OH (D) both b & C

76.   In the reaction,
        $CH_3 – CH = CH – CHO \xrightarrow{X} CH_3 – CH = CH – CH_2OH$ the reagent 'x' is
        (A) H_2 / Pt   (B) $NaBH_4$ (C) HI / P   (D) PCC in CH_2Cl_2

77.   Predict the product when given compound reacts with $LiAlH_4$

        (A)   (B)   (C)   (D)

Space for rough work

78.

$$\text{(structure with } H_3CO, OCH_3 \text{ on cyclohexane with } C(=O)Cl) \xrightarrow{\text{NaBH}_4} (X) \text{ Product } (X) \text{ is :}$$

(A) HO, OH on cyclohexane with CH₂OH

(B) cyclohexane with CH₂OH

(C) H₃CO, OCH₃ on cyclohexane with CH₂OH

(D) HO, OCH₃ on cyclohexane with CH₂OH
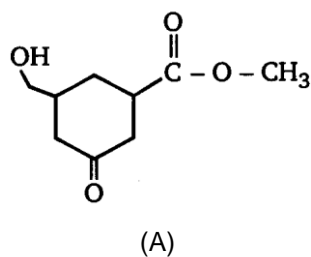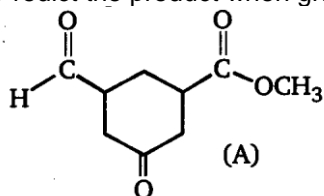
79. Lower alcohols are soluble in water because,
(A) the structure is water like
(B) it doesn't form precipitate with water
(C) it is polar
(D) it forms H. bond with water

80. How many isomers of $C_5H_{11}OH$ will be primary alcohols?
(A) 6   (B) 4   (C) 2   (D) 3

81. Which of the following plyhydric alcohol
(A) Ethanol   (B) Glycol   (C) Sabitol   (D) All

Space for rough work

82. How many of the following are 1° alcohol
    1. Benzyl alcohol   2. allyl alcohol   3. Isobutanol
    4. Cyclohexanol   5. Methanol
    (A) 3   (B) 4   (C) 5   (D) 2

83. Which of the following statement is correct regarding boiling point of alcohols.
    (A) It is directly proportional to molecular weight
    (B) It is directly proportional to no. of OH groups
    (C) It is Inversely proportional branching for same molecular weight
    (D) All

84.
$$\xrightarrow[\text{(ii) } H_2O_2^{18} / OH^-]{\text{(i) } B_2D_6/THF}$$
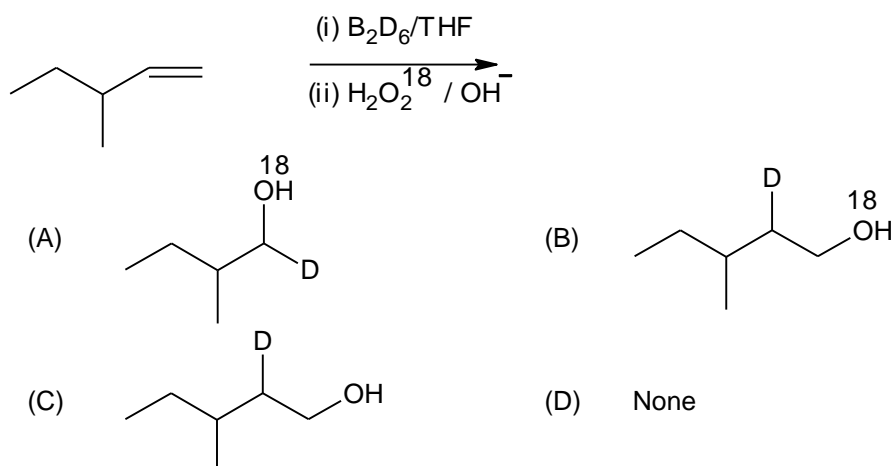
(A)

(B)

(C)

(D)   None

85. Ethyl alcohol is a commercial alcohol and is made unfit for drinking by adding

    (A) $CuSO_4$ (B)   (C) both a & b   (D) acetone
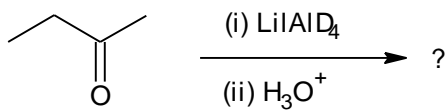
86. Ethene $\xrightarrow[\text{Ag}/\Delta]{O_2}$ A $\xrightarrow[\Delta]{\text{dil. HCl}}$ B. B = ?
    (A) Ethanol   (B) Ethene, 1, 2 diol
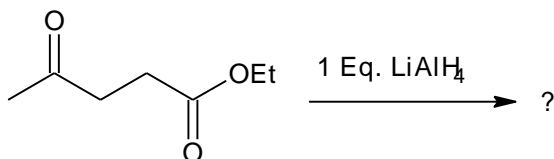   (C) Ethanal   (D) Epoxyethane

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Space for rough work

87. Which of the following is the best method to convert 3–methyl but–1–ene to 3–methyl but–2–ol
    (A) ACH   (B) HBO   (C) OMDM   (D) All

88.

(i) LiAlD$_4$

(ii) H$_3$O$^+$ → ?
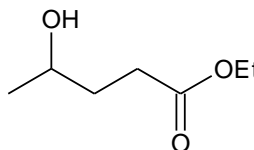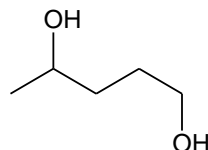
(A)

(B)

(C)

(D)   Any of these

89.

1 Eq. LiAlH$_4$ → ?

(A)

(B)

(C)   Et–OH

(D)   Both b & c

90.   Bayer's reagent → ? The no. of chiral carbons present in the product is

(A) 0   (B) 1   (C) 2   (D) 3

Space for rough work

FIITJEE PET – I (REG_2ND YEAR)
MAINS_SET–**B**_ANSWERS
DATE: 09.06.2018

MATHEMATICS

1.	A	2.	D	3.	**Bonus**	4.	D
5.	B	6.	B	7.	C	8.	**Bonus**
9.	D	10.	A	11.	A	12.	D
13.	B	14.	B	15.	A	16.	C
17.	C	18.	C	19.	A	20.	**Bonus**
21.	C	22.	B	23.	C	24.	B
25.	C	26.	B	27.	B	28.	C
29.	B	30.	C				

PHYSICS

31.	D	32.	C	33.	B	34.	A
35.	B	36.	B	37.	D	38.	C
39.	B	40.	C	41.	B	42.	B
43.	A	44.	D	45.	A	46.	A
47.	C	48.	A	49.	C	50.	C
51.	B	52.	D	53.	C	54.	A
55.	B	56.	D	57.	B	58.	D
59.	C	60.	A				

CHEMISTRY

61.	D	62.	D	63.	B	64.	A
65.	D	66.	D	67.	C	68.	D
69.	C	70.	B	71.	D	72.	D
73.	D	74.	D	75.	A	76.	B
77.	C	78.	C	79.	**Bonus**	80.	B
81.	C	82.	A	83.	D	84.	**B or C**
85.	C	86.	B	87.	C	88.	B
89.	A	90.	C				