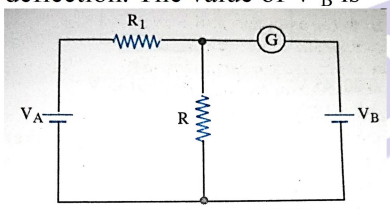
NEW STANDARD ACADEMY

Marks: 150

Date : 26-05-25 **CLASS : 12TH NEET** **Time: $2\frac{1}{2}$ hours**

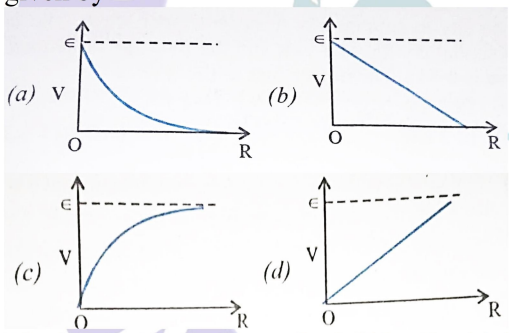
PHYSICS

1. 4. In the circuit shown, the cells A and B have negligible resistance for $V_A = 12V$, $R_1 = 500\ \Omega$ and $R = 100\ \Omega$, the galvanometer shows no deflection. The value of V_B is

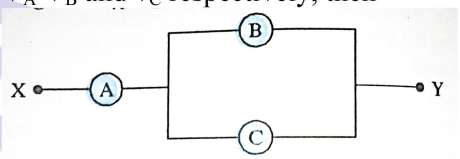


(a) 4V (b) 2V
(c) 12V (d) 6V

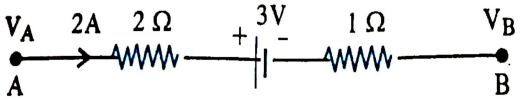
2. A cell having an em.fe and internal resistance is connected across a variable external resistance R. As the resistance R is increased, the plot of potential difference V across R is given by



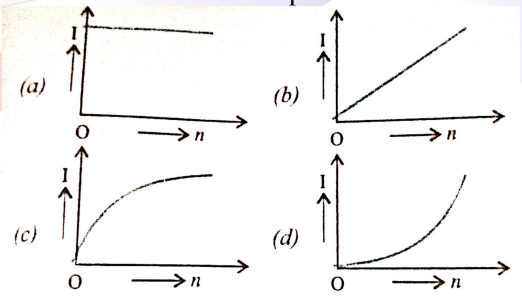
3. The internal resistance of a 2.1V cell which gives a current of 0.2A through a resistance of 10Ω is
(a) 0.2 Ω (b) 0.5 Ω
(c) 0.8 Ω (d) 1.0 Ω
4. Ten identical cells connected in series are needed to heat a wire of length one metre and radius'r' by 10°C in time 't'.
How many cells will be required to heat the wire of length two metre of same radius by same temperature in time t ?
(a) 20 (c) 40
(b) 30 (d) 10
5. Two cities are 150 km apart. Electric power is sent from one city to another city through copper wires. The fall of potential per km is 8 volt and the average resistance per km is 0.5 Ω Q. The power loss in the wire is
(a) 19.2 kW (b) 19.2 J
(c) 12.2 kW (d) 19.2 W
6. If A, B and C are voltmeters of resistance R. 1.5R and3R respectively as shown in the Fig. When some potential difference is applied between X and Y, the voltmeter readings are V_A V_B and v_C respectively, then



(a) $V_A \neq V_B = V_C$ (b) $V_A = V_B \neq V_C$
(C) $V_A \neq V_B \neq V_C$ (d) $V_A = V_B = V_C$
7. The charge flowing through a resistance R varies with time t as $Q = at - bt^2$ where a and b are positive constants. The total heat produced in R is
(a) $a^3R/2b$ (b) $a^3 R/b$
(c) $a^3 R/6b$ (d) $a^3 R/3b$
8. 15. The potential difference (V_{A} - V_{B}) between the points A and B in the given Fig is

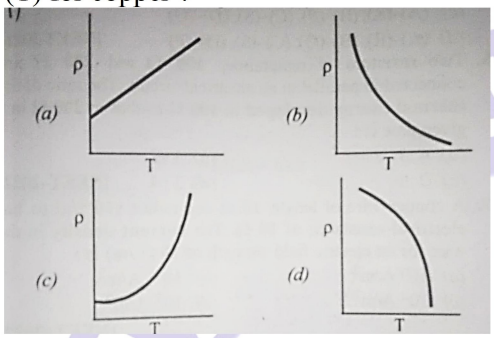


(a) -3V (b) +3V
(c) +6V (d) +9V
9. If a cell can supply a current I through a resistance R_1 and a current I/2 across a resistance R_2then the internal resistance of the cell is
(a) $R_1 - 2R_2$ (b) $R_2 - 2R_1$
(c) $R_1 + 2R_2$ (d) $R_2 + R_1$
10. A battery consists of a variable number n of identical cells (having internal resistance reach) which are connected in series. The terminals of the battery are short-circuited and the current I is measured. Which of the graph slows correct relationship between I and n ?

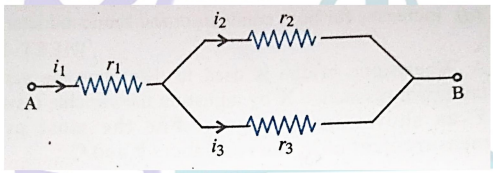


11. A charged particle having drift velocity of 7.5 $\times 10^{-4}$ m s^{-1} electric field of 3 $\times 10^{-10}$ V m^{-1} has a mobility in m^2 10 V^{-1} s^{-1} of
(a) 2.25 $\times 10^{15}$ (b) 2.5 $\times 10^{6}$
(c) 2.5 $\times 10^{-6}$ (d) 2.25 $\times 10^{-15}$

12. Which of the following graph represents variation of resistivity (ρ) with temperature (T) for copper ?



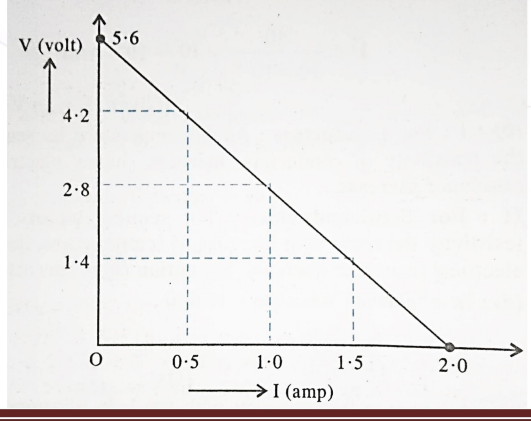
13. Three resistors having resistances r_1 ,r_2 and r_3 are connected as shown in the given circuit. The ratio i_3/i_1 terms of resistances used in the circuit is: of currents in



(a) $\frac{r_1}{r_2+r_3}$ (b) $\frac{r_2}{r_2+r_3}$
(c) $\frac{r_1}{r_1+r_2}$ (d) $\frac{r_2}{r_1+r_3}$

14. As the temperature increase, the electrical resistance :
(a) decreases for both conductors and semiconductors
(b) increases for conductors but decreases for semiconductors
(c) decreases for conductors but increase for semiconductors
(d) increases for both conductors and semiconductors.

15. Four cells of identical emf E and internal resistance are connected in series to a variable resistor. The given graph Mshows variation of terminal voltage of the combination with current. The emf of each cell used is

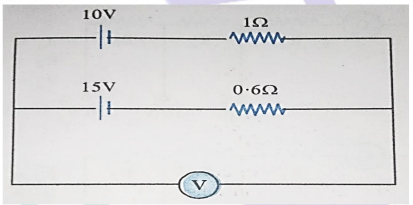


(a) 1.4 V (b) 5.6 V
(c) 2V (d) 1V.

16. Two electric bulbs rated 25 W-220 V and 100 W-220 V are connected in series to a 440 V supply. Which of the bulb will fuse?
(a) both (b) 100 W
(c) 25 W (d) neither.

17. A Wheatstone bridge has the resistances 10 Ω, 10 Ω, 10 Ω and 30 Q in its four arms. What resistance joined in parallel to 30 Ω will bring it to the balanced condition?
(a) 2 Ω (b)5 Ω
(c) 10 Ω (d) 15 Ω

18. 2. A 10V battery with internal resistance 12 and 15V battery with internal resistance 062 are connected in parallel to a voltmeter as shown in the Fig. The reading in voltmeter will be close to



(a) 12.5 V *(b) 24.5 V*
(c) 13.1 V (d) 11.9 V.

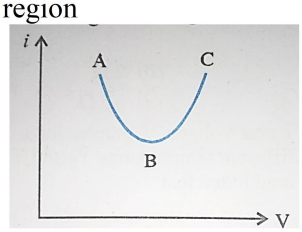
19. The temperature dependence of resistances of Cu and undoped Si in the temperature range 300-400 K. is best described by
(a) Linear increase for Cu, linear increase for Si
(b) Linear increase for Cu, exponential increase for Si.
(c) Linear increase for Cu, exponential decrease for Si.
(d) Linear decrease for Cu, linear decrease for Si.

20. A wire is being drawn to make it thinner such that the length of the wire *l* increases and radius *r* decreases. Its resistane R will finally be proportional to
(a) $\frac{1}{r}$ (b) $\frac{1}{r^2}$
(c) $\frac{1}{r^3}$ (d) $\frac{1}{r^4}$

21. Charge passing through a conductor of cross-section area, A= 0. 3m^2 is given by q = 3t^2 + 5t + 2 in coulomb, where t is in second. What is the value of drift velocity at t = 2s [Given n = 2 $\times 10^{25}$ / m^3]
(a) 0. 77 $\times 10^{-5}$ m / s (b) 1.77 $\times 10^{-5}$ m / s
(c) 2.0 8 $\times 10^{5}$ m / s (d) 0.57 $\times 10^{5}$ m / s

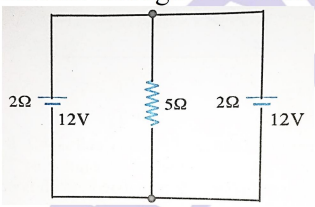
22. When a current is passed in a conductor, 3 °C rise in emperature is observed. If the strength of the current is made thrice, then rise in temperature will approximately be
(a) 36 °C (b) 27 °C
(c) 18 °C (d) 9°C

23. The current-voltage graph for a device is shown in figure, The resistance is negative in region



(a) AB (b) BC
(c) ABC (d) none of these.

24. In the arrangement shown in figure, the current through 5 Ω resistor is



(a) 2 A (b) zero
(c) 12/7A (d) 1A.

25. Then rows each containing m cells in series are joined in 25 parallel. Maximum current is taken from this combination across an external resistance of 3 Ω. If the total number of cells used are 24 and internal resistance of each cell is 0.5 Ω, then
(a) m = 8 n = 3 (b) m = 6 n = 4
(c) m = 12 n = 2 (d) m = 2, n = 12

CHEMISTRY

26. The rate law for the reaction:
RCI + NaOH → ROH + NaCl is given by
Rate = K[RCI] The rate of this reaction
(a) Is doubled by doubling the concentration of NaOH
(b) Is halved by reducing the concentration of RC*l* by one half
(c) Is decreased by increasing the temperature of the reaction
(d) In unaffected by change in temperature

27. For a hypothetical reaction,
A + 2B → 3C + D
d[C]/dt is equal to
(a) $\frac{3d[A]}{dt}$ (b) $-\frac{3}{2}\frac{d[B]}{dt}$
(c) $-\frac{d[B]}{dt}$ (d) $-\frac{d[A]}{dt}$

28. A drop of a solution (volume= 0.05mL) contains 6×10^{-7} mol of H^+. If the rate of disappearance of H^+ is 6.0×10^5 mol/L×s, how long will it take for H^+ to disappear from the drop?
(a) 8×10^{-8} s (b) 2×10^{-8} s
(c) 6×10^{-6} s (d) 2×10^{-2} s

29. For the reaction, $2NO_2 + F_2 \rightarrow 2NO_2F$ following mechanism has been provided,

$NO_2 + F_2 \xrightarrow{Slow} NO_2F + F$

$NO_2F \xrightarrow{Fast} NO_2F$

Thus, rate expression of the above reaction can be written as:
(a) $r = k [NO_2]^2 [F_2]$
(b) $r = k[NO_2][F_2]$
(c) $r = k[NO_2]$
(d) $r = k[F_2]$

30. The ionic reactions are usually very fast because:
(a) It does not involve bond breaking
(b) The energy of activation between charged ions is greater than that between neutral molecules
(c) Collision frequency is very low
(d) The reactions are highly exothermic

31. For the reaction, $N_2O_5 \rightarrow 2NO_2 + \frac{1}{2}O_2$
Given, $-\frac{d[N_2O_5]}{DT} = k_1[N_2O_5]$
$\frac{d[NO_2]}{dt} = k_2[N_2O_5]$
and $\frac{d[O_2]}{dt} = k_3[N_2O_5]$
The relation in between K_1 , K_2 and K_3 is
(a) $2k_1 = k_2 = 4k_3$ (b) $k_1 = k_2 = k_3$
(c) $2k_1 = 4k_2 = k_3$ (d) None of these

32. Observe the following reaction, 2A + B →C
The rate of formation of C is 2.2×10^{-3} mol L^{-1} min^{-1}
What is the value of $-\frac{d[A]}{dt}$(mol L^{-1} min^{-1})?
(a) 2.2×10^{-3} (b) 1.1×10^{-3}
(c) 4.4×10^{-3} (d) 5.5×10^{-3}

33. In the synthesis of ammonia by Haber process, if 60 moles of ammonia is obtained in one hour, then the rate of disappearance of nitrogen is
(a) 30 mol/min (b) 6 mol/min
(c) 0.5 mol/min (d) 60 mol/min

34. In the reaction, 2A + B → A_2B if the concentration of A is doubled and of B is halved, then the rate of the reaction will
(a) Increase by two times
(b) Decrease by two times
(c) Increase by four times
(d) Remain the same

35. For the reaction, $H_2(g) + Br_2(g) \rightarrow 2HBr(g)$
The experimental data suggest
rate = $k[H_2] [Br_2]^{1/2}$
the molecularity and order of the reaction are respectively
(a) 1 and 1/2 (b) 1 and 1
(c) 3/2 and 3/2 (d) 2 and 3/2

36. The reaction, $CH_3COOC_2H_5 + NaOH \rightarrow CH_3COONa + C_2H_5OH$ is
(a) Biomolecular reaction
(b) II order reaction

(c) Both (1) and (2)
(d) None of these

37. For the elementary step,
$(CH_3)_3$' CBr(aq) $\rightarrow (CH_3)_3C^+(aq) + Br^-(aq)$
the molecularity is
(a) Zero (b) 1
(c) 2 (4) Cannot ascertained

38. The inversion of cane sugar into glucose and fructose is
(a) I order (b) 11 order
(c) III order (d) Zero order

39. Consider the following two reactions,
A→ product, $-\frac{d[A]}{dt} = k_1 [A]^0$
B→ product, $-\frac{d[A]}{dt} = k_2[B]$
k_1 and k_2 are expressed in term of molarity (mol L^{-1} and time (s^{-1}) as
(a) s^{-1}, $M\ s^{-1}$ (b) Ms^{-1} $M\ s^{-1}$
(c) s^{-1},M^{-1} s^{-1} (d) $M\ s^{-1}$,s^{-1}

40. The half-life period for a zero order reaction is equal to
(a) $2k/[A]^0$ (b) $[A]_0/2k$
(c) 0.693/ k (d) $0.693/ k\ [A]_0$

41. The unit and value of rate constant and that of rate of reaction are same for
(a) Zero order (b) First order
(c) Second order (d) Third order

42. What is the formula to find value of $t_{1/2}$ for a zero order reaction?
(a) $k/[R]_0$ (b) $2k/[R]_0$
(c) $[R]_0/2k$ (4) 0.693/k

43. The half-life period for zero order reaction A→ product, is 100 min. How long will it take in 80% completion?
(a) 80 min (b) 160 min
(c) 100 min (d) 200 min

44. For zero order reaction, the integrated rate equation is
(a) $kt = [A]/[A]_0$ (b) $kt = [A] - [A]_0$
(c) $[A] = - kt + [A]_0$ (d) $[A] = kt - [A]_0$

45. At 373 K, a gaseous reaction A → 2B + C is found to be of first order. Starting with pure A, the total pressure at the end of 10 min was 176 mm and after a long time when A was completely dissociated, it was 270 mm. The pressure of A at the end of 10 min was
(a) 94 mm (b) 47 mm
(c) 43 mm (d) 90 mm

46. The hydrolysis of ethyl acetate,
$CH_3COOC_2H_5 + H_2O \xrightarrow{H+} CH_3COOH + C_2H_5OH$ is
(a) First order (b) Second order
(c) Third order (d) Zero order

47. The rate constant of a first order reaction is 4×10^{-3} sec^{-1} At a reactant concentration of 0.02 M, the rate of reaction would be
(a) 8×10^{-5} M sec^{-1} (b) 4×10^{-3} M sec^{-1}
(c) 2×10^{-1} M sec^{-1} (d) 4×10^{-1} M sec^{-1}

48. A first order reaction has a half-life period of 69.3 sec. At 0.10 mol $litre^{-1}$ reactant concentration, rate will be
(a) 10^{-4} M sec^{-1} (b) 10^{-3} M sec^{-1}
(c) 10^{-1} M sec^{-1} (d) 6.93×10^{-1} M sec^{-1}

49. In a first order reaction, the concentration of the reactant is decreased from 1.0 M to 0.25 M in 20 minutes. The rate constant of the reaction would be
(a) $10min^{-1}$ (b) $6.931min^{-1}$
(c) $0.6931min^{-1}$ (4) $0.06931\ min^{-1}$

50. In a first order reaction the concentration of reactant decreases from 800 mol/dm^6 to 50 mol/dm^6 in 2×10^4 s. The rate constant fo reaction in S^{-1} is
(a) 2×10^4 (b) 3.45×10^{-5}
(c) 1.386×10^{-4} (d) 2×10^{-4}

BIOLOGY

51. ABO blood group system is due to
(a) Multifactor inheritance
(b) Incomplete dominance
(c) Multiple allelism
(d) Epistasis

52. Mendel's laws apply only when
(a) Characters are linked
(b) Parents are pure breeding
(c) F, monohybrid ratio shows two types of individuals
(d) First pair of contrasting characters is dependent upon other pairs

53. Test cross is a cross between
(a) Hybrid x Dominant parent
(b) Hybrid x Recessive parent
(c) Hybrid x Hybrid
(d) All of the above

54. Percentage of heterozygous individuals obtained from selfing of Rr individuals is
(a) 100% (b) 75%
(c) 50% (d) 25%

55. In Mirabilis jalapa when red flowered plants crossed with white flowered plant, the F, progeny was
(a) Red (b) White
(c) Pink (d) Variegated

56. A cross between black flowered plant and white flowered plant yielded grey flowered plants. This phenomenon is called
(a) Co-dominance
(b) Pseudo-dominance
(c) Incomplete dominance

(d) Epistasis

57. Gametes of AaBb individual can be
(a) Aa, Bb (b) AB, ab
(c) AB, ab, aB (d) AB, Ab, aB, ab

58. A child has blood group O. If the father has blood group A and mother has blood group B. Then the possible genotype of father and mother would be
(a) I^A i and I^B I^B respectively
(b) I^AI^A and I^B I^B respectively
(c) I^A i and I^B i respectively
(d) I^AI^A and I^B i respectively

59. Which of the following is the example of pleiotropy?
(a) Sickle cell anaemia
(b) Phenylketonuria
(c) Starch synthesis in pea seeds
(d) All of the above

60. A pink flower plant when self-crossed produces plants with red, pink, and white flowers in the ratio of 1:2:1 in F1 generation.
This example shows the phenomenon of
(a) Co-dominance
(b) Multiple allelism
(c) Incomplete dominance
(d) Independent assortment

61. Distance between the genes a, b, c and d in map units is
a - d = 3.5, b - c = 1 , a - b = 6, c - d = 1.5 and a - c = 5
Find out the sequence of the genes.
(a) adcb (b) acdb
(c) abcd (d) acbd

62. Who used the frequency of recombination between gene pairs on the same chromosome as a measure of the distance between genes?
(a) Sutton and Boveri (b) T.H Morgan
(c) Sturtevant (d) Mendel

63. The genes, which are very tightly linked on chromosome show:
(a) High recombination
(b) Very low or no recombination
(c) Higher crossing over frequency
(d) Very few parental types in progeny

64. In birds, the females are
(a) ZZ (b) ZW
(c) ZO (d) WW

65. Read the following statements and choose the correct option.
I. In fruit fly, both male and female have same number of chromosomes
II In birds, the total number of chromosomes is same in both males and females.
III. In grasshopper, all eggs bear an additional X-chromosome besides the other chromosomes (autosomes)
IV. In both XO and XY type, males produce two different types of gametes, either with or without X-chromosome or some gametes with X-chromosome and some with Y-chromosome
Correct statement(s) is/are
(a) Only I, II, and IV
(b) Only II. III, and IV
(c) All the above
(d) Only 1, III, and IV

66. In honeybee, an unfertilised egg develops as
(a) Worker (b) Queen
(c) Drone (d) Either (1) or (2)

67. Match the following columns and choose the correct option.

Column I (Type of sex determination)	Column II(organism)
1. XO type	a Honeybee
2. XY type	b. Grasshopper
3. ZW type	c. Drosophila
4. Haplodiploid type	d. Columba

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

68. Match the following columns and choose the correct option.

Column I	Column II
1. Male	a. 
2. Female	b. 
3. Sex unspecified	c. 
4. Five unaffected offspring	d. 
5. Five affected offspring	

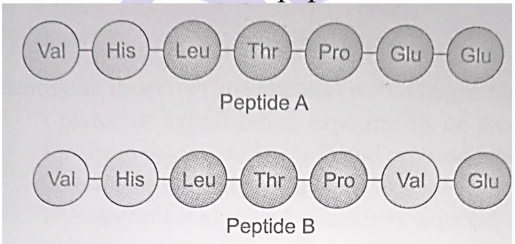
(a) 1-d, 2-b,3-a, 5-c
(b) 1-d,2-b,3-a,4-c
(c) 1-b,2-d,3-a,4-c
(d) 1-a, 2-d,3-b,5-c

69. A normal woman, whose father had haemophilia, married normal man. What

is the chance of occurrence of haemophilia in their children?
(a) 25% children will be haemophilic
(b) 50% children will be haemophilic
(c) 75% children will be haemophilic
(d) None haemophilic but 75% will be carrier

70. What is the probability that a haemophilic man (XY) and a normal homozygous woman (XX) produce a haemophilic daughter?
(a) 100% (b) 75%
(c) 50% (d) 0%

71. Given below are two peptides: A and B



Identify the correct statements:
(I) The peptide A represents sex-linked recessive trait known as sickle cell anaemia.
(II) Out of three possible genotypes, only homozygous recessive individual shows diseased phenotype.
(III) The substitution of glutamic acid by valine occurs at B-chain of globin protein due to change in gene from CTC to CUC.
(IV) Due to mutation, haemoglobin molecule undergoes polymerization under low oxygen tension causing change in shape from biconcave to elongated sickle like structure.
(a) (II) and (IV)
(b) (I) and (III)
(c) (I). (II) and (III)
(d) (II), (III) and (IV)

72. Which of the following is autosomal dominant trait?
(a) Myotonic dystrophy
(b) Cystic fibrosis
(c) Sickle-cell anaemia
(d) Phenylketonuria

73. Turner's syndrome is due to
(a) Monosomic chromosomes
(b) Nullisomic chromosomes
(c) Trisomic chromosomes
(d) Tetrasomic chromosomes

74. A child is born with extra chromosome in each of its cells
This condition is usually a result of
(a) Segregation (b) Hybridization
(c) Non-disjunction (d) Crossing over

75. Assertion: Sickle-cell anaemia is controlled by a single pair of allele, Hb and Hb
Reason: It can be transmitted from parents to the offspring when both the partners are carrier for the gene (or homozygous).
(a) If both assertion and reason are true and the reason is the correct explanation of the assertion.
(b) If both assertion and reason are true, but reason is not the correct explanation of the assertion.
(c) If assertion is true, but reason is false.
(d) If both assertion and reason are false