STELLA MARIS MEDICAL FOUNDATION
NEET ⑦ TEST SERIES
MODEL EXAM XII – 2

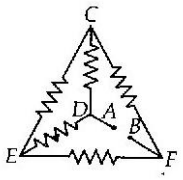
Total Questions: 180 **Total Marks: 720**

INSTRUCTIONS

- **Physics (180 Marks)** : Questions No.1 to 45 are of 4 Marks each
- **Chemistry (180 Marks** : Questions No. 46 to 90 are of 4 Marks each
- **Biology (360 Marks)** : Questions No. 91 to 180 are of 4 Marks each.
- **Negative Marking** : One Mark will be deducted for indicating incorrect response of each question.

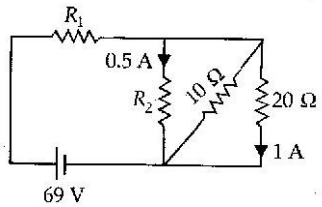
PHYSICS

1. In the given network of resistors, each of resistance R ohm, the equivalent resistance between points A and B is



a.5R b. $\frac{2}{3}R$ c. R d. $\frac{R}{2}$

2. In the circuit shown in the given figure, the resistances R_1 and R_2 are respectively



a. 14 Ω and 40 Ω b. 40 Ω and 14 Ω
c. 40 Ω and 30 Ω d. 14 Ω and 30 Ω

3. When 1A of current is passed through $CuSO_4$ solution for 10 seconds, then the number of copper ions deposited at the cathode will be
a. 1.6×10^{19} b. 3.1×10^{19}
c. 4.8×10^{19} d. 6.2×10^{19}

4. A 3°C rise of temperature is observed in a conductor by passing a certain amount of current. When the current is doubled, the rise of temperature will be
a. 15°C b. 12°C
c. 9°C d. 3°C

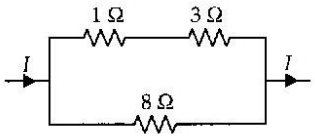
5. Flash light equipped with a new set of batteries, produces bright white light. As the batteries wear out
a. the light intensity gets reduced with no change in its colour
b. light colour changes first to yellow and then red with no change in intensity
c. it stops working suddenly while giving white light
d. colour changes to red and also intensity gets reduced.

6. When three identical bulbs of 60W, 200volt rating are connected in series to a 200volt supply, the power drawn by them will be
a. 60W b. 180 W c. 10W d. 20W

7. In a Wheatstone's network, P=2Ω, Q=2Ω, R=2Ω and S=3Ω. The resistance with which S is to be shunted in order that the bridge may be balanced is
a. 1Ω b. 2Ω c. 4Ω d. 6Ω

8. Two identical conductors maintained at same temperatures are given potential differences in the ratio 1:2: Then the ratio of their drift velocities is
a. 1 : 2 b. 3 : 2 c. 1 :1 d. $1 : 2^{1/2}$

9. Power dissipated across the 8Ω resistor in the circuit is 2watt. The power dissipated in watt across the 3Ω resistor is

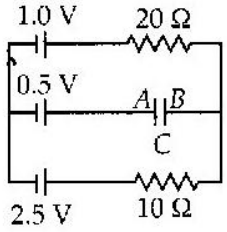


a. 3.0 b. 2.0 c. 1.0 d. 0.5

10. If 96500 C of electricity liberates one gram equivalent of any substance, the time taken for a current of 0.15 A to deposit 20mg of copper from a solution of copper sulphate is (chemical equivalent of copper = 32).
a. 5 min 20 s b. 6 min 42 s
c. 4 min 40 s d. 5 min 50 s

11. An electric bulb marked as 50W-200V is connected across a 100V supply. The power consumed by the bulb at present is
a. 37.5W b. 25W c. 12.5W d. 10W

12. In the circuit shown below, the potential of A with respect to B of the capacitor C is



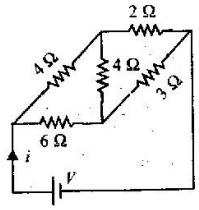
a. 2.00V b. -2.00V
c. -1.50V d. +1.50V

13. A and B are two points on a uniform ring of resistance R. The ∠ACB = θ, where C is the centre of the ring. The equivalent resistance between A and B is
a. $\frac{R\theta(2\pi-\theta)}{4\pi^2}$ b. $R\left(1-\frac{\theta}{2\pi}\right)$
c. $\frac{R\theta}{2\pi}$ d. $\frac{R(2\pi-\theta)}{4\pi}$

14. Resistance n, each of r ohm, when connected in parallel give an equivalent resistance of R ohm. If these resistances were connected in series, the combination would have a resistance in ohm, equal to
a. n^2R b. R/n^2
c. R/n d. nR

15. A 5-ampere fuse wire can withstand a maximum power of 1 watt in the circuit. The resistance of the fuse wire is
a. 0.04 ohm b. 0.2 ohm
c. 5 ohm d. 0.4 ohm

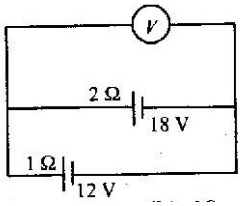
16. For the network shown in the figure the value of the current i is



a. $\frac{9V}{35}$ b. $\frac{18V}{5}$ c. $\frac{5V}{9}$ d. $\frac{5V}{18}$

17. When a wire of uniform cross-section a, length l and resistance R is bent into a complete circle, resistance between any two of diametrically opposite points will be
a. R/4 b. 4R c. R/8 d. R/2

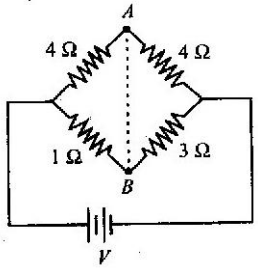
18. Two batteries, one of emf 18 volts and internal resistance 2Ω and the other of emf 12 volts and internal resistance 1Ω, are connected as shown. The voltmeter V will record a reading of



a. 30 volt b.18 volt
c. 15 volt d. 14 volt

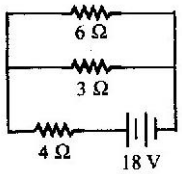
19. Kirchhoff's first and second laws of electrical circuits are consequences of
a. conservation of energy and electric charge respectively
b. conservation of energy
c. conservation of electric charge and energy respectively
d. conservation of electric charge

20. In the circuit shown, if a conducting wire is connected between points A and B, the current in this wire will



a. flow from B to A
b. flow from A to B
c. flow in the direction which will be decided by the value of V
d. be zero

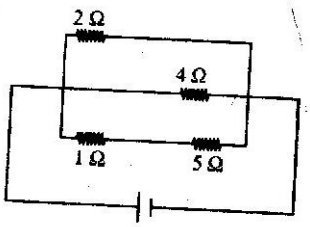
21. The total power dissipated in watt in the circuit shown here is



a. 40 b. 54 c. 4 d. 16

22. Three resistances P, Q, R each of 2Ω and an unknown resistance S form the four arms of a Wheatstone bridge circuit. When a resistance of 6Ω is connected in parallel to S the bridge gets balanced. What is the value of S?
a. 3Ω b. 6Ω c. 1Ω d. 2Ω

23. A current of 3amp. flows through the 2Ω resistor shown in the circuit. The power dissipated in the 5Ω resistor is



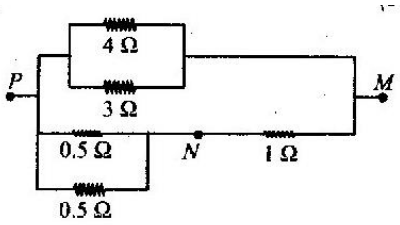
a. 1watt b. 5 watt
c. 4watt d. 2watt

24. An electric kettle takes 4 A current at 220V. How much time will it take to boil 1kg of water from temperature 20°C? The temperature of boiling water is 100°C
a. 12.6 min b. 4.2 min
c. 6.3 min d. 8.4 min

25. A cell can be balanced against 110cm and 100cm of potentiometer wire, respectively with and without being short circuited through a resistance of 10Ω. Its internal resistance is
a. 2.0 ohm b. zero
c. 1.0 ohm d. 0.5 ohm

26. A wire of a certain material is stretched slowly by ten percent. Its new resistance and specific resistance become respectively
a. both remain the same
b. 1.1 times, 1.1 times
c. 1.2 times, 1.1 times
d. 1.21 times, same

27. In the circuit shown, the current through the 4Ω resistor is 1 amp when the points P and M are connected to a d.c. voltage source. The potential difference between the points M and N is

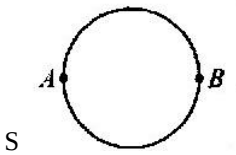


a. 0.5 volt b. 3.2 volt
c. 1.5 volt d. 1.0 volt

28. The mean free path of electrons in a metal is 4×10^{-8}m. The electric field which can give on an average 2eV energy to an electron in the metal will be in units V/m
a. 5×10^{-11} b. 8×10^{-11}
c. 5×10^{7} d. 8×10^{7}

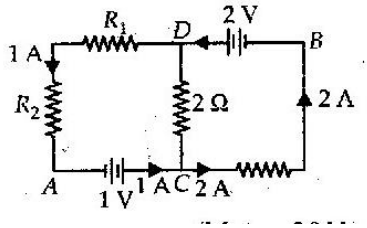
29. A student measures the terminal potential difference (V) of a cell (of emf ε and internal resistance (r) as a function of the correct (I) flowing through it. The slope, and intercept, of the graph between V and I, then, respectively, equal
a. –r and ε b. r and -ε
c. -ε and r d. ε and –r

30. A wire of resistance 12 ohms per meter is bent to form a complete circle of radius 10cm. The resistance between its two diametrically opposite points. A and B as shown in the figure is



a. 3Ω b. 6πΩ c. 6Ω d. 0.6πΩ

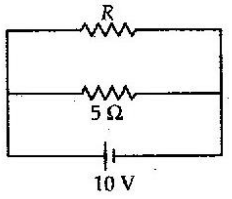
31. In the circuit shown in the figure, if the potential at point A is taken to be zero, the potential at point B is



a. +1V b. -1V c. +2V d. -2V

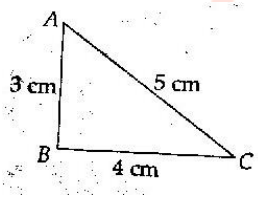
32. A current of 2A flows through a 2Ω resistor when connected across a battery. The same battery supplies a current of 0.5A when connected across a 9Ω resistor. The internal resistance of the battery is
a. 0.5Ω b. 1/3Ω
c. 1/4Ω d. 1Ω

33. The power dissipated in the circuit shown in the figure is 30 watts. The value of R is



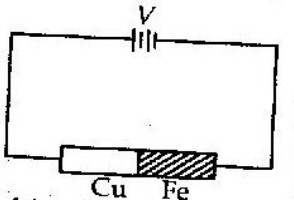
a. 20Ω b. 15 Ω c. 10Ω d. 30Ω

34. A 12cm wire is given a shape of a right angled triangle ABC having sides 3cm, 4cm and 5cm as shown in the figure
The resistance between two ends (AB, BC, CA) of the respective sides are measured one by one by a multi-meter. The resistances will be in the ratio



a. 9 : 16 : 25 b. 27 : 32 : 35
c. 21 : 24 : 25 d. 3 : 4 : 5

35. Two rods are joined end to end, as shown. Both have a cross-sectional area of $0.01cm^2$. Each is 1 meter long. One rod is of copper with a resistivity of 1.7×10^{-6} ohm-centimeter, the other is of iron with a resistivity of 10^{-5} ohm-centimeter. How much voltage is required to produce a current of 1 ampere in the rods?



a. 0.00145V b. 0.0145V
c. 1.7×10^{-6}V d. 0.117V

36. A wire of resistance 4Ω is stretched to twice its original length. The resistance of stretched wire would be
a. 8Ω b. 16Ω c. 2Ω d. 4Ω

37. The internal resistance of a 2.1V cell which gives a current of 0.2A through a resistance of 10Ω is
a. 0.8Ω b. 1.0Ω
c. 0.2Ω d. 0.5Ω

38. The resistances of the four arms P, Q, R and S in a Wheatsone's bridge are 10 ohm, 30 ohm, 30 ohm and 90 ohm, respectively. The e.m.f. and internal resistance of the cell are 7 volt and 5 ohm respectively. If the galvanometer resistance is 50 ohm, the current drawn from the cell will be
a. 0.1A b. 2.0A c. 1.0A d. 0.2A

39. The maximum power transferred by an emf to the coil, when the internal resistance r and the coil resistance R is
a. r = R b. $r = \frac{R}{2}$
c. r = 0 d. $R = \frac{2r}{4}$

40. A wire 50cm long and $1mm^2$ in cross-section carries a current of 4A when connected to a 2V battery. The resistivity of the wire is
a. $2\times10^{-7}\Omega m$ b. $5\times10^{-7}\Omega m$
c. $4\times10^{-6}\Omega m$ d. $1\times10^{-6}\Omega m$

41. Peltier coefficient depends on the
a. temperature of the junction
b. nature of the materials forming the junction
c. both a and b
d. none of these

42. The electric resistance of a certain wire of iron is R. If its length and radius are both doubled, then
a. the resistance will be doubled and the specific resistance will be halved
b. the resistance will be halved and the specific resistance will remain unchanged.
c. the resistance will be halved and the specific resistance will be doubled
d. the resistance and the specific resistance, both will remain unchanged.

43. n resistors of resistance R each are connected in series. The effective resistance of the combination is
a. R/n b. n^2R c. R/n^2 d. nR

44. A capacitor of 5μF is charged to a potential difference of 200V. If it is discharged through two resistors of 700Ω and 300Ω, what is the respective energy dissipated in each of the two resistor?
a. 0.07J, 0.03J b. 0.03J, 0.07J
c. 0.7J, 0.3J d. 0. 3J, 0.07J

45. A 220 volt – 1000 watt bulb is connected across a 110 volt mains supply. The power consumed will be
a. 1000 watt b. 1500 watt
c. 250 watt d. 750 watt