Electricity

ONE MARKS QUESTION

1. Define resistivity of material.
2. What is the power of torch bulb rated at 2.5V and 500mA?
3. Why series arrangement not used for connecting domestic electrical appliances in a circuit?
4. Which has higher resistance – a 50W bulb or a 2.5W bulb and how many times?
5. What is the direction of flow of conventional current?
6. Calculate the amount of charge flowing in a wire if it draws a current of 2A in 10 minutes
7. What happens to resistance of a conductor if area of cross-section is doubled?
8. Which device helps to maintain a potential difference across a conductor?
9. Find the number of electron in 1C of charge.
10. Name the physical quantity whose unit is V/A.
11. Name the device that helps to maintain a potential a potential difference across a conductor.

TWO MARKS QUESTION

12. Draw a circuit diagram having the following components

a. Bulb
b. A two cell battery
c. Ammeter
d. A closed key

13. Why are heating elements made of alloys rather than metals?
14. What do we mean when we say that potential difference between two points is 1volt?
15. Why is it not advisable to handle electrical appliances with wet hands?
16. Two electric bulbs marked 100W 220V and 200W 200V have tungsten filament of same length. Which of the two bulbs will have thicker filament?
17. How does the resistance of a wire vary with its area of cross section?
18. Define electric potential? What is its SI unit.
19. State the factor on which at a given temperature the resistance of a cylindrical conductor depends. State the SI unit of resistivity.
20. A circuit has a line of 5 A. How many lamps of rating 40W, 200V can simultaneously run on this line safely.

THREE MARKS QUESTION

21. If three resistors of 6Ω, 9Ω and 21Ω are connected in series to a 12V battery, find

22. What are the advantages of connecting electrical devices in parallel with the battery rather than in series?
23. A geyser is rated 1500W, 250V. This geyser is connected to 250V mains. Calculate -
    The current drawn The energy consumed in 50hrs,The cost of energy consumed at Rs. 2.20 per kWh.
24. What is the function of an electric fuse? Name the material used for making fuse. In household circuit where is fuse connected?
25. Write one important advantage of using alternative current. How alternating current differ from direct current?
26. What is the difference between short circuiting and overloading?
27. 2.4 x 10 20 electrons flow through a circuit in 10 hours. Calculate the magnitude of the current. [Charge on one electron = 1.6×10^{-19} C]. [1.066×10^{-3}]
28. **.** 50 coulombs of charge is brought from infinity to a given point in an electric field when 62.5 j of work is done. What is the potential at that point? [1.25 V]
29. What is the electric potential at a point in an electric field when 24 j of work is done in moving a charge of 84 C from infinity?[0.285 V]
30. A charge of 75 C is brought from infinity to a given point in an electric field; when the amount of work done is 12.5 j. Calculate the electric potential at that point. [0.166 V]

FIVE MARKS QUESTION

31. Draw diagram showing three resistors R_1, R_2 and R_3 in series.

    i)Two resistors of resistance 4Ω and 12Ω

    ii)In parallel

    iii)In series

32. Calculate the values of effective resistance in each case.

    (A) What is the function of fuse in an electric circuit?

    B) How is the SI unit of electric energy related to its commercial unit?

    (C) What would be the rating of the fuse for an electric kettle which is operated at 220V and consumes 500 W power?

34. a) State Ohms law. Derive the relation and give graphical representation for it.

    b) An electric oven rated at 500W is connected to a 220V line and used for 2 hours daily. Calculate the cost of electric energy per month at the rate of Rs.5 per KWh.