

9. If $R_p = 7K\Omega$, $g_m = 2.5 \text{ millimho}$, then on increasing plate voltage by $50V$, how much the grid voltage is changed so that plate current remains the same [RPET 1996]
 (a) $- 2.86 V$ (b) $- 4 V$
 (c) $+ 4 V$ (d) $+ 2 V$
10. The amplification factor of a triode is 20 and trans-conductance is 3 milli mho and load resistance $3 \times 10^4 \Omega$, then the voltage gain is [RPMT 1996]
 (a) 16.36 (b) 28
 (c) 78 (d) 108
11. In a triode amplifier, $\mu = 25$, $r_p = 40 \text{ kilo ohm}$ and load resistance $R_L = 10 \text{ kilo ohm}$. If the input signal voltage is 0.5 volt , then output signal voltage will be [RPMT 1995]
 (a) 1.25 volt (b) 5 volt
 (c) 2.5 volt (d) 10 volt
12. The amplification factor of a triode is 20. If the grid potential is reduced by 0.2 volt then to keep the plate current constant its plate voltage is to be increased by [RPMT 1993, 95]
 (a) 10 volt (b) 4 volt
 (c) 40 volt (d) 100 volt
13. For a triode $r_p = 10 \text{ kilo ohm}$ and $g_m = 3 \text{ milli mho}$. If the load resistance is double of plate resistance, then the value of voltage gain will be [RPMT 1994]
 (a) 10 (b) 20
 (c) 15 (d) 30
14. The amplification produced by a triode is due to the action of [AFMC 1994]
 (a) Filament (b) Cathode
 (c) Grid (d) Plate
15. In an experiment, the saturation in the plate current in a diode is observed at $240V$. But a student still wants to increase the plate current. It can be done, if [MNR 1994]
 (a) The plate voltage is increased further
 (b) The plate voltage is decreased
 (c) The filament current is decreased
 (d) The filament current is increased
16. In a triode amplifier, the value of maximum gain is equal to [MP PMT 1992]
 (a) Half the amplification factor
 (b) Amplification factor
 (c) Twice the amplification factor
 (d) Infinity
17. For a given triode $\mu = 20$. The load resistance is 1.5 times the anode resistance. The maximum gain will be [CPMT 1992]
 (a) 16 (b) 12
 (c) 10 (d) None of the above
18. The voltage gain of a triode depends upon [CPMT 1992]
 (a) Filament voltage (b) Plate voltage
 (c) Plate resistance (d) Plate current
19. In a triode valve [MP PET 1992]
 (a) If the grid voltage is zero then plate current will be zero
 (b) If the temperature of filament is doubled, then the thermionic current will also be doubled
 (c) If the temperature of filament is doubled, then the thermionic current will nearly be four times
 (d) At a definite grid voltage the plate current varies with plate voltage according to Ohm's law
20. The amplification factor of a triode valve is 15. If the grid voltage is changed by 0.3 volt the change in plate voltage in order to keep the plate current constant (in volt) is [CPMT 1990]

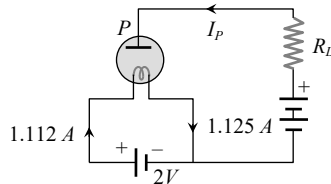
- (a) 0.02 (b) 0.002
(c) 4.5 (d) 5.0
21. The slope of plate characteristic of a vacuum tube diode for certain operating point on the curve is $10^{-3} \frac{mA}{V}$. The plate resistance of the diode and its nature respectively
[MP PMT 1990]
(a) 100 kilo-ohms static (b) 1000 kilo-ohms static
(c) 1000 kilo-ohms dynamic (d) 100 kilo-ohms dynamic
22. A triode has a mutual conductance of $2 \times 10^{-3} mho$ and an amplification factor of 50. The anode is connected through a resistance of $25 \times 10^3 ohms$ to a 250 volts supply. The voltage gain of this amplifier is [MP PMT 1989]
(a) 50 (b) 25
(c) 100 (d) 12.5
23. 14×10^{15} electrons reach the anode per second. If the power consumed is 448 milliwatts, then the plate (anode) voltage is [MP PMT 1989]
(a) 150 V (b) 200V
(c) $14 \times 448 V$ (d) $448/14V$
24. In the circuit of a triode valve, there is no change in the plate current, when the plate potential is increased from 200 volt to 220 volt and the grid potential is decreased from -0.5 volt to -1.3 volt. The amplification factor of this valve is [MP PMT 1989]
(a) 15 (b) 20
(c) 25 (d) 35
25. If the amplification factor of a triode (μ) is 22 and its plate resistance is 6600 ohm, then the mutual conductance of this valve is mho is [MP PMT 1989]
(a) $\frac{1}{300}$ (b) 25×10^{-2}
(c) 2.5×10^{-2} (d) 0.25×10^{-2}
26. For a triode, at $V_g = -1 volt$, the following observations were taken $V_p = 75 V, I_p = 2mA$, $V_p = 100 V, I_p = 4mA$. The value of plate resistance will be [MP PMT 1989]
(a) 25 k Ω (b) 20.8 k Ω
(c) 12.5 k Ω (d) 100 k Ω
27. The triode constant is out of the following [RPMT 1989]
(a) Plate resistance (b) Amplification factor
(c) Mutual conductance (d) All the above
28. The unit of mutual conductance of a triode valve is [MP PMT 1988]
(a) Siemen (b) Ohm
(c) Ohm metre (d) Joule Coulomb $^{-1}$
29. With a change of load resistance of a triode, used as an amplifier, from 50 kilo ohms to 100 kilo ohms, its voltage amplification changes from 25 to 30. Plate resistance of the triode is [MP PET 1986]
(a) 25 k Ω (b) 75 k Ω
(c) 7.5 k Ω (d) 2.5 k Ω
30. Select the correct statements from the following [IIT-JEE 1984]
(a) A diode can be used as a rectifier
(b) A triode cannot be used as a rectifier
(c) The current in a diode is always proportional to the applied voltage
(d) The linear portion of the I-V characteristic of a triode is used for amplification without distortion
31. The introduction of a grid in a triode valve affects plate current by [CPMT 1975, 90]
(a) Making the thermionic emission easier at low temperature
(b) Releasing more electrons from the plate
(c) By increasing plate voltage
(d) By neutralising space charge

32. Before the saturation state of a diode at the plate voltages of 400 V and 200 V respectively the currents are i_1 and i_2 respectively. The ratio i_1/i_2 will be

- (a) $\sqrt{2}/4$ (b) $2\sqrt{2}$
(c) 2 (d) 1/2

33. The value of plate current in the given circuit diagram will be

- (a) 3 mA
(b) 8 mA
(c) 13 mA
(d) 18 mA



34. Coating of strontium oxide on Tungsten cathode in a valve is good for thermionic emission because [RPMT 1998]

- (a) Work function decreases
(b) Work function increases
(c) Conductivity of cathode increases
(d) Cathode can be heated to high temperature

35. Correct relation for triode is

[RPMT 2000]

- (a) $\mu = g_m \times r_p$ (b) $\mu = \frac{g_m}{r_p}$
(c) $\mu = 2g_m \times r_p$ (d) None of these

36. Following is the relation between current and charge $I = AT^2 e^{at/V_L}$ then value of V_L will be [RPMT 2000]

- (a) $\frac{V}{kT}$ (b) $\frac{kV}{T}$
(c) $\frac{kT}{V}$ (d) $\frac{VT}{k}$

37. Which one is correct relation for thermionic emission

[RPMT 2000]

- (a) $J = AT^{1/2} e^{-\phi/kT}$ (b) $J = AT^2 e^{-\phi/kT}$
(c) $J = AT^{3/2} e^{-\phi/kT}$ (d) $J = AT^2 e^{-\phi/2kT}$

38. When plate voltage in diode valve is increased from 100 volt to 150 volt then plate current increases from 7.5 mA to 12 mA. The dynamic plate resistance will be [RPMT 2000]

- (a) 10 kΩ (b) 11 kΩ
(c) 15 kΩ (d) 11.1 kΩ

39. In a diode valve, the state of saturation can be obtained easily by [RPET 1998; RPMT 2002]

- (a) High plate voltage and high filament current
(b) Low filament current and high plate voltage
(c) Low plate voltage and high cathode temperature
(d) High filament current and high plate voltage

40. Plate resistance of two triode valves is 2 KΩ and 4 KΩ, amplification factor of each of the valves is 40. The ratio of voltage amplification, when used with 4 KΩ load resistance, will be

[RPET 1998]

- (a) 10 (b) $\frac{4}{3}$
(c) $\frac{3}{4}$ (d) $\frac{16}{3}$

41. Diode is used as a/an [AIIMS 1999]

- (a) Oscillator (b) Amplifier
(c) Rectifier (d) Modulator

42. The electrical circuits used to get smooth d.c. output from a rectifier circuit is called

[KCET 2000]

- (a) Filter (b) Amplifier
(c) Full wave rectifier (d) Oscillator

43. Which of the following does not vary with plate or grid voltages [BHU (Med.) 1999]

- (a) g_m (b) R_p
(c) μ (d) Each of them varies

44. The grid in a triode valve is used [UPSEAT 2000]

- (a) To increase the thermionic emission
(b) To control the plate to cathode current
(c) To reduce the inter-electrode capacity
(d) To keep cathode at constant potential

45. In a triode valve the amplification factor is 20 and mutual conductance is 10^{-3} mho. The plate resistance is

[UPSEAT 2000]

- (a) $2 \times 10^3 \Omega$ (b) $4 \times 10^3 \Omega$
(c) $2 \times 10^4 \Omega$ (d) $2 \times 10^4 \Omega$

46. The thermionic emission of electron is due to

[UPSEAT 2000]

- (a) Electromagnetic field (b) Electrostatic field
(c) High temperature (d) Photoelectric effect

47. The amplification factor of a triode is 50. If the grid potential is decreased by $0.20 V$, what increase in plate potential will keep the plate current unchanged [RPMT 1999]

- (a) $5 V$ (b) $10 V$
(c) $0.2 V$ (d) $50 V$

48. The slope of plate characteristic of a vacuum diode is $2 \times 10^{-2} mA/V$. The plate resistance of diode will be

[RPMT 1999]

- (a) 50Ω (b) $50 k\Omega$
(c) $500 k\Omega$ (d) $500 k\Omega$

49. The transconductance of a triode amplifier is 2.5 mili mho having plate resistance of $20 K\Omega$, amplification 10. Find the load resistance [RPMT 2001]

- (a) $5 k\Omega$ (b) $25 k\Omega$
(c) $20 k\Omega$ (d) $50 k\Omega$

50. The amplification factor of a triode is 18 and its plate resistance is $8 \times 10^3 \Omega$. A load resistance of $10^4 \Omega$ is connected in the plate circuit. The voltage gain will be

[RPMT 2002]

- (a) 30 (b) 20
(c) 10 (d) 1

51. The ripple factor in a half wave rectifier is [RPMT 2002]

- (a) 1.21 (b) 0.48
(c) 0.6 (d) None of these

52. The correct relation for a triode is [RPET 2000, 02]

(a) $g_m = \frac{\Delta I_p}{\Delta V_p} \Big|_{V_g = \text{const}}$ (b) $g_m = \frac{\Delta I_p}{\Delta V_g} \Big|_{V_p = \text{const}}$

- (c) Both (d) None of these

53. In a diode valve the cathode temperature must be ($\phi =$ work function) [RPET 2002]

- (a) High and ϕ should be high
(b) High and ϕ should be low
(c) Low and ϕ should be high
(d) Low and ϕ should be high

54. The plate resistance of a triode is $2.5 \times 10^4 \Omega$ and mutual conductance is $2 \times 10^{-3} \text{ mho}$. What will be the value of amplification factor [RPET 2002]

- (a) 50 (b) 1.25×10^7
(c) 75 (d) 2.25×10^7

55. Plate voltage of a triode is increased from $200 V$ to $225 V$. To maintain the plate current, change in grid voltage from $5V$ to $5.75 V$ is needed. The amplification factor is [RPET 2002]

- (a) 40 (b) 45
(c) 33.3 (d) 25

56. The current in a triode at anode potential $100 V$ and grid potential $-1.2 V$ is $7.5 mA$. If grid potential is changed to $-2.2 V$, the current becomes $5.5 mA$. the value of trans conductance (g_m) will be [RPMT 2003]

- (a) 2 mili mho (b) 3 mili mho
(c) 4 mili mho (d) 0.2 mili mho

57. Select the correct statement [RPMT 2003]

- (a) In a full wave rectifier, two diodes work alternately
(b) In a full wave rectifier, two diodes work simultaneously
(c) The efficiency of full wave and half wave rectifiers is same
(d) The full wave rectifier is bi-directional

58. The amplification factor of a triode is 20. Its plate resistance is 10 kilo ohms . Mutual conductance is [MNR 1992; Orissa JEE 2005]

- (a) $2 \times 10^5 \text{ mho}$ (b) $2 \times 10^4 \text{ mho}$

(c) 500 *mho*

(d) 2×10^{-3} *mho*