

Physics (Theory)

કુલ સમય :- ૬૦ મીનીટ

કુલ પ્રશ્નો : ૫૦

વિદ્યાર્થીએ ટીક કરવાના પ્રશ્નો : ૩૫

નોંધ : વિદ્યાર્થીએ માત્ર ૩૫ પ્રશ્નો જ ટીક કરવાના રહેશે. જો વધારે ટીક કરેલ હશે તો પ્રથમ ૩૫ પ્રશ્નો જ ગણતરીમાં લેવામાં આવશે.

- (1) JFET (Junction field effect transistor) is also called ----- transistor
(A) Unipolar (B) Bipolar (C) Unijunction (D) silicon control
- (2) JFE has three terminal namely-----
(A) cathode, anode, grid (B) emitter, base, collector
(C) source, gate, drain (D) None of the above
- (3) Gate of a JFET is ----- biased
(A) forward (B) reverse (C) reverse as well as forward (D) None of the above
- (4) In N-channel JFET the charge carrier are ----
(A) Electron (B) Holes (C) both electron and holes (D) photons
- (5) When drain voltage equal the pinch of voltage the drain current ----- with the increase with drain voltage
(A) Decrease (B) Increase (C) Remain constant (D) not said correctly
- (6) If the reverse bias on the gate of JFET is increase, then width of the conducting channel is -----
(A) Decrease (B) Increase (C) Remain the same (D) None of the above
- (7) In JFET, ratio of output current change and input voltage change is called-
(A) Drain resistance (B) Current gain (C) Voltage gain (D) Transconductance
- (8) JFET has----- power gain
(A) small (B) very high (C) very small (D) moderate
- (9) The input control parameter of JFET is -----
(A) Gate voltage (B) Source voltage (C) drain voltage (D) drain current
- (10) The constant current region of JFET lies between -----
(A) cut off and saturation (B) Cutoff and pinch off
(C) pinch off and breakdown (D) cut-off and breakdown
- (11) JFET is a ----- control device
(A) current (B) Voltage (C) Current and Voltage (D) power
- (12) Full name of MOSFET is -----
(A) Most operating system field effect transistor
(B) metal oxide system field effect transistor
(C) Metal oxide semiconductor field effect transistor
(D) Minimum operating system field effect transistor
- (13) In CB transistor if $\alpha = 0.98$ then find β
(A) 100 (B) 98 (C) 99 (D) 49
- (14) h parameter equivalent circuit parameter h_{22} is ----- called
(A) short circuit input impedance (B) short circuit current gain
(C) open circuit reverse voltage gain (D) Open circuit output admittance
- (15) unit of parameter h_{oe} is -----
(A) ohm (B) mho (C) ampere (D) unit less
- (16) Parameter h_{fe} is called----- in CE configuration with output shortcircuit
(A) voltage gain (B) current gain (C) input impedance (D) out admittance
- (17) The unit of intensity of Magnetisation
(A) A/m (B) A.m² (C) A.m (D) wb/m
- (18) unit of electrical dipole moment
(A) coulomb.meter (B) coulomb/meter (C) Ampere/meter² (D) Ampere.meter²
- (19) Out put part of h parameter equivalent is----- equivalent theorem
(A) Norton (B) Thevenin (C) Maximum power transform (D) Green
- (20) The magnetic susceptibility of diamagnetic material is-----
(A) small and negative (B) small and positive (C) large and negative (D) large and positive
- (21) which molecule's centre of positive and negative charges coincide
(A) Cl₂ (B) HCl (C) CO (D) H₂O
- (22) Equation is $\oint \mathbf{H} \cdot d\mathbf{l} = I$ known as-----
(A) Gauss law (B) Faraday's law (C) Maxwell law (D) Ampere law
- (23) The relation between B, M and H
(A) $B = \mu_0 (H + M)$ (B) $B = H/\mu$ (C) $B = \mu_0 M$ (D) $B = (H + M)/\mu_0$
- (24) The permeability of paramagnetic substance is -----
(A) greater than 1 (B) Less than 1 (C) Zero (D) infinite

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- (26) Intercept of graph χ_e against $\frac{1}{T}$ is
 (A) polarization density (B) polarizability of atom
 (C) permanent dipole moment (D) Electric susceptibility due to the induced polarization
- (27) UJT has -----
 (A) two pn Junction (B) One pn Junction (C) Three pn Junction (D) none of the above
- (28) UJT may be used as -----
 (A) Amplifier (B) saw tooth generator (C) Rectifier (D) voltage regulator
- (29) Which of following is not a characteristic of UJT
 (A) Intrinsic stand off ratio (B) Negative resistance (C) Peak point voltage (D) pinch off voltage
- (30) After peak point, the UJT operates in the --- region
 (A) cut off (B) saturation (C) Negative resistance (D) none of the above
- (31) The Q point in voltage amplifier is desirable in middle of the active region Because.....
 (A) It gives a distortion less output
 (B) The operating point then becomes very stable
 (C) the circuit requires less number of resistance
 (D) It requires a small dc voltage
- (32) The transistor is operating in active region under this condition----
 (A) Both the junction are forward biased (B) Both the junction are reverse biased
 (C) Emitter junction is reverse biased and collector junction forward biased
 (D) Emitter junction is forward biased and collector junction reverse biased
- (33) The potential divider biasing circuit most widely used because ---
 (A) Reduced the dc base current (B) Reduced the cost of the circuit
 (C) make the operating point almost independent of β (D) none of the above
- (34) collector to base resistor biasing circuit stability factor can be small and stable can be improved by making -----
 (A) R_B is large value (B) R_C is small value (C) $R_B \ll R_C$ (D) $R_C \ll R_B$
- (35) In voltage divider biasing circuit capacitor C_E is connected across R_E because---
 (A) To avoid negative feedback through R_E (B) to provide stability to operating point
 (C) to reduce the leakage current (D) None of the above
- (36) When dipole placed in electric field potential energy of dipole is ----
 (A) $\alpha E \cos \theta$ (B) $\chi_e \mu_0$ (C) $-PE \cos \theta$ (D) $PE \sin \theta$
- (37) When dipole placed in electric field, which position dipole has maximum potential energy --
 (A) p is perpendicular to E (B) p and E are same direction
 (C) p is opposite direction to E (D) None of the above
- (38) Equation $\epsilon_r = 1 + \frac{Nq^2}{\epsilon_0 m} \frac{1}{\omega_0^2 - \omega^2}$ is known as---
 (A) Biot-savart's equation (B) Gauss equation
 (C) Clausius-Mossotti equation (D) Faraday's equation
- (39) Compared to CB amplifier, the CE amplifier has-----
 (A) lower input resistance (B) higher output resistance
 (C) lower current gain (D) higher current gain
- (40) The input and output signal of CE amplifier are
 (A) out of phase (B) in phase (C) always negative (D) always equal
- (41) basis vector of cylindrical coordinate are----
 (A) i, j, k (B) e_r, e_θ, e_z (C) e_r, e_θ, e_ϕ (D) r, θ, z
- (42) scale factor of cylindrical coordinate are----
 (A) 1, 1, 1 (B) 1, 1, r (C) 1, $r, 1$ (D) 1, $r, r \sin \theta$
- (43) In cylindrical coordinate displacement of particle is $s = r e_r$ at time t then velocity of particle is----
 (A) $\dot{r} + e_r \dot{r}$ (B) $\dot{r} + r \theta \dot{e}_\theta$ (C) $r \dot{e}_r + \theta \dot{e}_r$ (D) $r \theta \dot{e}_r$
- (44) According to Parseval's theorem, In given interval Average of $|\phi(x)|^2$ is ----
 (A) $\sum_{-\infty}^{\infty} |c_n|^2$
 (B) $\frac{1}{L} \sum_{-\infty}^{\infty} |c_n|^2$
 (C) $\sum_{-\infty}^{\infty} |L c_n|^2$
 (D) None of the above
- (45) If the function $f(x)$ is odd then which coefficient is present in fourier series-----
 (A) a_0 (B) a_n (C) b_n (D) all coefficient are present
- (46) The function $f(t)$ called periodic because-----
 (A) has period $T=2\pi$ (B) *satisfies* $f(t+T) = f(t)$ (C) *satisfies* $f(t+T) = -f(t)$ (D) has period $T=\pi$
- (47) Find the coefficient a_0 of the fourier series for function $f(x) = x$ in $0 < x < 2\pi$ interval
 (A) 2π (B) π (C) 2 (D) $4\pi^2$
- (48) *if* $a_n = -n\pi[(-1)^2 - 1]$ then find a_5 -----
 (A) 20π (B) 5π (C) 10π (D) -10π
- (49) find the odd function given below
 (A) $x \sin x$ (B) x^2 (C) $x \cos x$ (D) $\cos x$
- (50) If the function $f(x)$ is even then which coefficient is not present in fourier series ----
 (A) a_0 (B) a_n (C) b_n (D) a_0 and a_n