

Name:		Roll No.		Subject	Physics
Test Type	MCQs, Short & Long question	Class	12	Date	
Chapter	18 Complete	Unit	18	Time	

Q. No. 1 Tick the best option

24

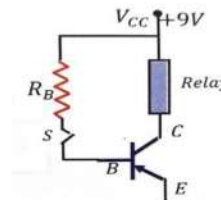
- When output of non-inverting amplifier is fed back directly to inverting input, gain is:
(a) Zero (b) $\frac{R_2}{R_1}$ (c) One (d) $1 - \frac{R_2}{R_1}$
- In n-p-n transistor, the current flows in the direction from:
(a) Base to emitter (b) Collector to emitter (c) Emitter to base (d) Base to collector
- In a transistor which one is very thin?
(a) Emitter (b) Base (c) Collector (d) All have equal size
- An expression for current gain of a transistor is given by:
(a) $\beta = \frac{I_B}{I_C}$ (b) $\beta = \frac{I_E}{I_C}$ (c) $\beta = \frac{I_C}{I_B}$ (d) $\beta = I_B + I_C$
- The open loop gain of an Op-amp is of the order of:
(a) 10^3 (b) 10^4 (c) 10^6 (d) 10^5
- An operational amplifier has a gain of 1000 and an input voltage of 2mV. What is the output voltage?
(a) 20V (b) 0.2V (c) 2V (d) None
- The values 1 and 0 are designated:
(a) Binary values (b) Continuous values (c) Decimal values (d) None of these
- The gate will recognize the as high or 1 if the voltage is applied to the gate is
(a) 0.5 V (b) 1.5 V (c) 3.5 V (d) 0.7 V
- The gate, which changes the logic level to its opposite level is called:
(a) OR (b) NOT (c) AND (d) NOR
- If both the inputs given to a gate are 0 such that the output is 1 then it is:
(a) NAND gate (b) NOR gate (c) XNOR gate (d) All of these
- Breakdown voltage is:
(a) 5 V (b) 15 V (c) 25 V (d) 35 V
- During day time, when light is falling upon LDR, R_L is:
(a) Large (b) Small (c) Unchanged (d) None of these
- In case of non-inverting Op-amp if $R_1 = R_2/2$ then:
(a) $V_{out} = 3 V_{in}$ (b) $V_{in} = 3 V_{out}$ (c) $V_{out} = 2 V_{in}$ (d) $V_{in} = 2 V_{out}$
- A fast-switching device responding in nano-seconds is:
(a) PN junction (b) Photo diode (c) LED (d) Photo-voltaic cell
- A device which converts a physical quantity into voltage is called?
(a) Inverter (b) Sensor (c) Amplifier (d) Photodiode
- The value of input resistance of Op-amp is of the order of:
(a) Few ohms (b) Milli-ohms (c) Kilo-ohms (d) Mega-ohms
- Boolean expression for NAND operation is
(a) $X = A - B$ (b) $X = A + B$ (c) $X = \overline{A} \cdot \overline{B}$ (d) $X = \overline{A}$
- In Op-amp as a comparator, when $V_- > V_+$ then at the output we get:
(a) $V_o = +V_{cc}$ (b) $V_o = -V_{cc}$ (c) $V_o > +V_{cc}$ (d) $V_o < -V_{cc}$
- The output of an OR gate is '0' only when its:
(a) Both inputs are 1 (b) Both inputs are 0 (c) Either input is 1 (d) Either input is 0
- The mathematical notation for exclusive OR operation is:
(a) $A\overline{B} + \overline{A}B$ (b) $\overline{A} + \overline{B}$ (c) $\overline{A + B}$ (d) $\overline{AB + AB}$
- The semi-conductor diode has property of a:
(a) Two-way conduction (b) One way conduction (c) Zero conduction (d) None of these
- The magnitude of voltage gain of an amplifier having $r_{ie} = 1 \Omega$, $\beta = 100$ and $R_c = 200 \Omega$:
(a) 5 (b) 500 (c) 1000 (d) 20,000
- If $R_1 = 10 \text{ k}\Omega$ and $R_2 = 100 \text{ k}\Omega$, then the gain of the non-inverting amplifier is:
(a) 100 (b) -10 (c) 10 (d) 11
- An Op-amp have how many input terminals:
(a) Two (b) Four (c) Three (d) Five

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Q. No. 2 Write the short answer of these following question

6 x 2 = 12

- 1) What is net charge on a n- type or a p-type substance?
- 2) Why charge carriers are not present in the depletion region?
- 3) Why ordinary silicon diodes do not emit light?
- 4) Why a photo diode is operated in reverse biased state?
- 5) Why is the base current in a transistor very small?
- 6) What is the principle of virtual ground? Apply it to find the gain of an inverting amplifier?



Q. No. 3 Long question

05

- (A) What is Operational amplifier? Name any two basic characteristics. How Op-amp used as non-inverting amplifier?
- (B) A transistor which operates a relay as the closed switch. The relay is energized by a current of 10 mA. Calculate R_B which will just make the relay operate. Current gain of transistor $\beta = 200$. When the transistor conducts, its V_{BE} can be assumed to be 0.6 V.