AAFAQ ACADEMY KASUR

Physics Book II **Chapter (18) NEW** **Objective + Subjective**

ELECTRONICS

Test Session 2014 – Name : _____ Roll No: (in words) _____

OBJECTIVE

Time: 10 Minutes **Marks: 10**

Note: Write your roll No. in space provided. Over-writing, cutting, erasing, using of lead pencils will result into loss of marks.

Q.1: Encircle the correct answers.

i. The average gap for Germanium at 0K is:
a) 1.12 ev
b) 0.02 ev
c) 6.72 ev
d) 7.2 ev

ii. The impurity in the germanium is usually in the ratio of:
a) $1:10^6$
b) $1:10^4$
c) $1:a0^8$
d) $1:10^{10}$

iii. In a certain circuit, I_B = 40 μA, I_c = 20 mA, then the emitter current will be
a) 450 A
b) 0.45 A
c) 5 m A
d) 500 A

iv. For normal biasing of transistor, the emitter current can be given by:
a) $I_E = I_C$
b) $I_E = I_C + I_B$
c) $I_E = I_B$
d) None of these

v. In case of op-amp as an inverting amplifier, $V_+ - V_- = 0$, this is because:
a) Open loop gain is very low
b) Closed loop gain is very high
c) Open loop gain is very high
d) Both (a) and (b)

vi. An expression for gain of an inverting amplifier is:
a) $-\frac{R_2}{R_1}$
b) $\frac{R_1}{R_2}$
c) $(R_1 R_2)$
d) None of these

vii. The mathematical symbol for NOR operation is:
a) $X = \overline{A+B}$
b) $X = A.B$
c) $X = A+B$
d) $X = \overline{A.B}$

viii. The gate, which changes the logic level to its opposite level is called:
a) NOR gate
b) AND gate
c) OR gate
d) NOT gate

ix. One use of a single p-n junction semiconductor in an electrical circuit is a:
a) Rectifier
b) Transistor
c) Battery
d) Diode

x. The output from a full wave rectifier is:
a) An ac voltage
b) A dc voltage
c) Zero
d) A pulsating unidirectional voltage

SUBJECTIVE

Time: 30 min. **Marks: 20**

Q.2: Write the short answers. **(2×6)**

i. How does the motion of an electron in n-type substance differ from the motion of holes in a p-type substance?

ii. What is the net charge on a n-type or a p-type substance?

iii. The anode of a diode is 0.2 V positive with respect to its cathode. Is it forward-biased?

iv. Why charge carriers are not present in the depletion region?

v. Why ordinary silicon diodes do not emit light?

vi. Why a photo diode is operated in reverse biased state?

vii. What is the principle of virtual ground? Apply it to fine the gain of an inverting amplifier.

viii. What is potential barrier ? What is the value of potential barrier for SI and Ge?

Note: Long questions:

Q.3 **(a)** How n-p-n transistor works as an amplifier? Giving its circuit diagram deduce the relation for current gain and voltage gain. (5)

(b) The current flowing into the base of a transistor is 100 μA. Find its collector current I_C, its emitter current I_E and the ration I_C/I_E, if the value of current gain β is 100. (3)