Total No. of Questions : 6]

SEAT No. :

P2205

[Total No. of Pages : 2

F.E. (Semester - II)
BASIC ELECTRONICS ENGINEERING
(2008 Pattern)

Time : 2 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) *Answer Q.1 or Q.2, Q.3 or Q.4 & Q.5 or Q.6.*
2) *Neat diagrams must be drawn wherever necessary.*
3) *Use of Calculator is allowed.*
4) *Figures to the right side indicate full marks.*
5) *Assume Suitable data if necessary.*

Q1) a) For HWR, define & derive the expressions for following parameters:**[8]**

i) I_{Ldc} ii) V_{Ldc} iii) $\%\eta$ iv) RF,

b) Calculate the Q-point for cricuit shown in Fig. 1). Assume $\beta_{dc} = 100$.**[8]**

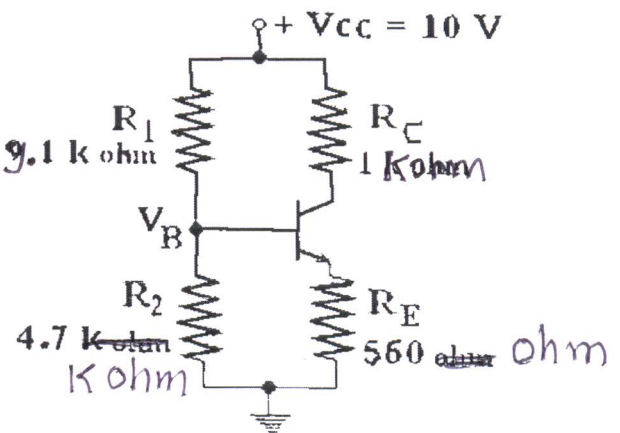

Fig. 1

OR

Q2) a) Explain principle of operation & characteristics of LED. State various materials used to fabricate LED. Enlist its advantages, disadvantages & applications. **[8]**

b) Explain construction, working, V-I characteristics, specifications & applications of TRIAC. **[8]**

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Q3) a) Draw neat circuit diagram & explain closed loop non-inverting adder (Summing Amplifier) using OP-AMP. Derive the expression for V_o. **[8]**

b) Draw & explain operation of following gates using CMOS. (Any 2) **[8]**

i) AND, ii) NOR, iii) EX-OR

OR

Q4) a) For RC Phase shift Oscillator Circuit, three identical phase shifting network of R = 10 kΩ & C = 0.01 μF are used. Determine the frequency of oscillation. **[4]**

b) Design non-inverting OP-AMP to obtain gain of 61. Assume input resistor is 1 kΩ **[4]**

c) Draw & explain block diagram of Micro - controller. State its advantages. **[8]**

Q5) a) Draw constructional details of LVDT (Displacement Transducer). Explain its operation. State its advantages, disadvantages, limitations, range, specifications & applications. **[6]**

b) Explain in brief different types of Strain Gauges. **[6]**

c) Draw & explain block diagram of Mobile Communication System. **[6]**

OR

Q6) a) Write short note on: (Any 2) **[6]**

i) Two Wire Transmitter ii) PID Controller

iii) Data Logger iv) PLC System

b) Draw & explain block diagram of Superheterodyning Receiver. **[6]**

c) Draw & explain Electromagnetic (IEEE Frequency) Spectrum. **[6]**