Total No. of Questions : 6]

SEAT No. :

P657

[Total No. of Pages : 2

[4456]-12
F.E. (Semester - II)
BASIC ELECTRONICS ENGINEERING
(2008 Course)

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) ***Figures to the right indicate full marks.***
4) ***Use of logarithmic tables slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.***
5) ***Assume suitable data, if necessary.***

Q1) a) Explain how DC output voltage of a full wave rectifier is improved when capacitor filter is used? Draw the waveforms of load voltage and diode current. **[8]**

b) Define α_{dc} and β_{dc} of a transistor. For a transistor the base current is 100 μA and collector current is 2.9mA. Find α_{dc} and β_{dc} **[8]**

OR

Q2) a) A diode whose internal resistance is 20 ohms is to supply to 1000 ohms load from a 110V rms source of supply, Calculate: **[6]**

i) Peak load current

ii) DC load current

iii) AC load current

iv) DC load voltage

b) Explain BJT as a switch and draw the necessary waveforms. **[4]**

c) Compare SCR and TRIAC. **[6]**

Q3) a) An op-amp is used in non-inverting mode with $R_1 = 1K\Omega$, $R_F = 12K\Omega$, $V_{cc} = \pm 15V$. Calculate output voltage for **[6]**

i) $V_{in} = 250mV$

ii) $V_{in} = 3V$

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b) Implement the following Boolean expression using both NAND and NOR gates. **[6]**

i) $\overline{A}BC + AC + B\overline{C}D$

ii) $AB + C\overline{D} + AD + BC$

c) State difference between Synchronous and Asynchronous Counters. **[4]**

OR

Q4) a) Draw block diagram of Op-Amp and explain. **[6]**

b) For inverting summing amplifier, if following inputs are applied, then calculate output voltage.

$V_1 = 1.5V$, $V_2 = 3.5V$ and $R_1 = R_2 = R_f = 5.2$ KΩ **[4]**

c) What is multiplexer? What is the relation between number of select lines and inputs? Draw diagram of 4:1 Mux and explain significance of strobe pin. **[6]**

Q5) a) Draw block diagram of Electronic weighing machine and explain its operation. **[6]**

b) What is RTD? Draw its constructional diagram and explain its operation. **[6]**

c) What is the need of modulation? Explain Amplitude modulation in detail. **[6]**

OR

Q6) a) Write short note on any two : **[6]**

i) PLC system

ii) Active - passive Transducer

iii) Thermocouple

iv) Piezoelectric Transducer

b) Draw and explain block diagram of Mobile Communication system. Explain concept of cellular. **[6]**

c) Write short note on Co-axial cable and fiber optic cable. **[6]**

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