22213

Instructions – (1) All Questions are *Compulsory.*

(2) Answer each next main Question on a new page.

(3) Illustrate your answers with neat sketches wherever necessary.

(4) Figures to the right indicate full marks.

(5) Assume suitable data, if necessary.

(6) Use of Non-programmable Electronic Pocket Calculator is permissible.

(7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1.   **Attempt any FIVE of the following:**   **10**

a) Draw the symbol of –

   i)   Zener Diode

   ii)   Photo Diode

b) Define term Ripple factor for rectifier.

c) Draw the symbol of NPN and PNP transistor.

d) Define term load regulation.

e) List any two applications of Zener diode.

f) Name the IC voltage for fixed voltage +5V and –10V.

g) Draw the logic symbol and truth table for NAND gate.

Marks

2. Attempt any THREE of the following: 12

a) State the working principle of photo diode.

b) Explain half-wave rectifier with input-output waveform.

c) Describe the working of NPN transistor.

d) State the need of D.C. regulated power supply. Also give it's advantages. (any four)

3. Attempt any THREE of the following: 12

a) Sketch the block diagram of D.C. regulated power supply. State function of each block.

b) List the application of LC and RC oscillators.

c) Draw input output characteristics of CE configuration.

d) Define filter. Give it's type and draw π type filter.

4. Attempt any THREE of the following: 12

a) Compare positive and negative feedback system on the basis of –

   i) Overall phase shift,

   ii) Voltage gain,

   iii) Stability,

   iv) Application.

b) In full wave rectifier Vm = 50V, R_L = 10 kΩ, find Vdc, Idc and Ripple factor.

c) Describe transistor as switch with neat sketch.

d) Explain with diagram construction of LED.

e) Draw the circuit diagram of centertap rectifier with LC filter.

Marks

5. **Attempt any TWO of the following:** 12

a) Sketch circuit diagram for common base configuration and explain it's input and output characteristics.

b) Sketch functional block diagram of IC 723 and explain each block in detail.

c) Sketch the implementation of OR gate and AND gate using NAND gate.

6. **Attempt any TWO of the following:** 12

a) Define α, β and γ of transistor and give relation between α and β of transistor.

b) Convert :–

i) $(416)_{10} = (\quad)_2$

ii) $(140)_{10} = (\quad)_{16}$

iii) $(AFC)_{16} = (\quad)_8$

iv) $(248)_8 = (\quad)_{10}$

c) Sketch colpits oscillator and explain its working. Also state it's application.

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