Printed Pages : 6

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NEC101 / NEC201

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 199129

Roll No.

B.Tech. (End Sem.)

SPL. THEORY EXAMINATION 2014-15

ELECTRONICS ENGINEERING

Time : 3 Hours] *[Total Marks : 100*

Note: Attempt questions from all sections as per instructions.

Section - A

1. This question consists of short answer questions. Attempt all parts of this question. All parts carry equal marks. (2×10=20)

   (a) What do you mean by Doping? Describe its need.

   (b) Give all the Equivalent / Approximation circuits of a Diode.

   (c) Differentiate between Clipper and Clamper circuit.

(d) Describe the equivalent circuit of a Transistor.

(e) Why the Q-point varies in transistors?

(f) Differentiate between Depletion and Enhancement type MOSFET.

(g) Define Threshold Voltage for an E-MOSFET. Also define I_{DSS} for an JFET.

(h) Draw the Drain V-I characteristics of n channel JFET.

(i) Differentiate between N-type and P-type semiconductor.

(j) Draw npn CE transistor in active region.

Section - B

2. Attempt any three parts of this question. All parts carry equal marks. (10×3=30)

(a) Compare different types of rectifier, giving there circuit.

(b) (i) Describe the working of voltage multiplier circuit.

(ii) Define / explain the following:

(a) Slew Rate

(b) Threshold Voltage

(c) Ripple Factor

6. Attempt any two parts of this question :

(a) Describe measurement of Voltage, Frequency & Phase using CRO.

(b) Describe the working of Digital Milimeter giving their block diagram.

(c) Describe the working of Digital Voltmeter giving their block diagram.

7. Attempt any one part of this question :

(a) Define amplitude modulation. Write the expression of AM wave. Define modulation index for AM wave.

(b) Explain any one demodulation technique of AM wave.

(c) Give comparison between FM and PM wave.

* * *

(d) CMRR

(e) Pinch off Voltage

(c) (i) Show the biasing arrangement for the NPN CE configuration so that it works in active region. Describe characteristics for CE configuration. Label all variables and also indicate the regions.

(ii) Explain the basic construction, operation and characteristics of LED.

(d) Explain the construction, operation and characteristics of n- channel JFET.

(e) (i) Describe the characteristics of Op- amp. Also give its symbol and equivalent circuit.

(ii) A half wave rectifier is used to supply 10 V to a resistive load of 400 ohm. If the diode has a forward resistance of 20 ohm, determine the value of ac voltage supplied to the circuit.

Section - C

Note: Attempt all questions of this section. All questions carry equal marks. (10×5=50)

3. Attempt any two parts of this question.

(a) Draw and explain the V-I characteristic of a P-N

Junction diode. Also describe the effect of Temperature on the V-I characteristic of a P-N Junction diode.

(b) Draw the output waveform for the circuit of Figure 3.b.

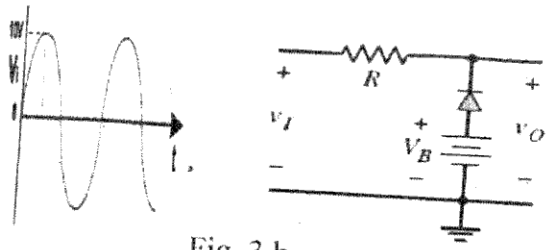

Fig. 3.b.

(c) Describe Varacter and Tunnel diode. Also draw their symbol.

4. Attempt <u>any two</u> parts of this question.

(a) Describe the construction of a NPN transistor. Define α and β with respect to BJT and derive the relationship between them.

(b) Refer the information appearing in Fig.4.b. Determine $I_C, V_E, V_C, I_B, \& V_{CE}$. assume $\beta = 100$.

(c) Explain the construction and working of E-MOSFET.

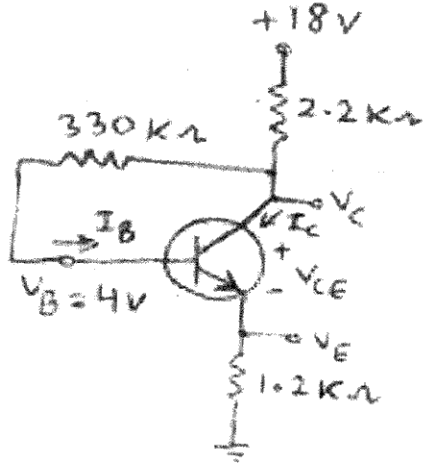

Fig.4.b.

5. Attempt <u>any two</u> parts of this question.

(a) Draw the circuit of Integrator using op-amp and obtain expression for output.

(b) Find the output V0 for the circuit of Fig 5.b in terms of V1 and V2.

(c) Explain four types of Negative Feedback configuration for an Op-amp.

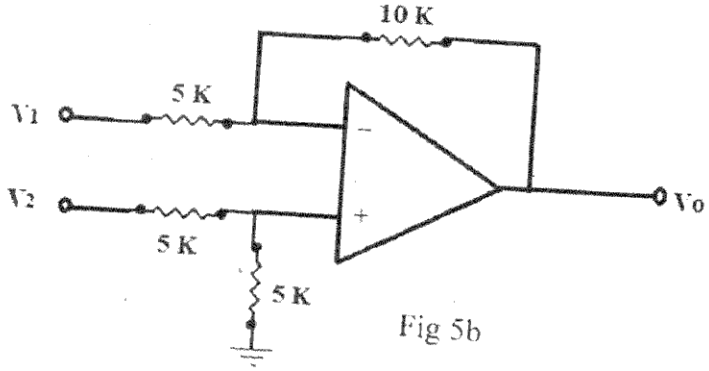

Fig 5b