



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

PAPER ID : 199214

Roll No.

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B. Tech.

(SEM. II) THEORY EXAMINATION, 2014-15
ELECTRONICS ENGINEERING

Time : 3 Hours]

[Total Marks : 100

- Note :
- (1) Attempt all questions.
 - (2) All questions carry equal marks.

1 Attempt **any four** parts of the following: 5×4=20

- (a) With the help of the circuit diagram explain the working of voltage doubler circuit.
- (b) For the network of Fig. 1, determine the range of V_i that will maintain V_L at 8 V and not exceed the maximum power rating of the Zener diode.

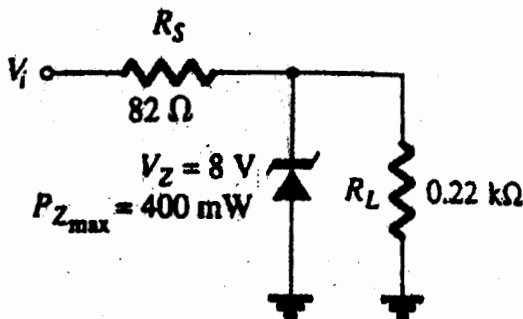


Fig.1

(c) Determine V_o for the given network shown in Fig.2

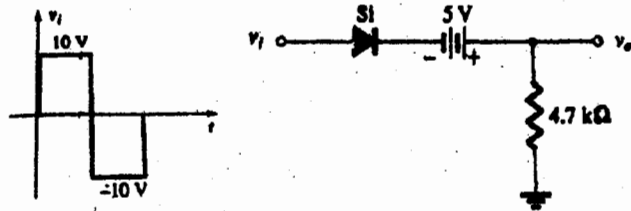


Fig.2

- (d) Write short notes on Tunnel Diode with necessary diagram.
 (e) Find out the ripple factor and efficiency of full wave Bridge rectifier.
 (f) Sketch V_o for the given network shown in Fig. 3 for the input shown.

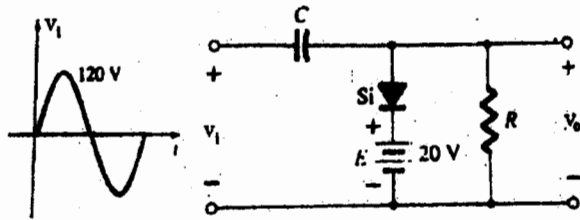


Fig.3

2 Attempt any four parts of the following: $5 \times 4 = 20$

- (a) Draw the input and output characteristics of CB npn transistor configuration with proper labels.
 (b) For the common emitter amplifier configuration using Hybrid equivalent model, determine Z_i, Z_o, A_v
 (c) Derive the stability factor $S(\beta)$ for the emitter bias configuration.
 (d) Find out I_C, I_E, V_{CE} of the fig 4.
 (e) Explain with necessary diagram how BJT works as switch
 (f) What is a well-designed voltage divider biasing circuit? Explain.

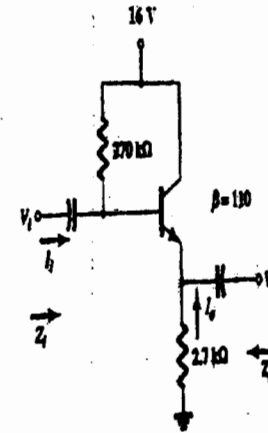


Fig. 4

3 Attempt any four parts of the following. $5 \times 4 = 20$

- (a) Define Op-Amp with the help of block diagram. Also describe the ideal characteristics of IC-741.
 (b) Explain :
 (i) Differentiator circuit using Op-Amp.
 (ii) Unity gain amplifier using Op-Amp.
 (c) For the network of Fig. 5, $V_D = 9V$. Determine I_D, V_{GS}, V_{DS}, V_p
 (d) Explain the construction and working of n channel enhancement type MOSFET.
 (e) Explain how FET used as Voltage Variable Resistance?
 (f) Find out the output voltages of the Fig.6.

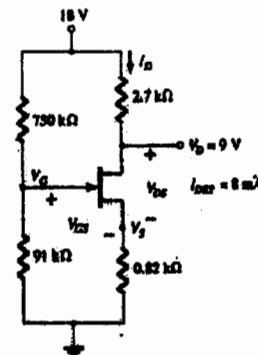


Fig.5

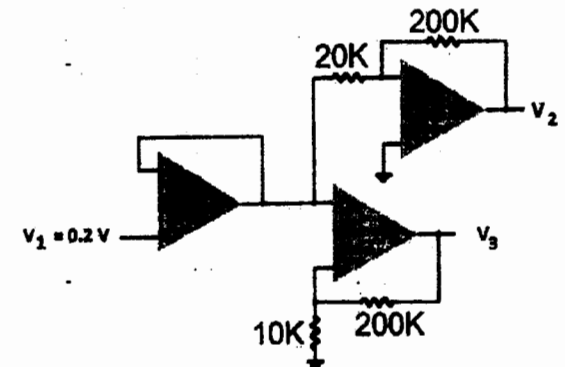


Fig.6

- 4 Attempt **any two** parts of the following: 10×2=20
- (a) Explain the basic principle of digital voltmeter with the help of block diagram.
 - (b) Explain how frequency and phase can be measured using CRO.
 - (c) Draw a neat block diagram of a cathode ray oscilloscope with proper labels. Also explain its working principle.

- 5 Attempt **any two** parts of the following: 10×2=20
- (a) Simplify the following expression using K-map and implement the output using universal logic gates.

$$F(A,B,C,D) = \sum M(1,3,4,6,8,9,13,15) + \sum d(0,2,14)$$

- (b) Simplify the following expression using Boolean algebra
 - (i) $F = AB + A(B + C) + B(B + C)$
 - (ii) $F = \overline{A}\overline{B}\overline{C}\overline{D} + \overline{A}\overline{B}D + B\overline{C}\overline{D} + \overline{A}B + B\overline{C}$
 - (c)
 - (i) Add and Subtract without converting their base of the following two Hexadecimal numbers, A4FB and 3FDC.
 - (ii) What are universal gates? Implement two inputs XOR gate using only 4 NAND Gates.
 - (iii) Convert the Binary number $(101011001110011)_2$ to a Gray number. Also convert Gray number $(111001100011)_{\text{Gray}}$ to Binary number.
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