



(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.

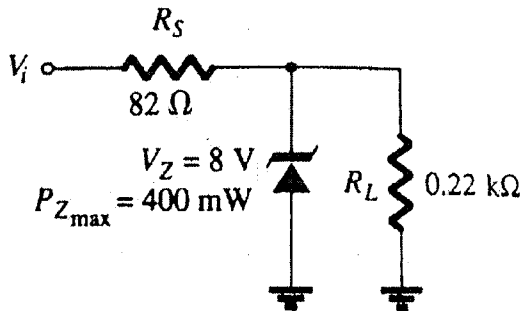


Fig.1

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

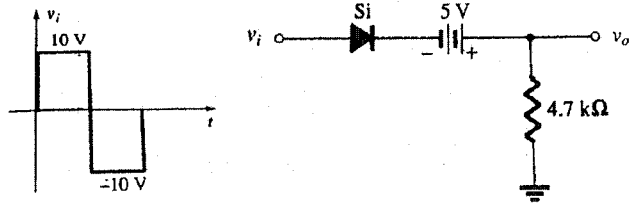


Fig.2

- (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.

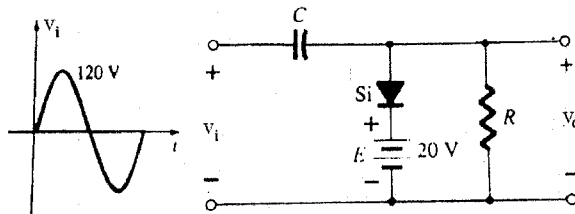


Fig.3

2 Attempt **any four** parts of the following: **5×4=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.

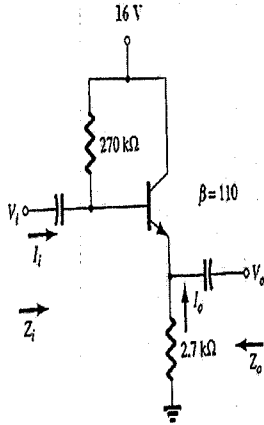


Fig. 4

3 Attempt **any four** parts of the following. 5×4=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,  $V_D = 9\text{ V}$ . 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.

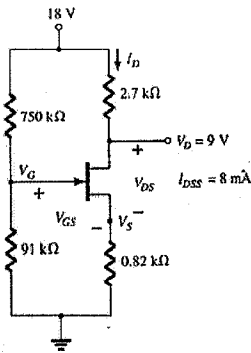


Fig.5

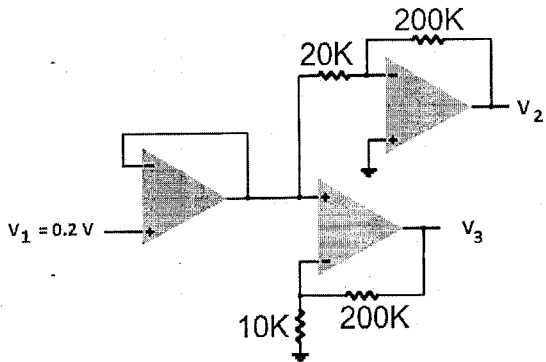


Fig.6

- 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)  $F = \overline{A}\overline{B}\overline{C}\overline{D} + \overline{A}\overline{B}D + B\overline{C}\overline{D} + \overline{A}B + \overline{B}\overline{C}$
  - (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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