

Printed Pages : 4



NEC-201/NEC-101

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

PAPER ID : 199226

Roll No.

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B. Tech.

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

Time : 3 Hours]

[Total Marks : 70

Note : All questions are compulsory.1 Attempt any four part of the following: 5×4=20

- (a) Draw and explain the working of a Bridge rectifier with input and output waveforms. Calculate efficiency and ripple factor.
- (b) Design a voltage regulator that will maintain an output voltage of 20 V across a 1-k Ω load with an input that will vary between 30 and 50 V. That is, determine the proper value of R_s and the maximum current I_{ZM} .
- (c) Determine and sketch V_o for the given network shown in Fig.1.

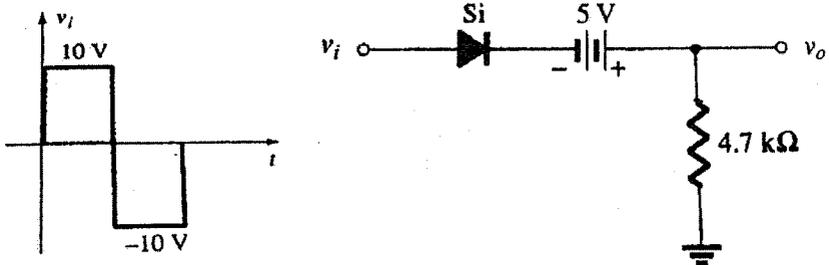


Fig.1

- (d) Determine V_o and the required PIV rating of each diode for the configuration of Fig.2.

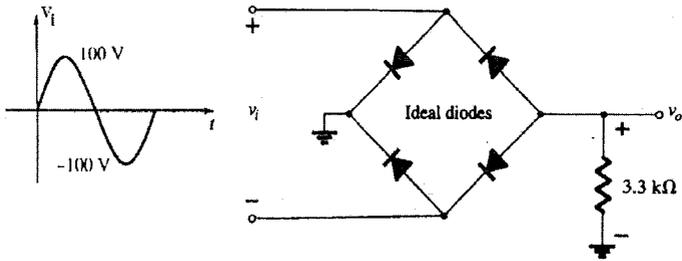


Fig.2

- (e) With the help of necessary diagram differentiate between Half wave and Full wave Voltage doubler.
- (f) Sketch V_o for the given network shown in Fig.3 for the input shown

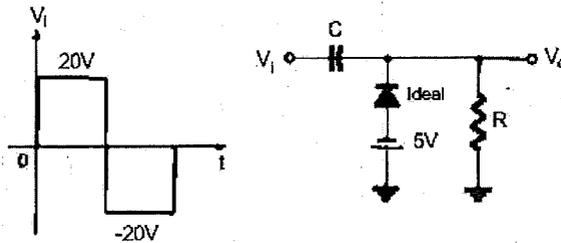


Fig. 3

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

- (a) Draw the input and output characteristics of CE npn transistor configuration with proper labels.
- (b) Explain with the help of necessary diagrams how FET can be used as VVR.
- (c) Determine Z_i, Z_o, V_o for the network of Fig.4 if $V_i = 20mV$

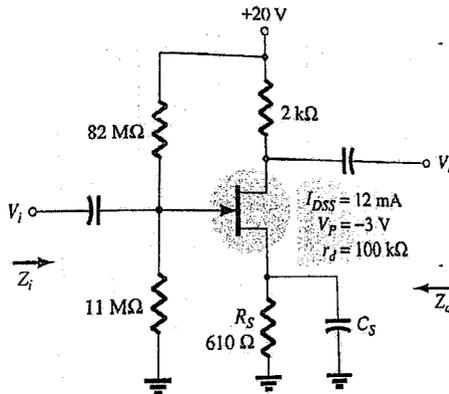


Fig. 4

- (d) For the common emitter or fixed bias configuration in Fig. 5, Determine r_e , Z_i , Z_o , A_v .

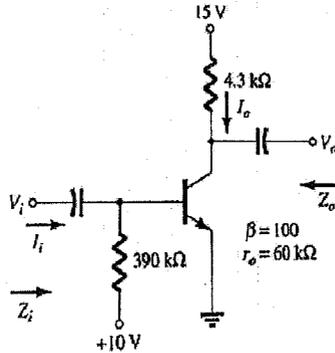


Fig. 5

- (e) Explain the construction and working of n channel depletion type MOSFET.
 (f) Derive the stability factor $S(I_{CO})$ for the Fixed bias configuration.

3 Attempt any two parts of the following: 10×2=20

- (a) Explain:
 (i) Differentiator circuit using Op-Amp.
 (ii) Non-Inverting amplifier using Op-Amp.
 (iii) Differential Amplifier using BJT with two modes of operation.
- (b) (i) Draw the circuit of an Op-Amp as voltage follower and find an expression for its voltage gain.
 (ii) Determine the output-voltage for the given circuit shown in Fig. 6.

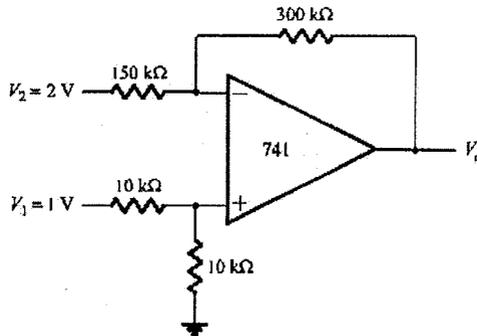


Fig.6

- (c) Define Op-Amp with the help of block diagram. Also describe the equivalent circuit along with its ideal and practical characteristics.
- 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. What are the characteristics of DVM?
- (b) (i) Explain how frequency and phase can be measured using CRO.
(ii) Explain working principle of Digital multimeter with the help of suitable Block diagram.
- (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) (i) What are the needs of modulation? Explain.
(ii) Explain with the help of block diagram the elements of communication systems.
- (b) What do you understand by modulation? Explain various modulation techniques. Also explain the demodulation technique of AM with the help of necessary diagram
- (c) (i) What do you understand by signal? Define various types of signals with suitable examples.
(ii) The antenna current of an AM transmitter 8 Amperes, when only the carrier is sent, but it increases to 8.93 Amperes when the carrier is modulated by a single sine wave. Find the % modulation. Determine the antenna current when the % of modulation changes to 0.8.
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