



DCEL101

Reg. No.

--	--	--	--	--	--	--	--

I Semester B.Sc. Degree Examination, May/June- 2022

ELECTRONICS

Electronic Devices & Circuits

(NEP 2020 Scheme)

Paper : ELE -CT1



Time : 2½ Hours

Maximum Marks : 60

Instructions to Candidates:

Answer all the questions from Part -A, any FOUR questions from Part-B and any FOUR questions from Part -C

Note: Answer all the questions of Part-A in any one page and to be answered only once. In this Part, answering the same question multiple times will not be considered for Evaluation.

PART - A

1. Answer All the Sub divisions

(12×1=12)

i) The circuit whose properties are same in either direction is known as

- | | |
|-------------------------|-----------------------|
| a) Unilateral circuit | b) Bilateral circuit |
| c) Irreversible circuit | d) Reversible circuit |

ii) For maximum transfer of power, internal resistance of the source should be

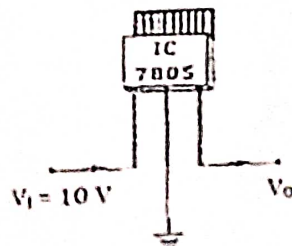
- | | |
|---------------------------------|------------------------------|
| a) equal to load resistance | b) Less than load resistance |
| c) Greater than load resistance | d) None of the above |

iii) Theoretical value of efficiency for a full Wave Rectifier is

- | | |
|----------|----------|
| a) 40.6% | b) 81.2% |
| c) 21.0% | d) 1.21% |

iv) Output voltage in the following circuit is

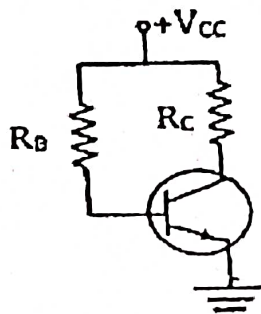
- | | |
|---------|---------|
| a) 10 V | b) 5V |
| c) -10V | d) -5 V |



[P.T.O.]



- v) The transistor gets the name BJT as the conduction is
- Due to immobile ions.
 - Due to only holes
 - Due to both holes and electrons.
 - Due to only electrons.
- vi) The correct relationship between the two current gains in BJT is
- $\alpha = \beta / 1 + \beta$
 - $\alpha = 1 - \beta$
 - $\alpha = \beta / 1 - \beta$
 - $\alpha = \beta + 1$
- vii) The biasing circuit shown in figure is
- Collector to base bias
 - Voltage divider bias
 - Emitter bias
 - Fixed bias



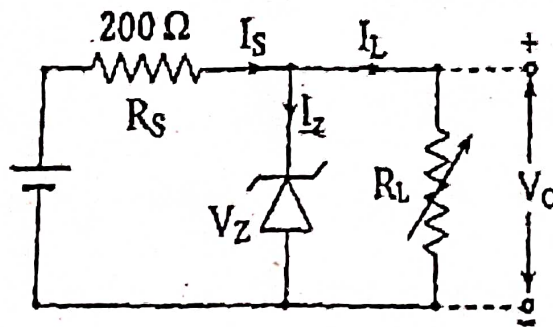
- viii) Common collector amplifier is always used as
- Voltage amplifier
 - Power amplifier
 - Impedance matching amplifier
 - audio amplifier
- ix) What is the input voltage of an amplifier with gain of 50 to generate 10V output?
- 1 V
 - 200mV
 - 1mV
 - 200V
- x) Which segments of a seven segment display need to be active in order to display a decimal digit 9 ?
- a, c, d, e, f
 - a, b, e, f, g
 - a, b, c, d, f, g
 - c, d, e, f
- xi) The BCD code for decimal number 10 is
- 1000 0000
 - 0101 0000
 - 0000 1010
 - 0001 0000



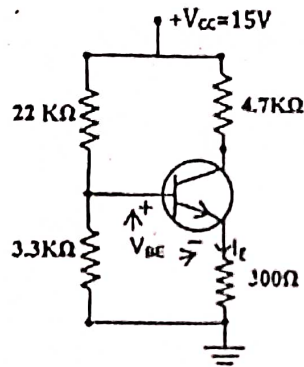
(4)

DCEL101

10. Calculate I_z (min) and I_z (max) in the circuit shown. Given: $V_Z=10V$, $V_{in}=36V$ and $P_Z=500mW$. (5)



11. Draw the DC load line and mark the operating point for the biasing circuit shown in figure using Silicon transistor. Given $\beta=200$. (5)



12. a) Subtract $20H$ from $5EH$ using 2's complement method.
b) Add $10111_{(2)}$ and $11010_{(2)}$ express the result in decimal. (3+2)
13. Simplify the Boolean expression $Y = [AB(C + AD) + \bar{A}\bar{B}]C$ and realise using basic gates. (5)
-