

POSSESSION OF MOBILE IN EXAMINATION IS A UFM PRACTICE

Name of Student ----- Enrolment No. -----

Department -----

BENNETT UNIVERSITY, GREATER NOIDA

Supplementary Examination, FALL SEMESTER 2018-19

COURSE CODE: EECE101L/EECE103L/EECE105L

MAX. DURATION: Three Hours

COURSE NAME: Fundamentals of Electrical and Electronics Engineering

COURSE CREDIT: 5

MAX. MARKS: 100

Note

- Answer all questions
- Assume any missing data

Questions

1. Convert 209.328(10) to binary. After radix point, six positions are desired. **(8 Marks)**
Radix point: or radix character is the symbol used in numerical representations to separate the integer part of a number from its fractional part.
2. Represent -87 in sign-bit (sign modulus) representation, 1's complement and 2's complement. Use 8-bits. **(9 Marks)**
3. Simplify the expression: $Y = (A + C)(AD + A\bar{D}) + AC + C$ **(8 Marks)**
4. Consider the circuit shown in fig. 1. Find the transfer function of the circuit if the output is taken between nodes A and B. What is the value of cut-off frequency of the filter circuit? **(10 Marks)**

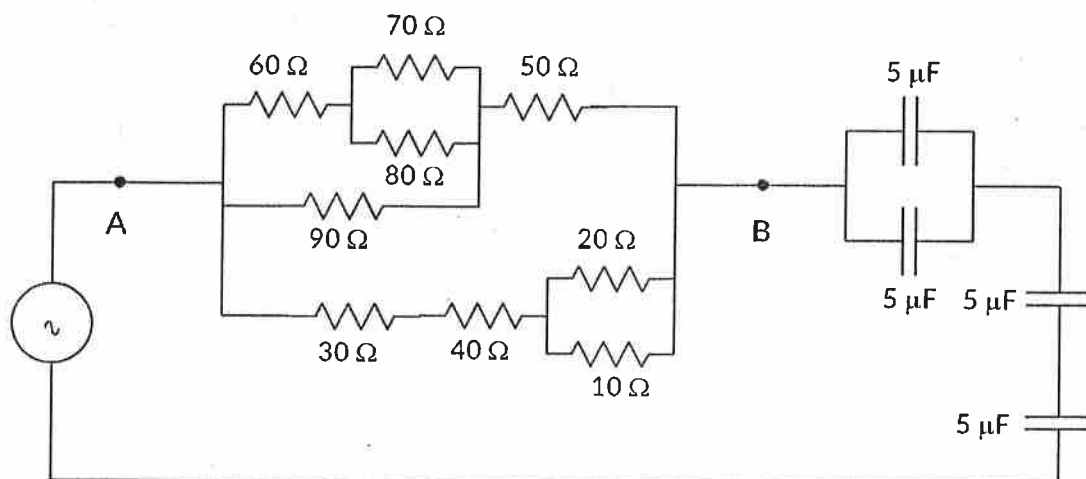


Fig. 1

5. A 20-volt peak to peak sinusoidal signal is given as an input to a bridge wave rectifier circuit which uses silicon diodes. The load consists of $1\text{ k}\Omega$ resistor. (i) Draw the bridge rectifier circuit diagram. (ii) Draw the voltage across the load resistance for one complete cycle. (iii) What is the power rating of the diode? (iv) What is the voltage that each diode has to hold across? **(10 Marks)**
6. For the circuit shown in Fig. 2, find the current and power absorbed by R_L for $R_L = 3\ \Omega$. Determine the value of R_L , which absorbs maximum power and determine the power. **(10 Marks)**

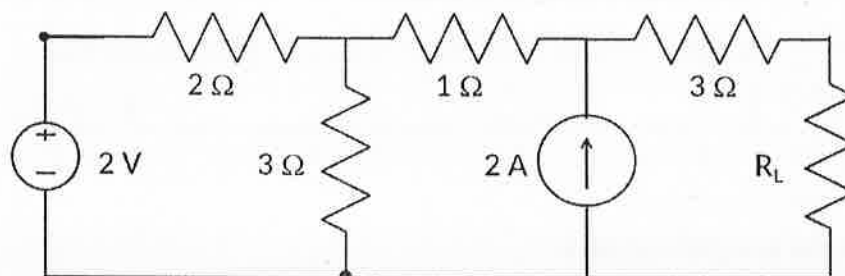


Fig. 2

7. Find the Thevenin equivalent circuit for the network across R in Fig. 3. **(15 Marks)**

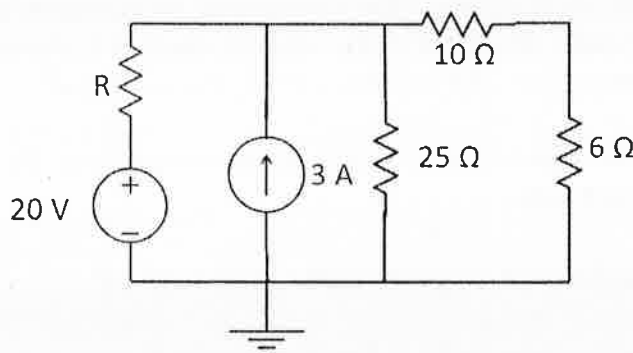


Fig. 3

8. Find the equivalent capacitance between points A and B in the circuit shown in fig. 4. Assume each capacitance is $1\ \mu\text{F}$. **(5 Marks)**

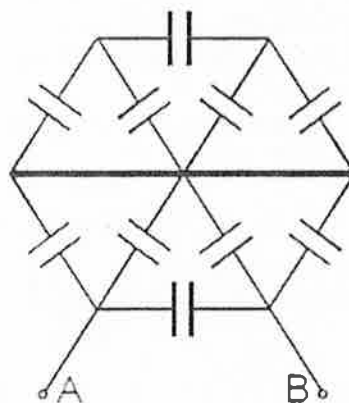


Fig. 4: Circuit for problem 8

9. Consider the truth table given in fig. 5. A, B and C are logic inputs, and 'Y' is logic output. Determine the standard POS expression and simplify the logic function as much as possible. **(10 Marks)**

A	B	C	Y
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	1
1	0	0	1
1	0	1	0
1	1	0	1
1	1	1	1

Fig. 5: Figure for problem 9

10. In the voltage regulator circuit shown in fig. 68, let $V_i = 6.3$ V, $R_i = 12 \Omega$, and $V_Z = 4.8$ V. The Zener diode current is to be limited to the range $5 \leq I_Z \leq 100$ mA. (i) Determine the range of possible load currents and load resistances. (ii) Determine the power rating required for the Zener diode and the load resistor. **(10 Marks)**

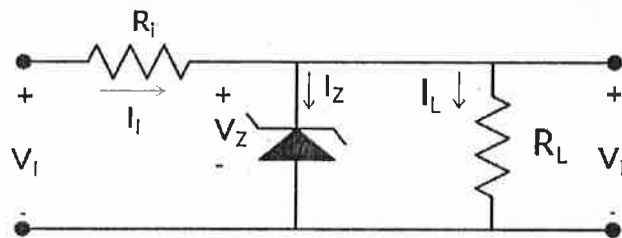


Fig. 6

11. Consider the signals given in (a). Two waves $f(t)$ and $g(t)$ are described by corresponding equations. From the wave equations, find which wave leads and which wave lags. Also find the angle of leading/lagging. **(5 Marks)**

$$f(t) = 10 \sin(\omega t + 30^\circ)$$

$$g(t) = 10 \sin(\omega t + 40^\circ)$$

(a)

----- End of Questions -----

