



M 18202

Reg. No. : .....

Name : .....

**Third Semester B.Tech. Engg. Degree (Regular/Supplementary) Examination,  
November 2010  
PT 2K6/2K6 EE/EC/AEI/CS/IT 302  
HUMANITIES**

Time : 3 Hours

Max. Marks : 100

*Instruction : All questions are compulsory.*

1. a) Rewrite the following sentences as suggested in the bracket. (5×1)
- Wait here \_\_\_\_\_ I get back.  
(Fill in the blank with a conjunction)
  - Monarch butterflies migrate to Mexico each year. They are guided by instinct.  
(Rewrite into complex sentence)
  - She/on a chair/sit  
(Form positive sentence in simple past tense)
  - Will you Alisha do that assignment for me.  
(Punctuate the sentence)
  - “Why don’t you speak English?”  
(Rewrite in reported speech)
- b) Fill in the blanks with suitable words from those given in the brackets. (5×1)
- He was \_\_\_\_\_ to see his birthday present.  
(anxious/eager)
  - The little boy finished the puzzle quickly and he got it \_\_\_\_\_  
(all right/alright)

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- iii) The twins are different \_\_\_\_\_ each other in several ways.  
(than/from)
- iv) The police are posted at all places to \_\_\_\_\_ tension created by the bomb blast.  
(defuse/diffuse)
- v) Since the car was at my \_\_\_\_\_ we decided to go for a picnic.  
(disposal/disposition)
- c) Complete each of the following sentences with an appropriate phrase choosing from (a), (b) or (c). (5×1)
- 1) The teacher asked the students to \_\_\_\_\_ the total marks.
  - 2) She was late to office and the traffic jam \_\_\_\_\_ her difficulties.
  - 3) Many ingredients have been \_\_\_\_\_ this dish.
  - 4) His huge salary is on account of the \_\_\_\_\_ to his basic pay.
  - 5) The accused was proved guilty as the evidence provided will not \_\_\_\_\_  
a) added to      b) add on      c) add up
- d) Use the following words in sentences of **your own** : (5×1)
- i) liable
  - ii) stationary
  - iii) acquit
  - iv) jovial
  - v) amnesia

2. Answer **any seven** of the following questions in a paragraph **each** :

- i) Describe the process of communication.
- ii) Explain the importance of technical communication.
- iii) Oral communication is more advantageous than written communication. Justify your opinion.
- iv) Which are the barriers that lead to miscommunication in an organization ?



- v) What is role of ethics in engineering ?
- vi) What is ethics and why is it important to act according to a code of principles ?
- vii) Write briefly about the major scientific and technical contributions of the Indian civilization.
- viii) Internet and social networking. Explain your view points.
- ix) The impact of science and technology on society. Explain.
- x) How has science contributed to the world of agriculture ? (7×5)
3. a) Technical revolution has overtaken cultural revolution. Express your views. (15×1)
- OR
- b) Write an essay on India a peaceful nation – Myth or Reality.
4. a) Write short notes on **any three** : (15×1)
- 1) Intrapersonal barrier in communication
  - 2) Noise
  - 3) Flow of communication in an Organization.
- OR
- b) Discuss the term communication and its process with examples.
5. a) People and modern technology your reflection on the human society. (15×1)
- OR
- b) Global life has it improved through agricultural science and technology.
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**Third Semester B.Tech. Engg. Degree (Regular/Supplementary)**  
**Examination, November 2010**  
**PT 2K6/2K6 EE 303 : MECHANICAL ENGG.**

Time: 3 Hours

Max. Marks: 100

*Instructions : i) Answer all questions.**ii) Use of heat transfer data hand book is permitted.*

1. a) Differentiate ideal fluids and real fluids. Give examples for both.
  - b) Write continuity, momentum and energy equations and explain briefly about their terms.
  - c) Explain the significance of critical thickness of insulation.
  - d) State and explain Stefan Boltzman law of radiation.
  - e) Differentiate impulse and reaction turbines. Give examples.
  - f) Explain the working principle of single stage single acting reciprocating compressor.
  - g) Discuss relative merits and demerits of conventional and non-conventional energy resources.
  - h) Draw the layout of hydel power plant and explain briefly. (8×5=40)
2. a) Derive the expressions for total pressure and position of centre of pressure in case of a inclined surface submerged in water. 15

OR

- b) Petrol of specific gravity 0.87 flows upward through a vertical pipe. A and B are two points in the pipe. B being 0.3 mt higher than A. Connections are led from A and B to a U tube manometer containing mercury. If the difference of pressure between A and B is  $1.8 \text{ N/cm}^2$  find the reading shown by the differential mercury manometer. 9
- c) State and prove Pascals law. 6

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3. a) The aluminium square fins ( $0.5 \text{ mm} \times 0.5 \text{ mm}$ ) of  $10 \text{ mm}$  length are provided on a surface to dissipate  $1 \text{ W}$  of energy. The surface temperature should not exceed  $80^\circ\text{C}$  when surrounding temperature is  $40^\circ\text{C}$ . Find number of first required, neglecting heat loss from the tip of the fins. Take  $K_{\text{aluminium}} = 200 \text{ W/m k}$ ,  $h = 15 \text{ W/m}^2 \text{ k}$ . 8
- b) State and explain Kirchoff's law. 7
- OR
- c) Derive one dimensional heat conduction equation in rectangular coordinates. State the assumptions made. 15
4. a) Why compounding is required in steam turbines ? What are the different types ? With a neat sketch explain about any one type. 15
- OR
- b) Show that thermal efficiency of ideal gas turbine cycle (Broyton cycle) is function of pressure ratio only. 8
- c) Differentiate reciprocating and rotary compressors. 7
5. a) Briefly explain about different types of boilers. Also give the list of boiler mountings and accessories and mention the function of each. 15
- OR
- b) What are the advantages and disadvantages of chain drive over best drive. 7
- c) Write a note on types of gears and their particular field of application. 8
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**Third Semester B.Tech. Engg. Degree (Regular/Supplementary)  
Examination, November 2010  
PT 2K6/2K6 EE 304 : ELECTRONIC CIRCUITS AND SYSTEMS**

Time: 3 Hours

Max. Marks: 100

*Instruction : Missing data may be suitable assumed. Answer all questions.*

PART - A

- 1. a) Briefly describe transition capacitance with reference to a diode.
- b) What is a diode clipper ? Give classification.
- c) Briefly describe the process of thermal runaway.
- d) Explain as how a transistor can be used as an amplifier.
- e) Give the high frequency response of a CE amplifier and describe the effect of capacitances.
- f) Briefly explain the working of a class B push pull amplifier.
- g) Explain how oscillations are generated in an oscillator.
- h) With a neat circuit diagram derive the expression for  $V_o$  of an integrator ckt. Draw the relevant waveforms. (8×5=40)

PART - B

- 2. a) i) The i/p vg  $V_i$  to the two level clipper shown below is  $20V_{p-p}$ . Carry out the analysis and sketch the o/p w/fs for the same.

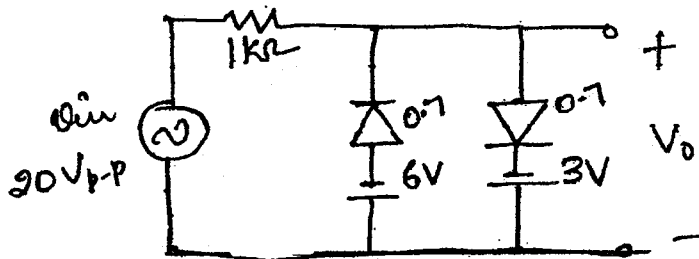


Fig. 1

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- ii) For the diode network shown below find the current  $I$  and voltages  $V_1$ ,  $V_2$  and  $V_o$ .

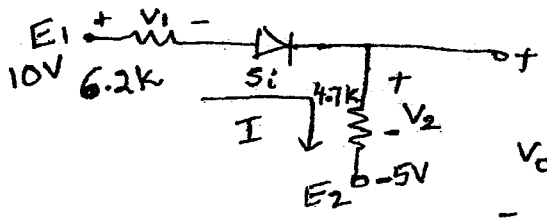


Fig. 2

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OR

- b) i) For the w/f shown below design a clamper network.

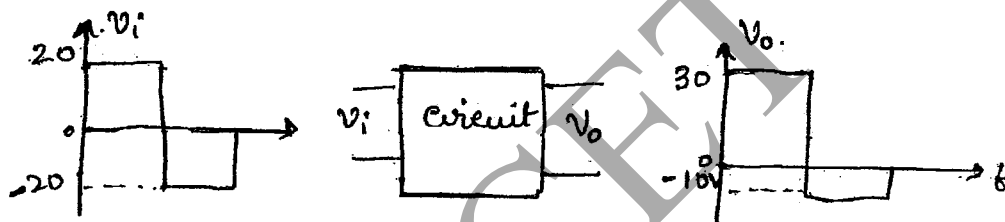


Fig. 3

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- ii) Explain with a neat diagram the working of a full wave rectifier. Derive an expression for  $I_{dc}$ .

10

3. a) i) For the biasing network shown below calculate  $V_{CC}$ ,  $V_E$ ,  $V_B$ ,  $V_{CE}$ ,  $I_C$  and  $R_1$ .

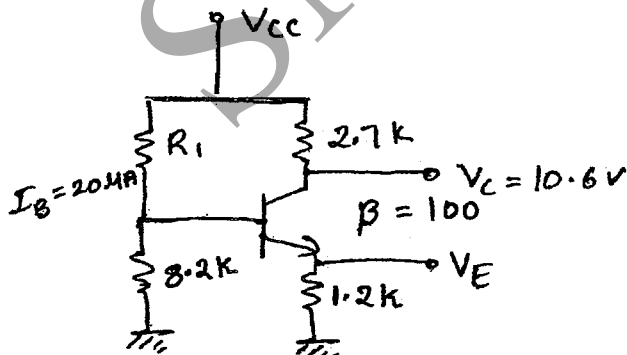


Fig. 4

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- ii) For the fixed Bias configuration carry out the de analysis to obtain  $V_{CEQ}$  and  $I_{CQ}$ .

5

OR



- b) For an voltage divider bias configuration carry out the exact and approximate analysis and obtain expressions for  $V_{CE}$  and  $I_C$ . **15**
4. a) Derive the expressions using hybrid  $\pi$  model for input conductance  $g_{b'e}$ , the feedback conductance  $g_{b'c}$  for a transistor at high frequency. **15**

OR

- b) For a series fed class A power amplifier carry out the dc analysis and derive the expressions for i/p power and o/p power. **15**
5. a) Derive the expressions for o/p  $v_o$  with neat circuit figures for (i) inverting amplifier (ii) non inverting amplifier (iii) subtractor. **15**

OR

- b) i) Design an RC n/w of an RC phase shift oscillator to operate at a frequency of 1 KHz. **5**
- ii) Derive an expression for the o/p  $v_o$  of a differentiator circuit with a neat circuit figure. Show the i/p and o/p waveforms. **10**
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**Third Semester B.Tech. Engg. Degree (Regular/Supplementary)**  
**Examination, November 2010**  
**PT 2K6/ 2K6 EE 305 : NETWORK ANALYSIS**

Time : 3 Hours

Max. Marks : 100

*Instruction : Answer all questions*

1. a) State and explain Norton's theorem.

b) Find the Laplace inverse of  $\frac{1}{S(S+4)}$  using convolution integral.

c) Derive the transient response of R.C. series circuit for DC excitation.

d) Two coupled coils have self-inductances  $L_1 = 10 \times 10^{-3} \text{H}$  and  $L_2 = 20 \times 10^{-3} \text{H}$ . The coefficient of coupling ( $k$ ) being 0.75 in the air, find voltage in the second coil and the flux of first coil provided the second coil has 500 turns and the circuit current is given by  $i_1 = 2 \sin 314t \text{A}$ .

e) Write a short note on even function symmetry in Fourier series.

f) Obtain Fourier coefficients for the function given by

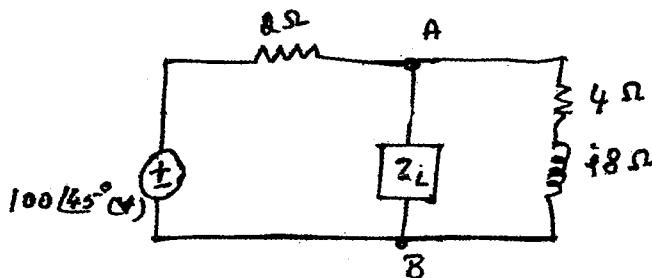
$$f(t) = (t + \pi) \text{ when } -\pi < t < \pi ; f(x + 2\pi) = f(x).$$

g) What is two port network ? Explain z parameters.

h) Prove that for transmission parameters condition of Reciprocity is  $AD - BC = 1$ .

(8×5=40)

2. a) In the network shown in figure determine the impedance  $z_L$  for which power transfer is maximum calculate the maximum power transferred to the load. 7

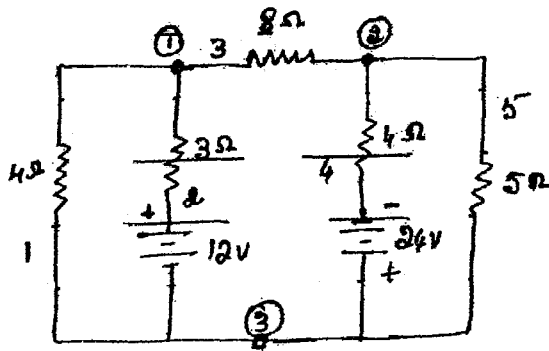


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- b) For the network shown in figure, draw the graph. Select a tree with branches having resistances  $3\Omega$  and  $4\Omega$  (branches 2 and 4). Draw the cut set matrix. Using topological form of KCL equation, find various branch voltages and currents. The branch numbers are marked with integers in the figure while node numbers are encircled.

15

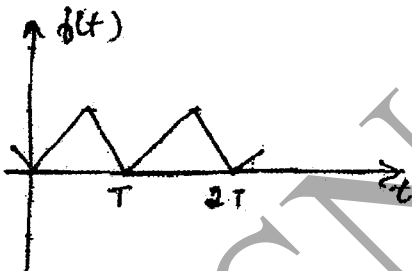


4. a) Explain or derive trigonometric form of Fourier series.

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- b) Find the amplitude of the 5<sup>th</sup> harmonic of the given waveform.

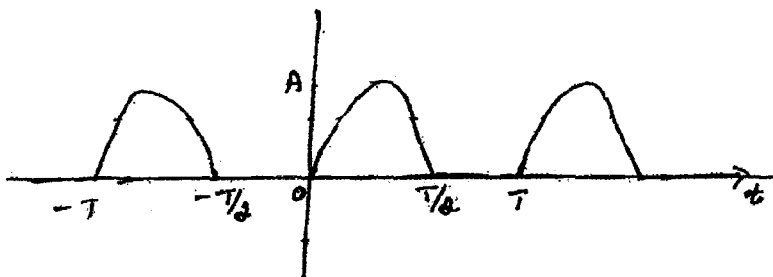
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OR

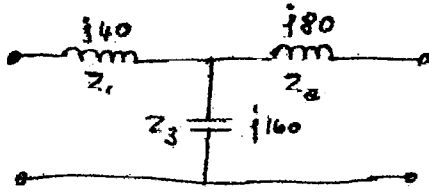
- c) Obtain the Fourier analysis of the waveform shown in figure

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5. a) Find Y-parameters of network shown in figure from Z-parameters. 7



b) The currents  $I_1$  and  $I_2$  at input and output port respectively of a two-port network can be expressed as :

$$I_1 = 5 V_1 - V_2$$

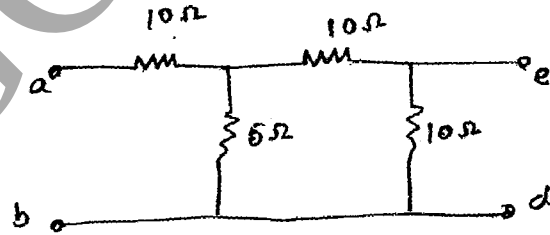
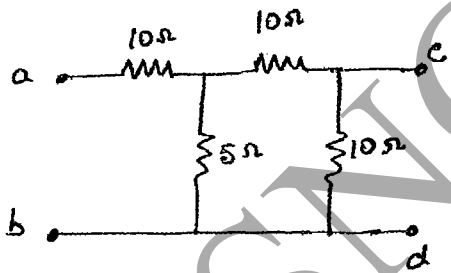
$$I_2 = -V_1 + V_2$$

a) Find the equivalent  $\pi$  network

b) Find the input impedance when a load of  $(3 + j 5)$  Ohms is connected across the output port. 8

OR

c) Two networks have been shown in figure. Obtain the transmission parameters of the resulting circuit when both the circuits are in cascade. 15



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**III Semester B.Tech. Engg. Degree (Regular/Supplementary) Examination,  
November 2010  
PT 2K6/2K6 EE 306 : ELECTRICAL MEASUREMENTS AND  
MEASURING INSTRUMENTS**

Time : 3 Hours

Max. Marks : 100

*Instruction : Answer all questions.*

- |   |   |
|---|---|
| 1. i) Explain the construction of permanent magnet moving coil instruments.   | 5 |
| ii) Write a brief note on shunts.   | 5 |
| iii) List advantages and disadvantages of electrodynamic wattmeter.           | 5 |
| iv) With a neat block diagram explain electronic energymeter.                 | 5 |
| v) Explain Brooks deflectional potentiometer.                                 | 5 |
| vi) List advantages and disadvantages of Maxwells bridge.                     | 5 |
| vii) List advantages and disadvantages of fluxmeter.                          | 5 |
| viii) Explain procedure for measurement of flux density using Ballistic test. | 5 |
| 2. a) Explain the construction of D'Arsonval Galvanometer.                    | 7 |
| b) Explain the construction of electrodynamic type instruments.               | 8 |
| OR  |   |
| c) Explain calibration of Ballistic Galvanometer using mutual inductance.     | 8 |
| d) Explain shunts and multipliers.  | 7 |
| 3. a) Explain the measurement of 3 phase power using two wattmeters.          | 7 |
| b) Explain the construction and working of a single phase energymeter.        | 8 |

OR



- c) A wattmeter connected to read the power consumed by an inductive load reads 25 W. The voltmeter across the supply and the pressure coil circuit reads 250 V. The ammeter connected in series with the current coil and the load reads 5A. The impedance of the pressure coil circuit is  $(2000 + j6)\Omega$ . The voltage drop across the ammeter and voltmeter are neglected. Find percentage error in wattmeter reading. 7
- d) Derive an expression for transformation ratio of C.T. 8
4. a) Explain Crompton's potentiometer. 7
- b) Explain measurement of capacitance using low voltage schering bridge. 8
- OR
- c) An inductance of 0.22 H and  $20\Omega$  resistance is measured by comparison with a fixed standard inductance of 0.1 H and  $40\Omega$  resistance. The unknown inductance is in arm ab and standard inductance is in arm bc a resistance of  $750\Omega$  is connected in arm cd and a resistance whose amount is unknown is in arm da. Find the resistance of arm da and show any necessary and practical additions required to achieve both resistive and inductive balance. 8
- d) Explain Vernier potentiometer. 7
5. a) With a neat block diagram, explain the components of a general purpose CRO. 8
- b) Explain Hall effect galvanometer. 7
- OR
- c) Write a note on hysteresis measurement. 8
- d) Explain the use of shunts with fluxmeter 7
-