Time: 3hrs.   Max. Marks: 75

SECTION-A (4 X 15 = 60 M)
Answer ALL Questions

1. **a)** Derive an expression for voltage gain for dual input balanced output differential amplifier. **(8M)**

   b) Explain the IC 741 op-amp block diagram and its features in detail. **(7M)**

   OR

   b) Explain the terms
   (i)Input &Output Off set voltages &currents (ii) slew rate (iii)CMRR and (iv)PSRR **(7M)**

   c) Explain DC analysis of differential amplifier. **(8M)**

2. **a)** Discuss in details about band pass and band reject filters**.** **(7M)**

   b) Explain the operation of second order low pass Butterworth filter. **(8M)**

   OR

   c) What is VCO draw and explain the functional block diagram of VCO. **(8M)**

   d) Draw and explain schematic diagram of a Wien bridge oscillator. **(7M)**

3. **a)** Draw and explain the block diagram of IC 555. **(8M)**

   b) Draw and explain the principle and description of PLL in detail. **(7M)**

   OR

   b) Discuss with relevant circuits and waveforms, working of monostable multivibrator using IC555 timer. **(15M)**

4. **a)** Classifications of integrated circuits in details. **(7M)**
   b) Draw and explain the operation of standard TTL NAND gate in detail. **(8M)**

   OR

   b) Comparison of TTL and CMOS logic families. **(8M)**
   c) what is interfacing. Draw and explain CMOS driving TTL**.** **(7M)**

Section-B (5 X 3 =15 Marks)

5. **Write a Short Note on any FIVE of the following**

   a) What are the different linear IC packages.

   b) What is an instrumentation amplifier and mention some applications.

   c) Draw the schematic of a second order High-pass filter and sketch the frequency response.

   d) write short notes on RC phase shift oscillator.

   e) what is phase-locked loop?.

   f) List out different A/D convertors &justify which A/D convertor is best in terms of speed.

   g) Design two input NAND gate using Cmos logic.

   h) Define CMOS transmission gate.

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Time: 3hrs.   **Max. Marks: 75**

SECTION-A (4 X 15 = 60 M)
Answer ALL Questions

1. **a**) Draw and explain the internal architecture of 8085 microprocessor **(8M)**
   b) What is an addressing mode Explain the addressing modes of 8085 **(7M)**
   Or
   c) Draw the timing diagram for op-code fetch machine cycle **(7M)**
   d) Explain the pin diagram and control signals of 8085 microprocessor **(8M)**

2. **a**) Explain the internal architecture of 8086 microprocessor **(7M)**
   b) Explain the instruction set of 8086 microprocessor **(8M)**
   Or
   c) Explain the maximum and minimum mode of operation of 8086 microprocessor **(8M)**
   d) Explain the memory segmentation of 8086 microprocessor. **(7M)**

3. **a**) Explain the concept of stack structure of 8086 microprocessor **(8M)**
   b) Write an Assemble language program to find number of even and odd numbers in an
   8- Bit array **(7M)**
   Or
   c) Explain different Maskable and Non-Maskable interrupts of 8086 microprocessor. **(7M)**
   d) Draw the interrupt vector table of 8086 microprocessor and explain its operation
   in detail. **(8M)**

4. **a**) Interfacing of a two 4X4 PROM and two 8X4 RAM with 8086 CPU, Draw the memory
   map and interfacing diagram for it, the RAM address follows the ROM address. **(8M)**
   b) Draw the 8255 PPI architecture and explain its operation of each block along with
   modes of it. **(7M)**
   Or
   c) Draw the 8257 DMA architecture and explain its operation along with register organization
   of DMA. **(8M)**
   d) Draw the 8251 USART architecture and explain the operation of each block in it. **(7M)**

Section-B (5 X 3 =15 Marks)
5. Answer any FIVE of the following:

   a) Draw the timing diagram for op-code fetch machine cycle.

   b) Draw the flag register of 8086 microprocessor and explain the function of each flag

   c) What is pipelining?

   d) Briefly explain about one -byte, two- byte and three -byte instructions with an example

   e) What is an assembly directive? List out the assembly directives in 8086 microprocessor.

   f) Differentiate between BSR and I/O modes of 8255 PPI.

   g) Explain about the interfacing of stepper motor to 8086 microprocessor.

   h) Differentiate between macro and procedure in 8086 assembly directives?

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ADIKAVI NANNAYA UNIVERSITY
III B.TECH – I SEMESTER
ELECTRONICS AND INSTRUMENTATION ENGINEERING
BTEIE 503 INDUSTRIAL INSTRUMENTATION - I
MODEL QUESTION PAPER

Time: 3hrs.   **Max. Marks: 75**

SECTION-A (4 X 15 = 60 M)
Answer ALL Questions

1. **a)** Explain the speed measurement using stroboscope technique **(12M)**
   b) What are the merits and demerits in stroboscope measurement **(3M)**
   Or
   c) Explain the toque measurement methods **(15M)**

2. **a)** Explain the vacuum pressure measurement using any two methods **(15M)**
   Or
   b) Explain about flapper nozzle arrangement for the measurement of pressure **(15M)**

3. **a)** Explain the flow measurement using magnetic and ultrasonic techniques. **(15M)**
   Or
   b) Explain the flow measurement using Hot -wire anemometer. **(8M)**
   c) with a neat diagram, Explain the principle and working of Rota meter **(8M)**

4. **a)** Explain the direct methods in level measurement **(8M)**

   b) Explain humidity measurement using hygrometer **(7M)**
   Or
   c) Discuss about capacitive and ultrasonic techniques in level measurement **(15M)**

Section-B (5 X 3 =15 Marks)
5. **Answer any FIVE of the following:**
   a) Describe hydraulic and pneumatic systems

   b) Define Reynolds number

   c) Define atmospheric pressure and vacuum pressure.

   d) What is a strain gauge and gauge factor?

   e) Explain any non-contact level measurement technique.

   f) What is a pitot tube?

   g) Draw and explain about thermal based flowmeter?

   h) Define absolute and relative humidity?

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Time: 3hrs.   Max. Marks: 75

SECTION-A (4 X 15 = 60 M)
Answer ALL Questions

1. **a)** What is management? Explain the Taylor's scientific management   **(15M)**
   Or
   b) Explain the Maslow's theory of human needs.   **(15M)**

2. **a)** What is meaning of HRM? Explain the functions of HR   **(15M)**
   Or
   b) Compare Vision, Mission, Strategies & Goals in its importance; also write model statements suitable for a Manufacturer of Electronics Components?   **(15M)**

3. **a)** What is JIT Approach, how can you use JIT concepts in manufacture of electronic goods? **(15M)**
   Or
   b) Compare features, merits & demerits of Product & Process Type of Layouts?   **(15M)**

4. **a)** Compare and contrast between CPM and PERT   **(15M)**
   Or
   b) What are the marketing strategies in each stage of PLC?   **(15M)**

Section-B (5 X 3 =15 Marks)
5. **Answer any FIVE of the following:**
   a) Explain about Planning

   b) What are the leadership styles?

   c) Discuss merit rating.

   d) Explain about welfare administration

   e) What is balanced score card?

   f) Explain about BPR

   g) Write about PERT

   h) What is marketing Mix?

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Time: 3hrs.   Max. Marks: 75

SECTION-A (4 X 15 = 60 M)
Answer ALL Questions

1. **a)** For a series RC circuit, Determine the voltage across the resistor and capacitor with the help of initial conditions.   **(15M)**

Or

   b) What is the response of an R-L network for unit step excitation   **(5M)**

   c) In the network shown in figure.1, the switch is closed at t=0.Find the values of i_1 (t) and i_2 (t) assuming zero initial currents through inductors   **(10M)**
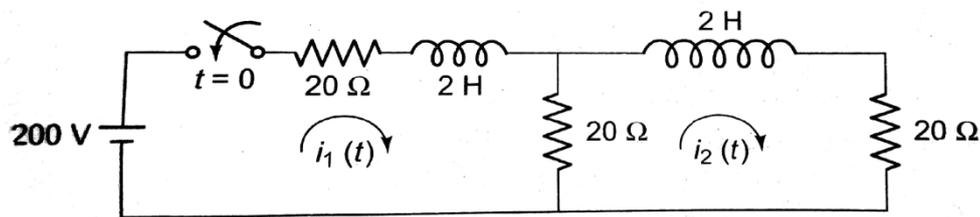
Figure: 1

2. **a)** A two-port network has the following parameters: $Z_{22} = 40$ ohms, $Z_{11} = 30$ ohms and $Y_{12} = 0.05$mhos. Calculate the ABCD parameters of the network   **(7M)**

   b) For a two-port network, convert Y-parameters in terms of Z-parameters.   **(8M)**

Or

   c) Find the h-parameters of the network shown in figure 2   **(15M)**
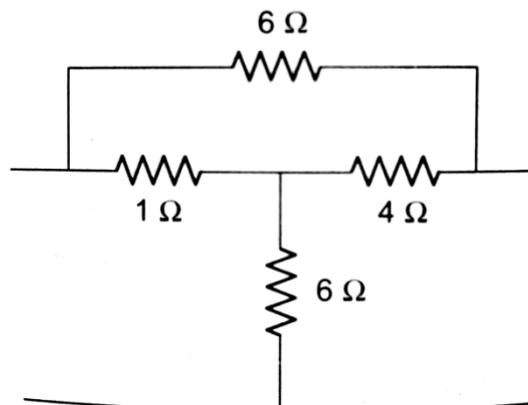
Figure: 2

3. **a)** Define Armature Reaction and state its effect   **(5M)**

    b) Compare separately excited DC generator with self excited generator   **(10M)**

                                         OR
    c) Explain the principle of operation of dc motor with neat sketch   **(10M)**
    d) With neat circuit diagram, explain the procedure to conduct Swinburne's test   **(5M)**

4. **a)** What is the efficiency of transformer? How the efficiency of transformer can be
    calculated?   **(15M)**
                                         Or
    b) Describe the constructional features of both slip ring and squirrel cage induction motor.

    Discuss the merits of one over the other   **(10M)**

    c) Derive the EMF equation of a alternator   **(5M)**

Section-B (5 X 3 =15 Marks)

5. **Write a Short Note on any FIVE of the following**

    a) Define time constant.

    b) Why cannot the current in a pure inductor change in zero time?

    c) Write the defining equations for ABCD parameters of a two-port network

    d) Define admittance and reactance of a network.

    e) What is the Importance of critical field resistance?

    f) Explain why the EMF generated in the armature of a DC motor is called "back emf".

    g) Discuss the purpose of oil used in transformer.

    h) On what principle does induction motor work?

Time: 3hrs.   **Max. Marks: 75**

SECTION-A (4 X 15 = 60 M)
Answer ALL Questions

2. **a)** what are different types of process variables **(8M)**

 b) Define degrees of freedom with examples **(7M)**

Or

 c) What are the characteristics of liquid ,gas and thermal system. **(15M)**

2. **a)** What is a control valve? Explain its characteristics **(10M)**

 b) write a short notes on control valve sizing. **(5M)**

Or

 c) Explain different types of electrical and pneumatic actuators **(15M)**

3. **a)** Explain about Ziegler and Nichols method for controller tuning **(15M)**

Or

 b) Explain in detail about IAE, ISE, ITAE evaluation criteria **(8M)**

 c) Discuss about discontinuous control mode **(7M)**

4. **a)** State the necessity of split range control for a process **(5M)**

 b) Explain the principles of split range control for multiple inputs by taking example **(10M)**

Or

 b) Write short notes on Ratio control and cascade control **(15M)**

Section-B (5 X 3 =15 Marks)

5. Answer any FIVE of the following:

 a) Define the process with suitable examples.

 b) What is Self Regulation in process control?

 c) Draw the block diagram of process control instrumentation

 d) List out pneumatic actuators.

 e) What are the differences between batch and continuous processes?

 f) List out the continuous control modes.

 g) What is feed forward control?

 h) What is adaptive control?

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