

Hall Ticket Number :

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**R-11/R-13**

**Code : 1G361**

III B.Tech. II Semester Regular & Supplementary Examinations May 2016

**VLSI Design**

( *Electronics and Communication Engineering* )

**Max. Marks: 70**

**Time: 03 Hours**

Answer any five questions

All Questions carry equal marks (14 Marks each)

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- 1 Write short notes on the following
  - (a) Ion Implantation 4M
  - (b) Encapsulation 3M
  - (c) Lithography 4M
  - (d) Oxidation 3M
  
2. a) Explain with neat diagrams about various forms of pull up's 8M  
b) Explain n MOS inverter with neat circuit diagram 6M
  
3. a) Explain VLSI design flow with neat sketch 7M  
b) Discuss in detail about limitations on scaling 7M
  
4. Discuss the following in brief
  - (a) Driving large capacitive loads 7M
  - (b) Switch logic 7M
  
5. Explain the following with neat diagrams.
  - (a) Parity generators 7M
  - (b) High density memory elements 7M
  
6. Discuss about
  - (a) FPGAs 7M
  - (b) Standard cells 7M
  
7. Explain the following
  - (a) VHDL Synthesis 7M
  - (b) Design capture tools 7M
  
- 8 Write about
  - (a) Chip level test techniques 7M
  - (b) System level test techniques 7M

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Code : 1G362

III B.Tech. II Semester Regular &amp; Supplementary Examinations May 2016

**Microwave Engineering***( Electronics and Communication Engineering )***Max. Marks: 70****Time: 03 Hours**

Answer any five questions

All Questions carry equal marks (14 Marks each)

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1. a) Evaluate expressions for the fields in rectangular waveguides in case of Transverse Magnetic (TM) wave. 10M
- b) A rectangular waveguide has a cross section of 1.5cm X 0.8cm,  $\sigma = 0$ ,  $\mu = \mu_0$  and  $\epsilon = 4\epsilon_0$ . The magnetic field component is given as
 
$$H_x = 2 \sin\left(\frac{fx}{a}\right) \cos\left(\frac{3fy}{b}\right) \sin(fx10^{11} - sz) \text{ A/m.}$$

Determine

  - i. The mode of operation
  - ii. The cut off frequency
  - iii. The phase constant
  - iv. The propagation constant
  - v. The wave impedance 4M
2. a) Explain and derive the expression for Quality factor Q of micro strip line. 10M
- b) Explain various applications of Microwaves 4M
3. a) Mention different types of phase shifters; explain briefly their principle of working. 10M
- b) What are scattering parameters? Why they only are suitable at microwave frequencies to model a network. 4M
4. a) What are tuning screws and posts? Differentiate them from coupling probes and loops. 7M
- b) Describe microwave component which makes use of Faraday rotation principle. 7M
5. a) Analyze the reflex klystron and find expressions for its output and efficiency. 10M
- b) A reflex klystron operates at the peak of  $n = 2$  mode. The dc power input is 45mW and  $V_1/V_0 = 0.3$ . If 25% of the power delivered by the beam is dissipated in the cavity walls, find the power delivered to the load. 4M
6. a) With respect to travelling wave magnetron, explain the following terms
  - I.  $\pi$ -mode oscillations
  - II. Strapping
  - III. Frequency pulling
  - IV. Frequency pushing 8M
- b) An X-band conventional magnetron has an anode voltage of 50 KV and current 50 A. It is applied an axial magnetic flux density of 0.01Wb/m<sup>2</sup>. The radii of cathode and anode are  $a = 4$  cm and  $b = 8$  cm respectively. Calculate cyclotron angular frequency, hull cut-off voltage and hull cut-off magnetic field. 6M
7. a) Explain different possible modes of Gunn diode operation 7M
- b) Differentiate TRAPATT diodes from IMPATT diodes. Give typical values of output power and frequency of TRAPATT diode. 7M
8. a) Describe various techniques of measuring unknown frequency of a microwave generator. 7M
- b) A slotted line is used in association with an X-band microwave source, When the line is terminated by a short circuit, adjacent nulls are found at position which are shown as 9.27cm and 11.05 cm. What is the value of the guide wavelength? 7M

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**R-11/R-13**

**Code : 1G363**

III B.Tech. II Semester Regular & Supplementary Examinations May 2016

**Microprocessors and Interfacing**

( *Electronics and Communication Engineering* )

**Max. Marks: 70**

**Time: 03 Hours**

Answer any five questions

All Questions carry equal marks (14 Marks each)

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1. a) Describe Intel 8086 Microprocessor Architecture. 8M  
b) Distinguish between a memory read and write machine cycle. Draw the timing diagrams in minimum and maximum modes of operation. 6M
  
2. a) Discuss the addressing modes of 8086 microprocessor. 8M  
b) Give the assembly language implementation of the following,  
(i) DO-WHILE  
(ii) FOR. 6M
  
3. a) Draw the block diagram of 8255 and explain each block. 8M  
b) Write an ALP in 8086 to generate a symmetrical square waveform with 1 kHz frequency. Give the necessary circuit setup with a DAC. 6M
  
4. a) Explain briefly about memory interfacing with 8086 microprocessor. 6M  
b) Explain the working of 8257 DMA controller With a neat block diagram. 8M
  
5. a) Describe the interrupt vector table of Intel processors. 6M  
b) Discuss the DOS and Bios interrupts. Give necessary examples. 8M
  
6. a) Describe the mode of operations used in 8253 programmable interval timer/counter. 6M  
b) Explain the block diagram of the 8279 Keyboard/Display interface and its operations. 8M
  
7. a) Distinguish between synchronous and asynchronous serial data transmission techniques. Discuss the advantages and disadvantages. 6M  
b) Draw the block diagram of 8251 and explain about each block. 8M
  
8. a) Explain the internal block diagram of 80286. 8M  
b) Discuss the concept of paging in 80386 processor. 6M

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**Code : 1G364**

III B.Tech. II Semester Regular &amp; Supplementary Examinations May 2016

**Digital and Data Communications***( Electronics & Communication Engineering )***Max. Marks: 70****Time: 03 Hours**

Answer any five questions

All Questions carry equal marks (14 Marks each)

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1. a) Give the comparison between PCM and DM systems. 5M  
 b) Explain the following operations in PCM system  
     i) Sampling  
     ii) Quantization  
     iii) Encoding 9M
2. a) Write in detail about  
     i) ASK  
     ii) FSK with waveforms and equations. 8M  
 b) Explain the working of DEPSK system. 6M
3. a) Derive the transfer function  $H(f)$  of the Optimum filter. 7M  
 b) Derive the expression for probability of error for BPSK system. 7M
4. a) An analog signal is band limited to  $B$  Hz. sampled at the Nyquist rate, and the samples are quantized into 4 levels. The quantized levels  $Q_1, Q_2, Q_3$  and  $Q_4$  (messages) are assumed independent and occur with probabilities  $P_1=P_2=1/8$  and  $P_3=P_4=3/8$ . Find i) Average information ii) Information rate. 8M  
 b) Derive the expression for capacity of Gaussian channel. 6M
5. a) The parity check matrix of a particular  $(7, 4)$  linear block code is given by  

$$H = \begin{pmatrix} 1110100 \\ 1101010 \\ 1011001 \end{pmatrix}$$
. Find  
     i) Generating matrix  $G$   
     ii) The code vectors for the data words 0011 and 1101. 8M  
 b) Explain about Trellis diagram. 6M
6. a) Describe the layered network architecture. 7M  
 b) Explain about data communication protocols. 7M
7. a) Draw the simplified block diagram of a two station data communication circuit and explain. 7M  
 b) List and briefly describe the data communication network topologies. 7M
8. a) Give the comparison between circuit switching and packet switching. 7M  
 b) Explain about ATM. 7M

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<b>R-11/R-13</b>
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**Code : 1GA62**

III B.Tech. II Semester Regular & Supplementary Examinations May 2016

**Management Science**

( *Electronics and Communication Engineering* )

**Max. Marks: 70**

**Time: 03 Hours**

Answer any five questions

All Questions carry equal marks (14 Marks each)

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1. a) What are the objectives of management? Highlight the importance of Taylor's scientific management. 7M  
 b) List and explain Fayol's principles of management. 7M
2. a) Define word study. Differentiate between batch and mass production. 7M  
 b) List the factors considered for plant location and explain them with examples. 7M
3. a) Describe the different functions of marketing in terms of their impact on organization. 7M  
 b) Examine the significance of market segmentation and target marketing with suitable examples. 7M
4. a) Define HRM policy with an example. Explain the advantages of HRM. 7M  
 b) List the factors which affect training and development and explain these factors. 7M
5. Table below gives the time and cost data with respect to normal and crash periods of a project.  
 (a) Draw the n/w of the project,  
 (b) What is the normal duration and cost of the project?  
 (c) Determine the project cost if all activities are crashed indiscriminately  
 (d) Determine the optimum project duration, if the indirect cost is Rs. 150/day

Activity	Normal time (days)	Normal cost (Rs.)	Crash time (days)	Crash cost (Rs.)
1-2	3	360	2	400
2-3	6	1400	4	1600
2-4	9	2000	5	2600
2-5	7	1000	5	1500
3-4	8	400	4	600
4-5	5	1600	3	2000
5-6	3	500	2	750

14M

6. a) List and explain the elements of corporate planning process. 7M  
 b) How critical is the process of environmental scanning? Illustrate with an example. 7M
7. a) Identify the benefits of MIS and explain the various modules involved in MIS with illustrations 7M  
 b) What is enterprise resource planning? List its applications. 7M
8. a) Analyze the advantages of ethics in an organization with examples. 7M  
 b) Evaluate the ethical issues involved in human resource management. 7M

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Hall Ticket Number :

R-11/R-13

Code : 1G365

III B.Tech. II Semester Regular & Supplementary Examinations May 2016

**Electronic Measurements and Instrumentation**

( Electronics & Communication Engineering )

Max. Marks: 70

Time: 03 Hours

Answer any five questions

All Questions carry equal marks (14 Marks each)

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1. a) Explain how the Range of D.C voltmeter is extended? 7M  
b) A basic 'D' Arsonval movement with an internal resistance  $R_m = 50\text{ohms}$  and full scale current  $I_{fsd} = 0.5\text{mA}$  is to be converted into a multistage D.C voltmeter with range of 0-10V, 0-50V and 0-250V. Show the arrangement with the help of neat diagram with the values of resistances used? 7M
2. a) What is arytion shunt? Describe it with a neat sketch. 7M  
b) Design a universal arytion shunt to provide an ammeter with a current range of 2A, 5A, and 10A using a D' arsonval movement with an internal resistance  $R_m = 50\text{ ohms}$  and full scale deflection current of 1mA. 7M
3. a) Explain the operation of heterodyne wave analyzer? 7M  
b) Explain the front –panel description of Signal generator? 7M
4. Draw the neat diagrams of vertical and horizontal deflection systems of CRO and explain their working in detail 14M
5. Explain the operation of Storage Oscilloscope with a neat block diagram? 14M
6. a) Draw the circuit diagram of Schering bridge and derive conditions for balance? 7M  
b) Find the equivalent parallel resistance and capacitance that causes a Wien bridge to null with the following component values.  
 $R_1 = 2\text{k ohms}$ ,  $C_1 = 0.1\mu\text{F}$ ,  $R_2 = 10\text{K ohms}$ ,  $R_3 = 50\text{K ohms}$ ,  
 $R_4 = 20\text{K ohms}$ ,  $f = 1\text{KHz}$ . 7M
7. a) Derive the expression for gauge factor for strain gauge? 7M  
b) Explain the Piezo – electric effect in detail? 7M
8. a) Draw the block diagram of Strip – chart recorder and explain its working. 7M  
b) Explain different digital data recording techniques? 7M

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