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**R18**

Course Code: A30414



**CMR COLLEGE OF ENGINEERING & TECHNOLOGY**  
(UGC AUTONOMOUS)

B.Tech V Semester Supplementary Examinations December-2024

Course Name: **Electronic Measurements & Instrumentation**  
(Electronics & Communication Engineering)

Date: 16.12.2024 AN

Time: 3 hours

Max.Marks: 70

(Note: Assume suitable data if necessary)

**PART-A**

Answer all TEN questions

Each question carries TWO marks.

10x2=20M

1. What is meant by D'Arsonval Movement? 2 M
2. Define Root sum squares formula. 2 M
3. Distinguish between Spectrum analyzer and heterodyne wave analyzer. 2 M
4. Compare pulse square wave and sweep frequency generators. 2 M
5. What is the need of Lissajous Figures? 2 M
6. Differentiate between Dual trace and Dual beam CROs. 2 M
7. What do you understand by LVDT? 2 M
8. What is the principle of piezo electric transducer? 2 M
9. Discuss the Kelvin Double Bridge. 2 M
10. What is Data Acquisition Systems? 2 M

**PART-B**

Answer the following. Each question carries TEN Marks.

5x10=50M

- 11.A). i) What are various measuring errors, explain in detail? 5M  
ii) Derive the expression for series resistance in DC voltmeter with neat diagram. 5M
- OR**
- 11.B). i) Describe the working principle of True RMS Responding AC voltmeter with neat diagram. 5M  
ii) Explain the static characteristics of measuring instruments. 5M
- 12.A). i) Explain about the function generator using neat block diagram. 5M  
ii) Describe the working of super heterodyne wave analyzer using neat block diagram. 5M
- OR**
- 12.B). i) Discuss the spectrum analyzer with neat diagram. 5M  
ii) Explain the working principle of video signal generators. 5M
- 13.A). i) Describe how to measure the phase difference between two sinusoidal signals using Lissajous Figure. 5M  
ii) Analyze the working principle of Digital Storage CROs. 5M
- OR**
- 13.B). i) Describe the working of CRO using neat block diagram. 5M  
ii) Describe the working of sampling oscilloscopes with neat diagram. 5M

(P.T.O.)

14. A). i) What is the role of strain gauges, explain? 5M  
ii) Describe the working principle of special resistance thermometers. 5M

**OR**

14. B). i) Explain the operation of LVDT using neat diagram. 5M  
ii) Which type of transducer is suitable to measure the displacement, Explain? 5M

15. A). i) Explain the working of Kelvin Double Bridge with neat diagram. 5M  
ii) How to measure the liquid levels, discuss with suitable figures? 5M

**OR**

15. B). i) Classify the various physical parameters measurements and explain flow of liquid measurement. 5M  
ii) Describe the working of Max well's Bridge. 5M

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**R18**

Course Code: A30411



**CMR COLLEGE OF ENGINEERING & TECHNOLOGY**  
(UGC AUTONOMOUS)

**B.Tech V Semester Supplementary Examinations December-2024**

**Course Name: Antenna & Wave Propagation**

**(Electronics & Communication Engineering)**

**Date: 18.12.2024 AN**

**Time: 3 hours**

**Max.Marks: 70**

(Note: Assume suitable data if necessary)

**PART-A**

Answer all **TEN** questions

Each question carries **TWO** marks.

**10x2=20M**

1. An antenna has field given by  $E(\theta) = \cos \theta$  for  $0^\circ \leq \theta \leq 90^\circ$ . Find HPBW. 2 M
2. Write the radiation resistance of short dipole antenna. 2 M
3. What are the basic elements of Yagi-Uda array? 2 M
4. What are the different modes of operation in helical antenna? 2 M
5. Mention the general properties of parabola antenna. 2 M
6. Give two application of lens antenna. 2 M
7. Write the expression for the total field of two isotropic point sources of same amplitude and phase. 2 M
8. Describe in brief about indoor and outdoor ranges. 2 M
9. Sky wave propagation is used for \_\_\_\_\_ distance communication. 2 M
10. The ratio  $\sigma/\omega\epsilon$  is called \_\_\_\_\_. 2 M

**PART-B**

**Answer the following. Each question carries TEN Marks.**

**5x10=50M**

- 11.A). Define: 10M
- (i) Beam area
  - (ii) Radiation pattern
  - (iii) Antenna efficiency
  - (iv) Gain
  - (v) Directivity

**OR**

11. B). Show that the radiation resistance of electric dipole antenna is  $R_r = 80\pi^2 (l/\lambda)^2$ . 10M
12. A). Explain the operation of Yagi-Uda array antenna with neat sketches. 10M

**OR**

12. B). Estimate the principle of operation of horn antenna with neat sketch along with the advantages disadvantages and application of horn antenna. 10M
13. A). Write a short note on: 10M
- (i) Patch antenna
  - (ii) Parabolic reflector

**OR**

13. B). i) Explain in detail about Cassegrain feed technique. 5M
- ii) Write a note on feeder of reflector antenna. 5M

**(P.T.O.)**

14. A). i) Analyze the field pattern of end fire array of 4-isotropic point source of same amplitude and  $\lambda/2$  spacing apart. 6M  
ii) Given a linear, broadside, uniform array of 10 isotropic elements ( $N = 10$ ) with a separation of  $\lambda/4$  ( $d = \lambda/4$ ) between the elements, find the directivity of the array. 4M

OR

14. B). i) What is reciprocity in antenna measurements elaborate in detail the principle involved in it? 5M  
ii) Write a note on typical sources of errors in antenna measurements. 5M

15. A). i) Derive the expression for the resultant wave strength at a point due to space wave propagation. 4M  
ii) Derive the expression for line of sight (LOS) in space wave propagation. 6M

OR

15. B). Explain the meaning of following terms in connection with sky wave transmission and indicate briefly the factors on which they depend. 10M  
(i) Maximum usable frequency  
(ii) Optimum traffic frequency  
(iii) Vertical incident critical frequency  
(iv) Skip distance.

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**R18**

Course Code: A30412



**CMR COLLEGE OF ENGINEERING & TECHNOLOGY**  
(UGC AUTONOMOUS)

B.Tech V Semester Supplementary Examinations December-2024

Course Name: **Linear & Digital IC Applications**

(**Electronics & Communication Engineering**)

Date: 20.12.2024 AN

Time: 3 hours

Max.Marks:70

(Note: Assume suitable data if necessary)

**PART-A**

Answer all TEN questions

Each question carries TWO marks. 10x2=20M

1. List out any four characteristics of op-Amp used for ac applications. 2 M
2. What are the disadvantages of open loop op-Amp configurations? 2 M
3. Mention the applications of All pass filters. 2 M
4. Draw the pin diagram of IC555. 2 M
5. Compare all Analog to Digital Converters. 2 M
6. What are the drawbacks of weighted resistor DAC? 2 M
7. Draw the schematic of CMOS transmission gate. 2 M
8. What are the modifications need to be done when CMOS IC is driving the TTL IC? 2 M
9. Draw the excitation table of D-flip-flop. 2 M
10. List out various types of ROM s available. 2 M

**PART-B**

Answer the following.Each question carries TEN Marks. 5x10=50M

- 11.A). Derive the voltage gain of closed loop op-Amp Inverting amplifier. Draw the circuit diagram. 10M
- OR**
11. B). Design a practical differentiator using op-Amp for  $f_{max}=100\text{Hz}$ . Assume the value of the capacitor as 0.1  $\mu\text{f}$ . Draw the designed circuit. 10M
12. A). Explain the operation of square wave generator using op-Amp with the help of circuit diagram. Draw the required waveforms. 10M
- OR**
12. B). Draw the block schematic of IC 565 PLL and describe the individual blocks in brief. 10M
13. A). Design a 3-bit weighted resistor DAC which produces 5V output for full scale reading. 10M
- OR**
13. B). Describe the operation of successive approximation DAC. 10M
14. A). Show that 2 numbers of 4-bit adders can be connected as 8-bit parallel adder. 10M
- OR**
14. B). Explain about the BCD-TO-7-segment decoder. 10M
15. A). Explain the working of up/down synchronous counters. 10M
- OR**
15. B). With the help of neat diagram explain the Architecture of ROM. 10M

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**R18**

Course Code: A30413



**CMR COLLEGE OF ENGINEERING & TECHNOLOGY**  
(UGC AUTONOMOUS)

B.Tech V Semester Supplementary Examinations December-2024

Course Name: **Digital Signal Processing**

(Electronics & Communication Engineering)

Date: 23.12.2024 AN

Time: 3 hours

Max.Marks: 70

(Note: Assume suitable data if necessary)

**PART-A**

Answer all TEN questions

Each question carries TWO marks.

10x2=20M

- |   |     |
|---|-----|
| 1. Define linear and non linear systems.                              | 2 M |
| 2. What are the advantages of Z-transform ?                           | 2 M |
| 3. Define the DFT.  | 2 M |
| 4. What are the advantages of FFT over DFT?                           | 2 M |
| 5. List the properties of Bilinear transformation.                    | 2 M |
| 6. Write the procedure for design of low pass Butterworth IIR filter? | 2 M |
| 7. What are the advantages of FIR filter?                             | 2 M |
| 8. Define a window.   | 2 M |
| 9. Define the interpolation.  | 2 M |
| 10. What is multirate signal processing?                              | 2 M |

**PART-B**

Answer the following. Each question carries TEN Marks.

5x10=50M

- |   |                   |
|---|-------------------|
| 11.A). i) Explain about the representation of the discrete time signals.  | 5M                |
| ii) Discuss about energy and power of a signals.  | 5M                |
| <b>OR</b>   |                   |
| 11. B). i) Check for the stability and Causality of following   | 5M                |
| (a) $y(n)=x(-n-3)$  | (b) $y(n)=n x(n)$ |
| ii) Determine the linear convolution for the two sequences $x(n)=\{3,2,1,2\}$ and $h(n)=\{1,2,1,2\}$ .                              | 5M                |
| 12. A). Determine the 8-point DFT of the sequences $x(n)=\{1,1,1,1,1,1,0,0\}$   | 10M               |
| <b>OR</b>   |                   |
| 12. B). Compute 8-point DFT of a sequence $x(n)=\{2,2,2,2,1,1,1,1\}$ by using radix-2 DIT-FFT algorithm.                            | 10M               |
| 13. A). Derive the expression for Bi-linear transformation.   | 10M               |
| <b>OR</b>   |                   |
| 13. B). Obtain the direct form-I, directform-II realization for the system $y(n)= -0.1y(n-1)+0.2y(n-2)+3x(n)+3.6x(n-1)+0.6x(n-2)$ . | 10M               |

(P.T.O..)

14. A). Design the ideal high pass filter with frequency response 10M  
 $H_d(e^{j\omega})=1$  for  $\frac{\pi}{4} < |\omega| < \pi$   
 $=0$  for  $\pi < |\omega| < \frac{\pi}{4}$ . find the values of  $h(n)$  for  $N=11$  using Hamming Window

**OR**

14. B). i) Explain different window techniques in FIR digital filter. 5M  
ii) Comparison of FIR and IIR filters. 5M

15. A). Explain in detail about interpolation and decimation with examples. 10M

**OR**

15. B). With necessary derivation explain the operation of sampling rate conversion by non-integers. 10M

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**R18**

Course Code: A30457



**CMR COLLEGE OF ENGINEERING & TECHNOLOGY**  
(UGC AUTONOMOUS)

**B.Tech V Semester Supplementary Examinations December-2024**

**Course Name: Computer Organization**

**(Electronics & Communication Engineering)**

**Date: 26.12.2024 AN**

**Time: 3 hours**

**Max.Marks: 70**

**(Note: Assume suitable data if necessary)**

**PART-A**

**Answer all TEN questions**

**Each question carries TWO marks.**

**10x2=20M**

1. List the basic functional units of a computer. 2 M
2. Write the symbols used in RTL. 2 M
3. Draw the 4-bit binary subtractor. 2 M
4. Outline the principle of restoring method of division? 2 M
5. Differentiate between isolated vs memory mapped I/O. 2 M
6. List the features of 8086 CPU. 2 M
7. What is the purpose of parallel processing? 2 M
8. Differentiate throughput and speedup. 2 M
9. Draw the memory hierarchy in a computer system 2 M
10. List the most commonly used replacement algorithms. 2 M

**PART-B**

**Answer the following. Each question carries TEN Marks.**

**5x10=50M**

- 11.A). Explain about various Shift and Rotate instructions. 10M
- OR**
11. B). Explain various addressing modes with examples. 10M
12. A). Develop the flow chart for booth multiplication. 10M
- OR**
12. B). Design 4-bit binary parallel adder using carry look ahead generator. 10M
13. A). Design Control unit of basic computer in hard wired control. 10M
- OR**
13. B). Explain about Programmed I/O and interrupt initiated I/O. 10M
14. A). Explain various pipeline hazards. 10M
- OR**
14. B). Write short notes on i) concurrent access ii) cache coherency. 10M
15. A). Explain various mapping techniques used in cache memory. 10M
- OR**
15. B). Write short notes on i) memory interleaving 10M  
ii) cache size & block size

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**R18**

Course Code: A30441



**CMR COLLEGE OF ENGINEERING & TECHNOLOGY**  
(UGC AUTONOMOUS)

**B.Tech V Semester Supplementary Examinations December-2024**

**Course Name: Digital Design Through Verilog HDL**

**(Electronics & Communication Engineering)**

**Date: 26.12.2024 AN**

**Time: 3 hours**

**Max.Marks: 70**

(Note: Assume suitable data if necessary)

**PART-A**

**Answer all TEN questions**

**Each question carries TWO marks.**

**10x2=20M**

1. Distinguish between tasks and functions. 2 M
2. Define Keywords and Identifiers. 2 M
3. Define strengths and content resolution. 2 M
4. Illustrate the concepts of continuous assignment structure. 2 M
5. Define Blocking and Non-Blocking assignments. 2 M
6. Discuss about parallel blocks. 2 M
7. Interpret about array of Instances of primitives. 2 M
8. Explain Bi-Directional gates. 2 M
9. Explain capacitive model. 2 M
10. Describe about sequential circuit testing. 2 M

**PART-B**

**Answer the following. Each question carries TEN Marks.**

**5x10=50M**

- 11.A). Explain with examples about Display tasks, Strobe tasks and Monitor tasks. 10M
- OR**
11. B). Using example, explain about concurrent and procedural statement with Syntaxes. 10M
12. A). Classify and explain strengths and contention resolution. 10M
- OR**
12. B). Illustrate about writing a Verilog code for tri-state devices. 10M
13. A). Explain blocking and non-blocking statement with examples. 10M
- OR**
13. B). Distinguish between a sequential block and a parallel block? Explain using an example. 10M
14. A). Discuss about Intra statement delay and an Inter statement delay with an example. 10M
- OR**
14. B). Explain compiler directives in detail. 10M
15. A). Explain with the help of an example how the memory initialization carried out in Verilog. 10M
- OR**
15. B). Mentions the use of assert cycle sequence and assert next? Explain using an example. 10M

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