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R18

Course Code: C30166



CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech IV Semester Regular/Supplementary Examinations August-2023

Course Name: **BUSINESS ETHICS & CORPORATE GOVERNANCE**

(Common for EEE, ECE, CSE, IT, CSC, CSM, CSD, AID & AIM)

Date: 07.08.2023 AN

Time: 3 hours

Max.Marks: 70

(Note: Assume suitable data if necessary)

PART-A

Answer all TEN questions (Compulsory)

Each question carries TWO marks.

10x2=20M

1. Can business ethics be taught and trained? 2 M
2. Write in short about moral development. 2 M
3. Ethics in HRM. 2 M
4. Ethics of health care services. 2 M
5. Cyber space. 2 M
6. Ethical dimensions of cyber crimes. 2 M
7. Does good governance really matters to corporations? 2 M
8. Write in short about Board committees. 2 M
9. Corporate risk. 2 M
10. Effective corporate governance frame work. 2 M

PART-B

Answer the following. Each question carries TEN Marks.

5x10=50M

- 11.A). Discuss the five myths about business ethics. 10M
- OR**
11. B). Explain the kohlberg's study and carol Gilligan's theory. 10M
12. A). Explain the ethics of finance and accounting professionals. 10M
- OR**
12. B). Elaborate the concept of ethics of media marketing and ethical dilemma. 10M
13. A). Discuss the social, political issues in the cyber space. 10M
- OR**
13. B). Discuss mindset and skills of hackers and other criminals. 10M
14. A). Explain the corporate governance in India-board structures. 10M
- OR**
14. B). Explain the process and evaluation of corporate governance. 10M
15. A). Discuss role of corporate governance in managing the risks. 10M
- OR**
15. B). Explain the internal auditing's role in corporate governance. 10M

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R18

Course Code: A30378



CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech IV Semester Regular/Supplementary Examinations August-2023

Course Name: WASTE TO ENERGY

(Common for EEE, ECE, CSE, CSD & AID)

Date: 07.08.2023 AN

Time: 3 hours

Max.Marks: 70

(Note: Assume suitable data if necessary)

PART-A

Answer all TEN questions (Compulsory)

Each question carries TWO marks.

10x2=20M

1. Explain different types of MSW. 2 M
2. Define incinerator. 2 M
3. Define Syngas. 2 M
4. Explain about process of pyrolysis. 2 M
5. Classify various types of gasifiers. 2 M
6. Explain about Updraft gasifiers. 2 M
7. Explain about Biomass Stove. 2 M
8. Briefly discuss various types of Combustors. 2 M
9. List out applications of biogas plants. 2 M
10. Explain briefly about Bio-Chemical Conversion. 2 M

PART-B

Answer the following. Each question carries TEN Marks.

5x10=50M

- 11.A). Discuss briefly about Agro based waste. 10M
- OR**
11. B). Explain various types of digestors for waste management briefly. 10M
12. A). Explain the manufacturing process of pyrolytic oils briefly. 10M
- OR**
12. B). Discuss Slow and Fast Pyrolysis methods. 10M
13. A). Draw Gasifier engine arrangement for production of Electric power and explain the methodology. 10M
- OR**
13. B). Explain the design, construction and operation of fluidized bed gasifier. 10M
14. A). Explain Design, Construction and Operation of Fixed bed combustor. 10M
- OR**
14. B). Explain the Design, Construction and Operation of Fluidized bed combustor with neat sketches. 10M
15. A). Discuss briefly about Biomass conversion processes. 10M
- OR**
15. B). Explain the operation of Inclined grate combustors. 10M

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Course Code: A30531



CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech IV Semester Regular/Supplementary Examinations August-2023

Course Name: PYTHON PROGRAMMING

(Common for EEE, ME, ECE, CSE, IT, CSC & CSM)

Date: 07.08.2023 AN

Time: 3 hours

Max.Marks: 70

(Note: Assume suitable data if necessary)

PART-A

Answer all TEN questions (Compulsory)

Each question carries TWO marks.

10x2=20M

- | | |
|--|-----|
| 1. Identify the difference between the if, if-else, if-elif-else statements. | 2 M |
| 2. Outline the Characteristics of functions and modules. | 2 M |
| 3. What are local variable and how they are used? | 2 M |
| 4. Show the need of Void function. | 2 M |
| 5. Summarize about two dimensional Lists. | 2 M |
| 6. Discuss the need of Recursion. | 2 M |
| 7. Determine the Benefits of Instances. | 2 M |
| 8. Distinguish between Classes and Objects. | 2 M |
| 9. Classify the need of Turtle graphics. | 2 M |
| 10. How to use Widgets in python? | 2 M |

PART-B

Answer the following. Each question carries TEN Marks.

5x10=50M

- | | |
|---|-----|
| 11.A). i) Identify the most Commonly used Repetition structures in Python | 5M |
| ii) Write a Python program to convert height in feet and inches to cm. [1 feet = 12 inch and 1 inch= 2.54 cm] (Sample input: 2 feet 7 inch Sample output: 78.74 cm) | 5M |
| OR | |
| 11. B). Summarize various operators, built-in functions and standard library modules that deals with python numeric type. | 10M |
| 12. A). i) Outline the declaration and calling of functions in Python? Illustrate with an example. | 5M |
| ii) Demonstrate the process of storing functions in Modules. | 5M |
| OR | |
| 12. B). i) Write a Python program to print all prime numbers less than 256 using Functions | 5M |
| ii) What type of parameter passing is used in Python? Justify your answer with sample programs. | 5M |
| 13. A). i) Demonstrate the process finding items in Lists with the in Operator. | 5M |
| ii) Illustrate a Python program that counts the number of occurrences of a letter in a string, using dictionaries. | 5M |
| OR | |
| 13. B). i) What is a list in Python? How to create nested lists? Demonstrate how to create and print a 3-dimensional matrix with lists. | 5M |
| ii) Write a python program to convert 'a, e, i, o, u' letters in a string with 'w, x, y, z, p' using string translate method. | 5M |

(P.T.O..)

14. A). i) Classify the Techniques for Designing Classes. 5M
ii) Elaborate the implementation of hierarchical inheritance in Python, with a program. 5M

OR

14. B). i) Construct a python program to show the polymorphism in Python. 5M
ii) How does Instances are created in python show with an example? 5M

15. A). i) Can you categorize the different widgets in GUI designing. 5M
ii) Show the implementation of two dimensional shapes. 5M

OR

15. B). i) Elaborate the implementation of Radio Buttons, labels and Check Buttons in Python. 5M
ii) How to Develop a python program to show Button widgets and Info Dialog boxes? 5M

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R18

Course Code: A30557



CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech IV Semester Regular/Supplementary Examinations August-2023

Course Name: WEB PROGRAMMING

(Common for EEE, ME, ECE, CSD & AID)

Date: 07.08.2023 AN

Time: 3 hours

Max.Marks: 70

(Note: Assume suitable data if necessary)

PART-A

Answer all TEN questions (Compulsory)

Each question carries TWO marks.

10x2=20M

1. How to preserve white space in XHTML? 2 M
2. What is use of tag? 2 M
3. What are <div> and tags? 2 M
4. What is an internal CSS? 2 M
5. Define instance of operator in Javascript. 2 M
6. What is the use of <noscript> tag? 2 M
7. What is XSLT? 2 M
8. Write the differences between XML and HTML. 2 M
9. What is Ajax? 2 M
10. Explain alert(), confirm() and prompt() methods of window object. 2 M

PART-B

Answer the following. Each question carries TEN Marks.

5x10=50M

- 11.A). What is a form? Explain form components with example. 10M
- OR**
11. B). Differentiate XHTML and HTML. 10M
12. A). Explain the basic table tags with the different attributes. 10M
- OR**
12. B). What are Design issues of CSS? Explain in detail. 10M
13. A). Explain various datatypes used in Javascript. 10M
- OR**
13. B). i) Explain about Javascript operators. 5M
ii) Write a Javascript to find factorial of a given number. 5M
14. A). What do you mean by XML namespace? Explain in detail. 10M
- OR**
14. B). What is DTD? Explain internal DTD and external DTD. 10M
15. A). Explain about Ajax features. 10M
- OR**
15. B). Explain about the Dojo Toolkit and XMLHttpRequest object. 10M

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R18

Course Code: A30405

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

B.Tech IV Semester Regular/Supplementary Examinations August-2023

Course Name: SIGNALS & SYSTEMS

(Common for EEE & ECE)

Date: 09.08.2023 AN

Time: 3 hours

Max.Marks: 70

(Note: Assume suitable data if necessary)

PART-A

Answer all TEN questions (Compulsory)

Each question carries TWO marks.

10x2=20M

1. Deduce the relation between signum function and unit step function. 2 M
2. Distinguish between continuous time and discrete time signals. 2 M
3. Find the Fourier transform of $e^{-at}u(t)$. 2 M
4. What is aliasing in the process of sampling? 2 M
5. Distinguish between signal bandwidth and system bandwidth. 2 M
6. State Paley-Wiener criterion for physical realizability. 2 M
7. Derive the relation between correlation and convolution. 2 M
8. Find the correlation of the symmetrical gate pulse of amplitude and time duration of '1' with itself. 2 M
9. Define ROC for z-transform. 2 M
10. Find the z-transform of $-a^n u[-n - 1]$. 2 M

PART-B

Answer the following. Each question carries TEN Marks.

5x10=50M

- 11.A). i) Categorize the following signal as power or energy signal. Also determine either power or energy of the signal 5M
- $$x(t) = \begin{cases} 2; & 0 \leq t \leq 1 \\ 2 - t; & 1 \leq t \leq 2 \\ 0; & \text{otherwise} \end{cases}$$
- ii) Sketch the signal: $f(t)=3u(t) + tu(t) - u(t-1) + u(t+1) - 5u(t-2)$ 5M

OR

11. B). Obtain the Trigonometric Fourier series representation of half wave rectified sine wave. 10M
12. A). i) Find the Fourier transform of $\cos(\omega_0 t)$. 6M
ii) Sketch the magnitude and phase spectrums of signum function. 4M

OR

12. B). Determine Nyquist rate and Nyquist sampling interval of the following signals. 10M
(i) $\sin(200\pi t) + \sin(1000\pi t)$ (ii) $\sin(1000\pi t) \cos(2000\pi t)$

(P.T.O..)

13. A). Sketch the characteristics of ideal LPF, HPF, BPF and BRF. 10M

OR

13. B). For an LTI system described by a differential equation 10M

$\frac{d^2}{dt^2}y(t) + 4\frac{d}{dt}y(t) + 3y(t) = \frac{d}{dt}x(t) + 2x(t)$, the input is $x(t) = e^{-t}u(t)$. Determine its transfer function, impulse response and its output $y(t)$.

14. A). Evaluate $u(t)*e^{-t}u(t)$ and sketch the appropriate waveforms. 10M

OR

14. B). i) Distinguish between auto correlation and cross correlation with illustrations. 5M

ii) Derive the relation between input and output power spectral densities of a system. 5M

15. A). i) Determine the Laplace transform and the associate region of convergence for the function: $x(t) = 1; 0 \leq t \leq 1$ 5M

ii) Find the inverse Laplace transform of the following: 5M

$$X(s) = \frac{s+1}{s^2+5s+6}; \quad -3 < \text{Re}\{s\} < -2$$

OR

15. B). Find the z- transform of the following sequences. Also specify ROC. 10M

(i) $x[n] = 7\left(\frac{1}{3}\right)^n u[n] - 6\left(\frac{1}{2}\right)^n u[n]$ (ii) $x[n] = \cos(n\omega)u[n]$

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R18

Course Code: A30205



CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech IV Semester Regular & Supplementary Examinations August-2023

Course Name: **ELECTRICAL MACHINES-II**

(Electrical & Electronics Engineering)

Date: 11.08.2023 AN

Time: 3 hours

Max.Marks: 70

(Note: Assume suitable data if necessary)

PART-A

Answer all TEN questions (Compulsory)

Each question carries TWO marks.

10x2=20M

- | | |
|---|-----|
| 1. What are the advantages of short pitch winding? | 2 M |
| 2. Define coil span factor. | 2 M |
| 3. Mention the differences between constant and pulsating magnetic field. | 2 M |
| 4. Calculate the Distribution factor for a 36-slot,4-pole, single layer 3-phase Winding. | 2 M |
| 5. A 3 phase, 4 pole induction motor operates from a supply whose frequency is 50 Hz. Calculate the frequency of the rotor current at standstill and the speed at which the magnetic field of the stator is rotating. | 2 M |
| 6. Differentiate between squirrel cage type rotor and phase wound rotor. | 2 M |
| 7. Draw the torque slip characteristics of single-phase induction motor. | 2 M |
| 8. What are the features of universal motor? | 2 M |
| 9. Distinguish salient pole and cylindrical rotor synchronous machines. | 2 M |
| 10. What are all the various methods to determine the voltage regulation? | 2 M |

PART-B

Answer the following. Each question carries TEN Marks.

5x10=50M

- | | |
|--|-----|
| 11.A). Derive distribution factor in 3- ϕ machine winding. | 10M |
| OR | |
| 11. B). Explain the concentrated winding flux distribution with neat diagrams. | 10M |
| 12. A). Explain the production of rotating magnetic field in a three-phase system | 10M |
| OR | |
| 12. B). Consider a 3-phase, double-layer, synchronous generator, with 18 slots, 6 poles, RYB sequence. Draw the MMF waveform at the instant when the current in phase R is maximum positive in the following two cases and give your comment on MMF wave:
i) If the machine is chorded by one slot
ii) if the machine is full pitched. | 10M |
| 13. A). A 4 pole, 3- ϕ induction motor is supplied from 3-phase, 50 Hz supply. Calculate: | 10M |
| i) Speed at which the magnetic field of the stator is rotating | |
| ii) Speed of the rotor when the slip is 0.04 | |
| iii) Frequency of the rotor currents when slip is 0.03 | |
| iv) Frequency of rotor currents at stand still. | |

(P.T.O..)

OR

13. B). Explain the slip torque characteristics of three phase induction motor also discuss the effect of rotor resistance. 10M
14. A). Using double field revolving theory, explain why a single-phase induction motor is not self-starting. Also obtain the equivalent circuit of single-phase induction motor with necessary equations. 10M

OR

14. B). What is stepper motor? Explain the operation of variable reluctance stepping motor. State its applications. 10M
15. A). i) Discuss the need and conditions of parallel operation of alternators. 5M
ii) Discuss any two methods of starting of synchronous motors. 5M

OR

15. B). In a 50-KVA, Y-connected, 440-V, 3-phase, 50 Hz alternator, the effective armature resistance is 0.25Ω / phase. The synchronous reactance is 3.2Ω / phase and leakage reactance is 0.5Ω / phase. Determine at rated load at unity power factor: (a) Internal e.m.f E_a (b) no-load e.m.f, E_0 , (c) percentage regulation on full load, (d) value of synchronous reactance which replaces armature reaction. 10M

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R18

Course Code: A30204



CMR COLLEGE OF ENGINEERING & TECHNOLOGY

(UGC AUTONOMOUS)

B.Tech IV Semester Regular & Supplementary Examinations August-2023

Course Name: **POWER SYSTEMS-I**

(Electrical & Electronics Engineering)

Date: 14.08.2023 AN

Time: 3 hours

Max.Marks: 70

(Note: Assume suitable data if necessary)

PART-A

Answer all TEN questions (Compulsory)

Each question carries TWO marks.

10x2=20M

1. Explain selection of site for a Hydroelectric power plant. 2 M
2. List the major components in Gas power plant. 2 M
3. List out the various solar applications. 2 M
4. Mention the types of Bio-gas digesters. 2 M
5. List the advantages and disadvantages of Radial distribution system. 2 M
6. Define servicemain. 2 M
7. What are the major components in a substation? 2 M
8. What are the various methods of voltage control in a power system? 2 M
9. Explain a) Demand factor and b) Utilization factor. 2 M
10. What is tariff? 2 M

PART-B

Answer the following. Each question carries TEN Marks.

5x10=50M

- 11.A). Describe the schematic arrangement of a Thermal power station and explain the function of each part briefly. 10M

OR

11. B). With neat diagram discuss the essential components of a Nuclear reactor. 10M

12. A). i) What are the advantages of anaerobic digestion? Explain. 5M
ii) With neat diagram explain briefly the essential components in a Wind mill. 5M

OR

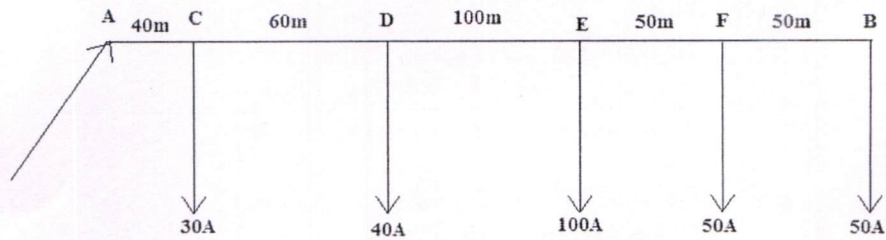
12. B). i) Explain: a) Insolation b) Zenith angle c) Azimuth angle. 5M
ii) Explain briefly the types of wells in Geo thermal energy. 5M

13. A). i) Discuss the relative merits and demerits of underground and overhead systems. 5M
ii) with neat diagram briefly explain types of D.C. Distributors 5M

(P.T.O..)

OR

13. B). Determine the cross sectional area of the d.c distribution shown. Take $\rho=1.78 \times 10^{-8} \Omega\text{m}$. 10M
The maximum voltage drop is not to exceed 10V. The conductor is fed at A.



14. A). Discuss in detail about types of substations. 10M

OR

14. B). A 3-phase, 5 kW induction motor has a p.f. of 0.75 lagging. A bank of capacitors is connected in delta across the supply terminals and p.f. raised to 0.9 lagging. Determine the kVAR rating of the capacitors connected in each phase. 10M

15. A). Explain the following: i) Load Curve, ii) Load duration curve, iii) Load factor, iv) Plant use factor and v) Diversity factor. 10M

OR

15. B). The monthly readings of a consumer's meter are as follows: 10M

Maximum demand = 50 kW

Energy consumed = 36,000 kWh

Reactive energy = 23,400 kVA R

If the tariff is Rs 80 per kW of maximum demand plus 8 paise per unit plus 0.5 paise per unit for each 1% of power factor below 86%, calculate the monthly bill of the consumer.

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R18

Course Code: A30206



CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech IV Semester Regular/Supplementary Examinations August-2023

Course Name: NETWORK THEORY-II

(Electrical & Electronics Engineering)

Date: 16.08.2023 AN

Time: 3 hours

Max.Marks: 70

(Note: Assume suitable data if necessary)

PART-A

Answer all TEN questions (Compulsory)

Each question carries TWO marks.

10x2=20M

1. A balanced three phase star connected system with a phase voltage of 300V, calculate all the other phase voltages and line voltages. 2 M
2. Draw the phasor diagram of a 3-φ star connected system indicating the line, phase voltages and currents for lagging power factor. 2 M
3. A series RL circuit contains R= 10ohms and L= 0.1mH, determine time constant, initial current and final current for a voltage of 10 V. 2 M
4. Define a) Transient Response b) Steady state Response. 2 M
5. List the important properties of Driving point functions. 2 M
6. Draw the pole zero plot for the driving function $V(s) = \frac{s(s+2)}{(s+1)(s+3)}$ 2 M
7. List the required equations related to transformation of Z-parameters to Y-Parameters. 2 M
8. Sketch the characteristics of Low pass and Band pass filters. 2 M
9. List any four properties of Fourier transform. 2 M
10. List the observations of Fourier series coefficients for even and odd functions. 2 M

PART-B

Answer the following. Each question carries TEN Marks.

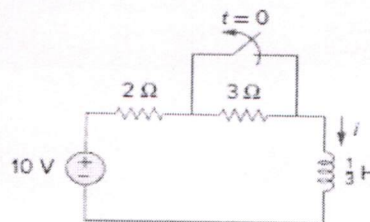
5x10=50M

- 11.A). The power consumed in a three phase balanced star connected load is 2kw at a power factor of 0.8 lagging. The supply voltage is 400 V, 50Hz. Calculate the resistance and reactance of each phase. 10M

OR

11. B). A delta-connected three-phase load has 10 ohms between R and Y, 6.36 mH between Y and B, and 6.36 μF between B and R. the supply voltage is 400V, 50Hz. Calculate the line currents for RYB phase sequence. 10M

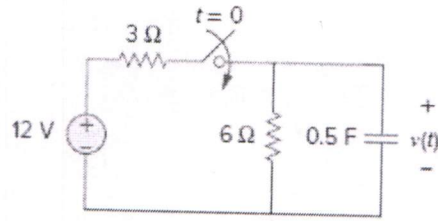
12. A). Find $i(t)$ in the circuit of Fig for $t > 0$. Assume that the switch has been closed for a long time. 10M



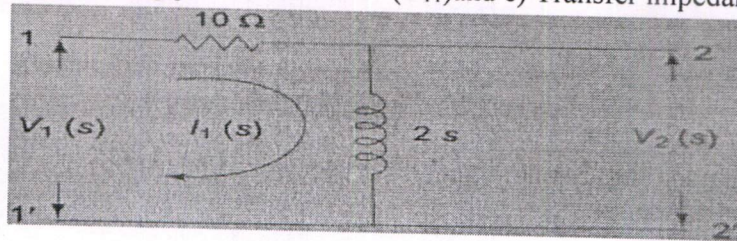
(P.T.O..)

OR

12. B). Find $v(t)$ in the circuit of Fig for $t > 0$. Assume that the switch has been opened for a long time. 10M



13. A). For the two port network shown below, determine the following a) Driving point impedance (Z_{11}) b) Driving point Admittance (Y_{11}) and c) Transfer impedance (Z_{21}) 10M



OR

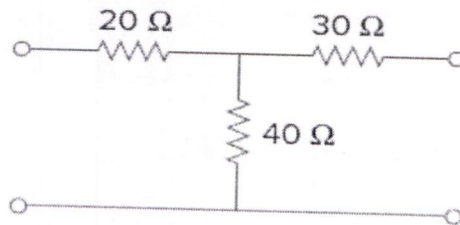
13. B). Draw the pole zero diagram for the given network function $I(s)$ and hence obtain $i(t)$. 10M

$$I(s) = \frac{(s+2)}{(s+1)(s+3)}$$

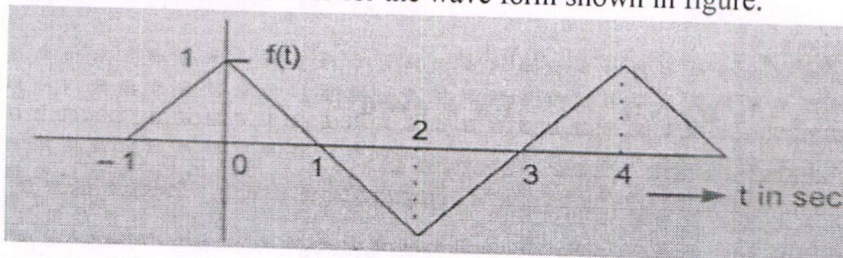
14. A). Design a m-derived high pass filter with a cut-off frequency of 10kHz, design impedance of 5 ohms and $m=0.4$ 10M

OR

14. B). Determine the Z-parameters of the circuit shown below. 10M

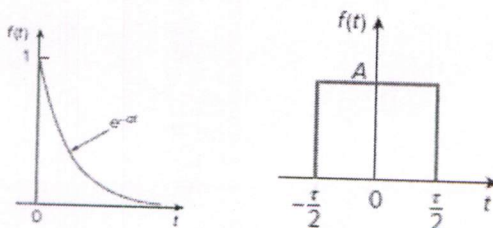


15. A). Obtain the exponential Fourier series for the wave form shown in figure. 10M



OR

15. B). Obtain the Fourier transform of the functions as shown below. 10M



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Course Code: A30403



CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech IV Semester Regular & Supplementary Examinations August-2023

Course Name: SWITCHING THEORY & LOGIC DESIGN

(Electrical & Electronics Engineering)

Date: 18.08.2023 AN

Time: 3 hours

Max.Marks: 70

(Note: Assume suitable data if necessary)

PART-A

Answer all TEN questions (Compulsory)

Each question carries TWO marks.

10x2=20M

1. Make use of Number system conversion techniques to convert following Binary numbers into Octal: a) 10110110001, b) 11001110100100 2 M
2. Simplify the Boolean expression, $C = A\bar{B} + \bar{A} + B$ 2 M
3. List out the properties of Minterms and Maxterms. 2 M
4. Draw the circuit diagram of programmable logic array with three inputs. 2 M
5. In a master-slave J-K flip-flop, $J = K = 1$. What will be the state Q_{n+1} after the clock pulse? 2 M
6. What is meant by triggering of a flip-flop? 2 M
7. A synchronous counter has four flip-flops and the propagation delay of each is 20 ns. What is its maximum counting speed? 2 M
8. Draw the circuit diagram of 4-bit shift register. 2 M
9. How do you indicate Moore and Mealy output in an ASM chart? 2 M
10. Discuss the salient features of an ASM chart. 2 M

PART-B

Answer the following. Each question carries TEN Marks.

5x10=50M

- 11.A. i) Translate the following numbers in decimal: a) $(11101.1011)_2$, b) $(651.7)_8$ and c) $(EF9.B)_{16}$ 6M
- ii) Apply 9's complement method for the Excess-3 subtraction output $(145)_{10} - (135)_{10}$ 4M

OR

11. B). Classify the binary codes? Explain about excess-3 code with an example. 10M
12. A). Construct the given Boolean function using K-map with minimal SOP expression: $F(A, B, C, D) = \sum m(0, 1, 4, 6, 8, 9, 10, 12) + d(3, 7, 11, 13, 14, 15)$ and draw the circuit using 2 input NAND gates. 10M

OR

12. B). Design 8×1 multiplexer. Implement the following Boolean function using 8×1 multiplexer: $F(A, B, C, D) = \sum m(1, 4, 6, 7, 10, 11, 13)$. 10M
13. A). An equation expressing the next state Q_{n+1} in terms of the present state Q_n and the excitations of the flip-flop is called a characteristic equation. For a J-K flip-flop show that it is given by $Q_{n+1} = JQ'_n + K'Q_n$. Find the characteristic equations for a) T flip-flop b) D flip-flop. 10M

(P.T.O.)

OR

13. B). i) Translate an SR flip flop into i) T flip flop ii) D flip flop. 5M
ii) Compare the combinational logic and sequential logic circuits. 5M

14. A). Design a MOD counter to generate a sequence length of 8 having self-start feature. 10M

OR

14. B). Draw the logic diagram of a 4 bit binary ripple counter using positive edge triggering. 10M
What is the main disadvantage in a ripple counter?

15. A). Construct an ASM chart for a digital system that counts the number of people in a room. 10M
People enter the room from one door that has a photocell which changes a signal x from 1 to 0 when the light is interrupted. They leave the room from a second door with a similar photocell with a signal y . Both x and y are synchronized with the clock, but they may stay on or off for more than one clock-pulse period. The data processor subsystem consists of an up-down counter with a display of its contents.

OR

15. B). Obtain the ASM charts for the following state transitions. 10M
- i). If $x = 0$, control goes from T1 to state T2; if $x = 1$, generate a conditional operation and go from T1 to T2.
 - ii). If $x = 1$, control goes from T1 to T2 and then to T3; if $x = 0$, control goes from T1 to T3.
 - iii). Start from state T1, then if $xy = 00$, go to T2, if $xy = 01$, then go to T3, if $xy = 10$, then go to T1, otherwise go to T3
