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Mangalmay Institute of Engineering & Technology
AN INSTITUTION OF MANGALMAY FOUNDATION TRUST
Campus: 8, Knowledge Park-II, Greater Noida (U.P.) Ph.: 0120-2320400, 2320401
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Class Test 1(CO1)

SUBJECT NAME (CODE):-MP (KCS-403) **CLASS:-B.TECH (IVSEM)**

1. Explain the evolution of microprocessor with its different generations in detail. Discuss briefly about the types of Microprocessors.
2. Discuss in detail about the Microprocessor architecture and Operation of its components.
3. Explain how the op-code is fetched from the memory. Explain the op-code fetchcyclewith the help of a timing diagram.
4. State the number of T-states required for following instructions: MVI A, 34H, LXI H 2000 H.
5. Discuss briefly about the Registers in Microprocessor.

Class Test 2(CO2)

SUBJECT NAME (CODE):-MP (KCS-403) **CLASS:-B.TECH (IVSEM)**

1. Draw and explain the architecture of 8085 microprocessor, also explain the programmer's model of 8085.
2. Draw the PIN diagram of 8086 microprocessor and discuss about each pin.
3. Explain the various general purposes registers available in 8085.
4. Describe the significance of the term addressing modes. Illustrate the various addressing modes in 8085 along-with suitable examples.
5. What are interrupts? Give the classification of interrupts. Explain the hardware and software interrupts used in 8085.

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Class Test 3(CO3)

SUBJECT NAME (CODE):-MP (KCS-403) **CLASS:-B.TECH (IVSEM)**

1. Explain in detail about the Architecture of 8086 microprocessor with the help of a neat diagram.
2. DrawtheFlagregisterof8086.
3. Describe the function of BIU and EU in the architecture of 8086 microprocessor.Explain the Register organization of 8086 microprocessor. Explain the function ofsignals: TEST', LOCK'.
4. Illustrate the functional pin diagram of 8086 microprocessor.
5. Discuss in detail about the different Address Modes of 8086. Give Example for each type.

Class Test 4(CO4)

SUBJECT NAME (CODE):-MP (KCS-403) **CLASS:-B.TECH (IVSEM)**

1. What do you understand by the term Instruction sets?Classify the instruction set of 8085 on the basis of their functions. Write the different instructions and explain their function.
2. Illustrate the following instructions of 8085 along-with suitable diagram (i) ADD, ADI (ii) ANA, ANI (iii) RLC (iv) RAL (IV) XTHL
3. Discuss briefly about the concept of Assembly language. Explain the programming techniques of Looping and Counting.Explain the call and Ret instructions used in 8085.
4. Write an assembly language program to find the largest number in a series of number stored from location 2000 H to 200A H. Store the result at location 3000 H. Explain the program with a relevant flowchart.
5. Discuss in detail about the instruction formats. What is the difference between Subroutine and Macro? Discuss in detail about the Conditional call and Return instructions.

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Class Test 5 (CO5)

SUBJECT NAME (CODE):-MP (KCS-403) **CLASS:-B.TECH (IVSEM)**

1. What do you understand by the Peripheral Devices ? Demonstrate the interfacing of output and input devices with 8085 along-with a suitable diagram. Also explain the relevant instructions used.
2. Explain Direct Memory Access (DMA).Draw the schematic and internal block diagram of 8257 DMA controller.
3. Demonstrate the architecture of 8253/54 Programmable Timer and discuss the control word register.
4. Write short notes on following.
   I. 8259 programmable interrupt controller
   II. 8251 USART
5. Explain the following.
   I. Data transfer schemes
   II. Interfacing devices

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Class Test 1(CO1-CO2)

SUBJECT NAME (CODE):-DAA (KCS-503) **CLASS:-B.TECH(VI-SEM)**

[Time: 1 hour] *[Total Marks : 10]*

YEAR: 3rd Year *Branch: B.Tech CSE/AI/DS*

NOTE: Attempt ALL parts

1. What do you mean by asymptote? Explain Big O, OmegaΩ, and Theta Θ notations. Also draw their diagrams.
2. Show that $5n3 + 2n^2 + n + 10^6 = O(n^3)$
3. Write an algorithm for insertion of key in the Red Black Tree. Discuss the various cases for insertion of key in red-black tree for given sequence of key in an empty red black tree :**5,16,22,25,2,10,18,30,50,12,1**
4. What is advantage of binary search over linear search? Also, state limitations of binary search
5. What is an Algorithm? What are the charactertics of an algorithm?

Class Test 2 (CO3-CO5)

SUBJECT NAME (CODE):- DAA (KCS-503) **CLASS:-B.TECH(VI-SEM)**

[Time: 1 hour] *[Total Marks : 10]*

YEAR: 3rd Year *Branch: B.Tech CSE/AI/DS*

NOTE: Attempt ALL parts

1. How Greedy algorithm is different from Dynamic programming?
2. Explain Prim's and Kruskal's Algorithms
3. What do you mean by backtracking? Explain one situation which cannot be solved without backtracking approach.
4. What is Dynamic Programming? Explain with suitable example. What are the features and drawbacks of dynamic programming?
5. Explain the Rabin-Karp algorithm for string matching with q=11, T=3141592653598793 and P=26.

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Class Test 1(CO1) K1 &K5

SUBJECT NAME (CODE):- BAS203 : ENGINEERING MATHEMATICS-II
CLASS:- B.TECH (IISEM)
Total Hours: 1 **Total Marks: 10**
Attempt all questions

1. **Solve** $(D^2-4D+4)y=x^2+e^x+\cos 2x$
2. **Solve** by Reduce to its normal form
$$\frac{d^2y}{dx^2}-2\tan x\frac{dy}{dx}+5y=\sec x\ e^x$$

3. Solve by Cauchy- Euler equation
$$x^2\frac{d^2y}{d^2x}+4x\frac{dy}{dx}+2y=e^x$$

Class Test 2 (CO2) K2 ,K3 & K5

SUBJECT NAME (CODE):- BAS203 : ENGINEERING MATHEMATICS-II
CLASS:- B.TECH (IISEM)
Total Hours: 1 **Total Marks: 10**
Attempt all questions

1. Find the inverse Laplace transforms of

i) $\frac{3}{2s}$ ii) $\frac{40}{s^3}$ iii) $\frac{s+2}{s^2+1}$ iv) $\frac{s+4}{s^2-9}$

2. Solve $y_1'=-y_1+y_2$, $y_2'=-y_1-y_2$, $y_1(0)=1$ and $y_2(0)=0$.

3. Solve $y_1''+y_2=-5\cos 2t$, $y_2''+y_1=5\cos 2t$, $y_1(0)=1$, $y_1'(0)=1$, $y_2(0)=-1$

and $y_2'(0)=1$.

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Class Test 3 (CO3) K2 & K4

SUBJECT NAME (CODE):- BAS203 : ENGINEERING MATHEMATICS-II

CLASS:- B.TECH (IISEM)

Total Hours: 1 Total Marks: 10

Attempt all questions

1. Test the convergence of $\sum_{n=1}^{\infty}\left(\sqrt{n^4+1}\ -\sqrt{n^4-1}\right)$
2. Test the convergence of $\sum_{n=1}^{\infty}\frac{n!\,2^n}{n^n}$
3. Find the half-range cosine series for the function $f(x) = x(\pi - x); \quad 0 < x < \pi.$

Class Test 4 (CO4) K3, K6& K3

SUBJECT NAME (CODE):- BAS203 : ENGINEERING MATHEMATICS-II

CLASS:- B.TECH (IISEM)

Total Hours: 1 **Total Marks: 10**

Attempt all questions

1. Show that the function $f(z)$ defined by $f(z) = \frac{x^2y^3(x+iy)}{x^6+y^{10}}$ $z \neq 0$ $f(0) = 0$ is not analytic at the origin even though it satisfies Cauchy- Riemann equations at the origin.
2. If $f(z) = u + iv$ *is an analytic function find* $f(z)$ *if* $u - v = e^x(\cos y - \sin y)$
3. Show that the following function $u(x,y) = x^4 - 6x^2y^2 + y^4$ is harmonic .Also find the analytic function $f(z) = u(x,y) + iv(x,y)$.

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Class Test 5 (CO5) K3& K5

SUBJECT NAME (CODE):- BAS203 : ENGINEERING MATHEMATICS-II
CLASS:- B.TECH (IISEM)
Total Hours: 1 **Total Marks: 10**
Attempt all questions

1. Evaluate the residue $\int_0^{\infty} \frac{\cos mx}{x^2+1}\,dx$

2. Expand $\frac{1}{z^2-3z+2}$ in the regions (i) $1<|z|<2$ (ii) $0<|z-1|<1$

3. Show that $\int_0^{2\pi} \frac{\sin^2\theta}{a+b\cos\theta}\,d\theta = \frac{2\pi}{b^2}\left(a-\sqrt{a^2-b^2}\right)$ $0<b<a$.

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