H.T No: | | | | | | | | | | | **R18** | **Course Code: A30123**

CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech VI Semester Regular/ Supplementary Examinations Jun/ July-2024

Course Name: Design and Drawing of Steel Structures

(Civil Engineering)

Date: 25.06.2024 FN **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 bolted connections? 2 M
2. State the defects that will arise in welding process. 2 M
3. What do you mean by net effective area? 2 M
4. State the uses of providing column base. 2 M
5. What is laterally unsupported beam? Give an example. 2 M
6. What do you mean by web buckling? 2 M
7. Give general guidelines for fixing spacing of roof trusses. 2 M
8. What do you mean by eccentric connection? 2 M
9. What are the classifications in stiffeners? 2 M
10. What are the elements of Welded plate girder? 2 M

PART-B

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

11.A). i) Write the types of welded joints with the help of a neat sketch. 5M
ii) Distinguish between fillet weld subjected to moment acting in the plane of the joint and acting at right angles to the plane of the joints. 5M

OR

11. B). Estimate strength and efficiency of a single bolted double cover butt joint is used to connect two plates of 10 mm thick. Provide 20 mm diameter bolts of grade 4.6 are used and cover plates are 8 mm thick. Assume pitch of 50 mm and edge distance of 30 mm. 10M

12. A). A steel column ISHB 400 @ 759.3 N/m is subjected to a factored axial load of 2000 kN. Design a slab base plate for the column. Assume that the bearing surfaces of the column and base plate are machined and the concrete footing is of M20 grade. 10M

OR

12. B). Two ISA 75x50x10mm are connected to a gusset plate on its same side of the thickness 10mm by Four M18 grade 4.6 bolts. Find the design tensile strength of the angle if 10M
i) Gusset is connected to the longer leg
ii) Gusset is connected to the shorter leg.(Assume P-50mm E-30mm).

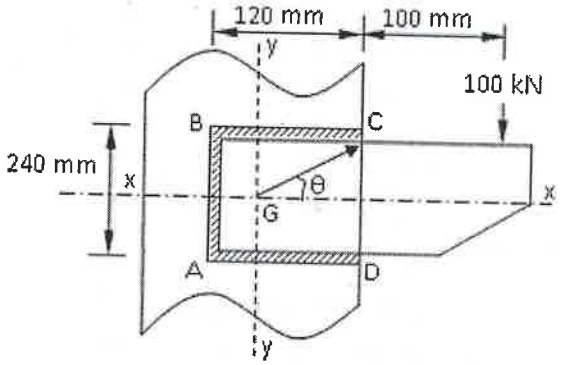
(P.T.O..)

13. A). Estimate the suitable built up beam section for a span of 8m to carry a uniformly distributed load of 15kN/m and a central concentrated load of 100 kN. The beams is laterally supported through out. Show the curtailment of plates also. 10M

OR

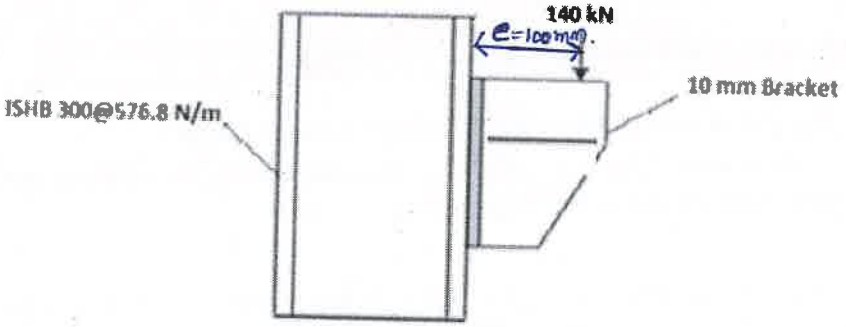
13. B). An ISMB 500 section IA used as a beam over a span of 6 m, with simply supported ends. Determine the maximum factored uniformly distributed load that the beam can carry if the ends are restrained against torsion but compression flange is laterally unsupported. 10M

14. A). A bracket is subjected to a load of 100 kN as shown in fig. The bracket is welded to a stanchion by means of three weld lines as indicated in fig. Find out the size of the welds so that the load is carried safely 10M



OR

14. B). A bracket plate 10 mm thick is used to transmit a reaction of 140 kN at an eccentricity of 100 mm from the column flange as shown in fig. Design the weld. 10M



15. A). Design a bearing stiffener for a welded plate girder with the following specifications. 10M
Web = 1000mm X 6mm thick.
Flanges = 2 Nos. of 350 X 20mm plate on each side.
Support reaction = 350kN. Width of the support = 300mm.

OR

15. B). Design a welded plate girder of 20 m span using the tension field action for the following factored forces: Maximum moment Mz =5000 kNm; Maximum shear force = 900 kN. The girder is laterally restrained. Connections need not to be designed. 10M

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H.T No: | | | | | | | | | | | **R18** Course Code: A30124

CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech VI Semester Regular/ Supplementary Examinations Jun/ July-2024

Course Name: Foundation Engineering

(Civil Engineering)

Date: 27.06.2024 FN **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 factors affecting quality of a sample? 2 M
2. What is boring and sampling? 2 M
3. Define a) Infinite slop and b) Finite slop. 2 M
4. Name any two types of failures associated with earth slopes. 2 M
5. If the ratio between passive earth pressure and active earth pressure is 9, find angle of internal friction of the soil 2 M
6. State any 4 assumptions of coulomb's wedge theory. 2 M
7. What is settlement? What are the components of settlement? Distinguish between them? 2 M
8. Define Ultimate bearing capacity and Safe bearing capacity. 2 M
9. Differentiate between friction pile and end bearing pile. 2 M
10. What is negative skin friction? Why negative skin friction is developed in the pile? 2 M

PART-B
Answer the following. Each question carries TEN Marks. **5x10=50M**

11.A). Explain in detail the various types of samplers with sketches. 10M

OR

11. B). Explain the (i) Seismic refraction method and (ii) Electrical resistivity method of soil exploration. 10M

12. A). Compare and contrast the standard method of slices and Bishop's Simplified method for slope stability analysis. Discuss the scenarios in which each method is most applicable. 10M

OR

12. B). An embankment is to be made from a soil having $c' = 20$ kN/m^2 , $\varphi' = 18°$ and $\gamma = 18.5$ kN/m^3. The desired factor of safety with respect to cohesion as well as that with respect to friction is 1.5. Determine 10M

i) The safe height if the desired slope is 2 horizontal to 1 vertical.

ii) The safe slope angle if the desired height is 15 m.

13. A). A retaining wall 5 m high is pushed against a cohesive back fill. The uniform surcharge on the level backfill is 40 kN/m^2. The cohesive strength of soil 30 kN/m^2 and angle of shearing resistance is 20^0. The unit weight of soil is 20 kN/m^3. Determine the total Rankine passive thrust and its point of application. 10M

OR

13. B). Discuss about different types of retaining walls with neat sketches? Also explain about stability criteria involved in the design of retaining walls. 10M

(P.T.O.)

14. A). A footing of 4mx4m carries a uniform gross pressure of 300 kN/m^2 at a depth of 1.5m in a sand. The saturated unit weight of the sand is 20 kN/m^3 and the unit weight above the water table is 17 kN/m^3. The shear strength parameters are c'=0, ϕ'=32^0. Determine the factor of safety with respect to shear failure for the following cases; a) The water table is at ground surface b) The water table is 1.5m below the surface. 10M

OR

14. B). i) List various types of shallow foundations with neat sketches and also write a short note of each. 5M

ii) A footing 2m square laid at a depth of 1.2m in sand. The saturated unit weight of sand is 20kN/m^3 and bulk unit weight is 16.8 kN/m^3. The shear strength parameters are C = 0 and angle of friction 30° determine the net ultimate bearing capacity (a) Water table is at the base of the footing (b) Water table is at GL. 5M

15. A). A circular concrete pile of diameter 450 mm is installed in a clay stratum having undrained shear strength of 100 kPa. Determine the length of the pile needed if the pile has to carry a load of 420 kN with a factor of safety of 2.5 against shear failure. Take adhesion factor of 0.6. 10M

OR

15. B). Explain different components of well foundation with neat sketches? Also explain their functions and design criteria involved in the stability of well foundations. 10M

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H.T No: | | | | | | | | | | | **R18** | **Course Code: A30125**

CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech VI Semester Regular/ Supplementary Examinations Jun/ July-2024

Course Name: Estimation and Costing

(Civil Engineering)

Date: 29.06.2024 FN **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**

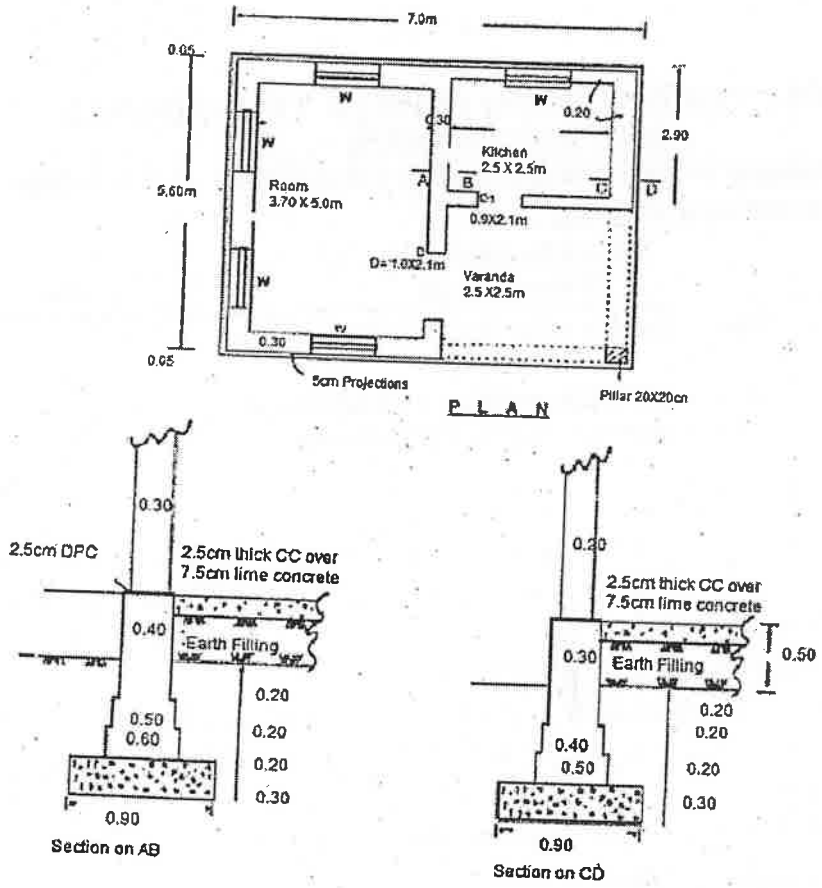
1. State the requirements of an estimate. 2 M
2. Estimate the quantities of brickwork and plastering required in a wall 3m long, 3m high and 30cm thick. Calculate also the cost if the rate of brickwork is Rs.33.00 per cu.m and of plastering is Rs. 9.50 per sq.m 2 M
3. Define the term "cutting" in the context of road construction. 2 M
4. The depths at two ends of an embankment of road of length 60m are 2m and 2.5m. The formation width and side slopes are 8m and 2:1 respectively. Estimate the Quantity of earth work by Mid Sectional Area. 2 M
5. Evaluate the cost of Brick Masonry in super structure with CM 1:6 2 M
6. What do you infer from schedule of rates? 2 M
7. What is Bar-bending schedule? 2 M
8. List the important contents in contract document. 2 M
9. Define the capitalized value. 2 M
10. Enumerate the need for valuation of property 2 M

PART-B

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

11.A). Calculate a detailed estimate for the following works in the figure below. 10M
(i) Earth filling for flooring
(ii) Concrete for flooring
(iii) 1st Class Brick work in Super Structure

(P.T.O..)



OR

11. B). Prepare an approximate estimate of building project with total plinth area of all building is 80 sqm. and from following data. 10M

Plinth area rate Rs. 40000 per sqm

Cost of water supply @7½%of cost of building.

Cost of Sanitary and Electrical installations each @ 7½% of cost of building.

Cost of architectural features @1% of building cost.

Cost of roads and lawns @5% of building cost.

Cost of P.S. and contingencies @4% of building cost.

Determine the total cost of building project.

12. A). Find the quantity of earthwork of irrigation canal using Prismoidal method and Trapezoidal method from the following data: 10M

Distance (m)	0	50	100	150	200
RL of Ground (m)	100.00	101.00	101.10	99.2	100.0
RL of Formation (m)	99.50	99.10	89.60	89.00	88.55

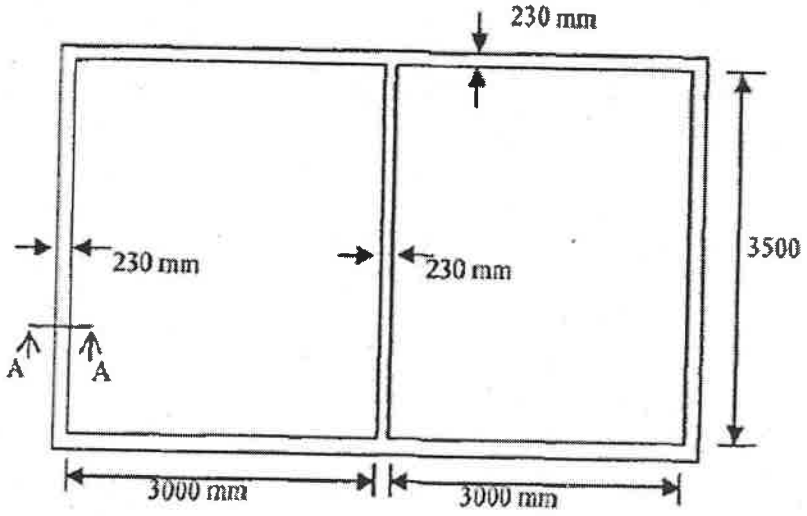
Formation bottom width of canal is 6 m and side slope is 1:1.

OR

12. B). Calculate the volume of earthwork for 100.00 m length of road in a uniform ground. Height of the bank at one end is 0.75 m and at the other end is 1.25 m. formation width is 10.00 m and side slopes of embankment is 2:1. Ground does not have any cross slope. Calculate the volume of earth work by (i) Mid sectional Area Method, (ii) Mean sectional area method (iii) Prismoidal formula. 10M

(P.T.O..)

13. A). Calculate costing of internal and external plastering for the fig below. Assume cement mortar of 12 mm thickness 1:6 for internal and 1:4 for external. 10M



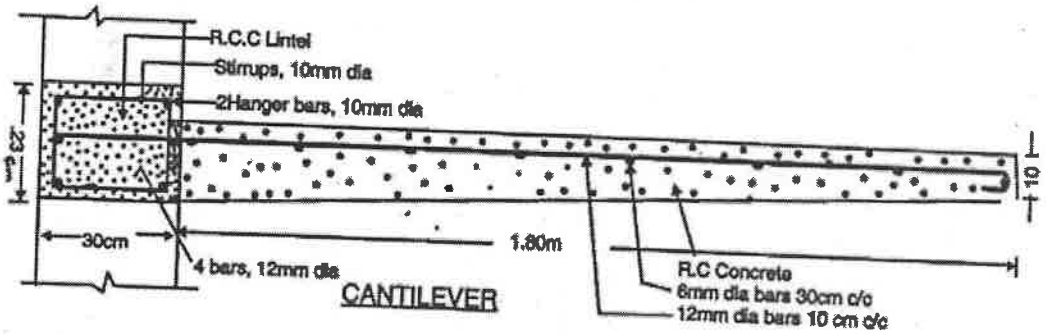
OR

13. B). Prepare analysis of rate for centering and shuttering for a RCC beam of 60 cm x 30 cm for a span of 8.5 m. Assume 4.5 m as the height of room. 10M

14. A). Illustrate in detail about Labour Contract and Material Contract. 10M

OR

14. B). Calculate the quantity of steel required by preparing bar bending schedule, for a R.C.C (1:1.5:3) lintel cum sunshade as per the drawing given below. Take clear span of Lintel as 1.8m and bearing over the support is 0.3 m on either side. 10M



15. A). List the various methods of valuation of property and explain any two methods in detail. 10M

OR

15. B). A building is situated on a land of 250 sq.m. The built up portion is 10 m x 8.5 m. The building is first class type and provided with water supply, sanitary and electric fittings. The age of the building is 10 years. Work out the valuation of the property. Assume plinth area rate as Rs. 21,000 per sq.m and cost of land as Rs. 4800 per sq.m. 10M

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H.T No: | | | | | | | | | | | R18 | Course Code: A30126

CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech VI Semester Regular/ Supplementary Examinations Jun/ July-2024

Course Name: Water Resources Engineering

(Civil Engineering)

Date: 02.07.2024 FN **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. Name the different instruments used in measuring precipitation. 2 M
2. List out various forms of precipitation. 2 M
3. List out the various components of runoff. 2 M
4. Define unit hydrograph. 2 M
5. Distinguish between water table and piezometric surface. 2 M
6. Define porosity. 2 M
7. List out the advantages of crop rotation. 2 M
8. Sketch the border strip method of irrigation. 2 M
9. Distinguish between a ridge canal and a contour canal. 2 M
10. Sketch a typical cross-section of a canal which is partly in cutting and partly in filling. 2 M

PART-B

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

11.A). Describe with the help of neat sketch the hydrologic cycle and list out the applications of hydrology in engineering. 10M

OR

11. B). Describe how infiltration capacity rate can be measured using double ring infiltrometer. 10M

12. A). Sketch a typical single peaked hydrograph resulting from an isolated storm and explain the features of the same. 10M

OR

12. B). The following are the ordinates of 4-h unit hydrograph. Derive the ordinate of a 12-hour unit hydrograph and plot the same by s-curve method. 10M

Time (h)	0	4	8	12	16	20	24	28	32	36	40
Ordinates of 4-h UH (m^3/s)	0	15	40	80	100	80	45	25	15	5	0

13. A). Derive an expression for the steady state discharge of well fully penetrating into an unconfined aquifer. 10M

OR

13. B). Illustrate the occurrence of ground water with the help of neat sketches. 10M

14. A). Discuss in briefly the benefits and ill-effects of irrigation. 10M

OR

14. B). Discuss briefly the methods of improving duty. 10M

(P.T.O..)

15. A). For a channel discharge Q, rugosity coefficient N, critical velocity ratio m and bed slope S are given. Explain how would you design the channel using Kennedy's theory. 10M

OR

15. B). A small watershed near Nagpur is 150 ha in size and has group C soil. The land cover can be classified as 40 % open forest (CN = 60) and 60% poor quality pasture (CN=86). Assuming AMC at average condition and the soil to be black soil, estimate the direct runoff volume due to a rainfall of 75 mm in one day. Use SCS-CN equation applicable to Indian Conditions. 10M

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H.T No: | | | | | | | | | | | R18 | Course Code: A30013

CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech VI Semester Regular/ Supplementary Examinations Jun/ July-2024

Course Name: Business Management & Financial Analysis

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

Date: 25.06.2024 FN **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. Define the leadership. 2 M
2. Explain Directing function of Management. 2 M
3. State the importance of plan layout in production process. 2 M
4. Illustrate two objectives of HR Management. 2 M
5. Define Elasticity of demand. 2 M
6. Write short notes on inflation. 2 M
7. Explain the theory of pricing. 2 M
8. Assess the limitations of production function. 2 M
9. Explain conventional source of business enterprise. 2 M
10. What is activity ratio? 2 M

PART-B

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

11.A). Define Management and explain the functions of management. 10M

OR

11. B). Discuss about the different content theories of motivation and explain aboutMaslow's need hierarchy theory. 10M

12. A). Elaborate the Goals of Financial Management. 10M

OR

12. B). Describe the Functions of HR Management. 10M

13. A). Elucidate the scope and functions of Managerial Economics. 10M

OR

13. B). Explain types of Elasticity demand and methods of measuring Elasticity of demand. 10M

14. A). What do you mean by break even analysis? Discuss various assumptions and limitations. 10M

OR

14. B). Discuss types of cost concept and appraise the cost output relationship. 10M

(P.T.O..)

15. A). Define the business enterprise and Explain the types of business enterprise. 10M

OR

15. B). From the following data prepare Trading and Profit and Loss Account for the year ending on Mar31,2023 and a Balance sheet as on that data: 10M

Particulars	**Amount**	**Particulars**	**Amount**
Purchases	10,000	Sales	15,100
Wages	600	Commission Received	1,900
Freight Inwards	750	Rent Received	600
Advertisement	500	Creditors	2,400
Carriage Outwards	400	Capital	5,000
Cash	1,200		
Machinery	8,000		
Debtors	2,250		
Bills Receivable	300		
Stock	1,000		
	25,000		**25,000**

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H.T No: | | | | | | | | | | | **R18** **Course Code: A30421**

CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech VI Semester Regular/ Supplementary Examinations Jun/ July-2024

Course Name: Microprocessors & Microcontrollers

(Common for EEE & ECE)

Date: 27.06.2024 FN **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. Write the functions of Bus Interface Unit in 8086 processor. 2 M
2. What physical address is represented by: (a) 4370 : 561E H (b) 7A32 : 0028 H. 2 M
3. What are the differences between a macro and a subroutine? 2 M
4. Write an instruction for indirect addressing mode. 2 M
5. Define mode2 input control signals in 8255 2 M
6. Why 8251 is called USART? 2 M
7. State any four inbuilt features of 8051 microcontroller. 2 M
8. Draw the format of IE register. 2 M
9. What is the need of external memory in 8051? 2 M
10. Write the function of instruction CJNE in 8051 programming. 2 M

PART-B
Answer the following. Each question carries TEN Marks. **5x10=50M**

11.A). Explain why internal architecture of 8086 is divided into BIU and EU. Discuss A-bus, D-bus, C-bus and their use. 10M

OR

11. B). Illustrate the architecture of 8086 processor with the help of a block diagram. 10M

12. A). Describe the addressing modes of 8086 processor with an example. 10M

OR

12. B). What do you mean by assembler directives and explain all the assemble directives. 10M

13. A). Draw and discuss internal architecture of USART 8251. 10M

OR

13. B). Discuss about vector interrupt table of 8086 processor. 10M

14. A). Describe the formats and bit definitions of the following SFRs of 8051. i) TCON ii) PSW and iii) PCON 10M

OR

14. B). Draw the pin diagram of 8051 and describe the function of each pin. 10M

15. A). Explain about the timers of 8051 with its modes of operation and the registers used for timers. 10M

OR

15. B). What are the interrupts available in 8051? Explain about the interrupt structure. 10M

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H.T No: | | | | | | | | | | | **R18** **Course Code: A30216**

CMR COLLEGE OF ENGINEERING & TECHNOLOGY

(UGC AUTONOMOUS)

B.Tech VI Semester Regular/ Supplementary Examinations Jun/ July-2024

Course Name: Computer Methods in Power Systems

(Electrical & Electronics Engineering)

Date: 29.06.2024 FN **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. Write primitive network equations. 2 M
2. Write the demerits of Z_{Bus} over Y_{Bus} 2 M
3. What is the necessity of power flow studies. 2 M
4. List the types of buses in load flow solution & mention the specified & unspecified quantities. 2 M
5. List the advantages of Per unit system. 2 M
6. What is short circuit MVA? 2 M
7. What are sequence impedance networks? 2 M
8. What is the significance of symmetrical component transformation? 2 M
9. List the methods to improve the transient state stability. 2 M
10. What is the significance of critical clearing angle? 2 M

PART-B

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

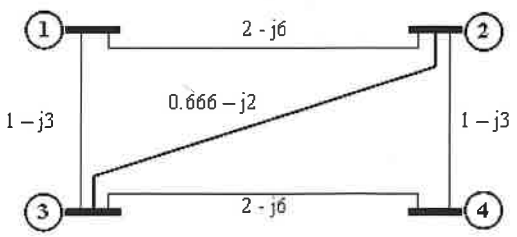
11.A). Determine the Zbus for the following data,using building algorithm 10M

Element Number	Connected between Bus numbers	Self reactance in P.U
1	1-2	0.3
2	1-3	0.4
3	2-3	0.1
4	2-3	0.5

OR

11. B). Derive the expression for bus admittance matrix in terms of primitive admittance matrix and bus incidence matrix. 10M

12. A). For the system shown in below figure. $P_2 = 0.5$ p.u., $Q_2 = -0.2$ p.u., $P_3 = -1$ p.u., $Q_3 = 0.5$ p.u., $P_4 = 0.3$ p.u., $Q_4 = -0.1$ p.u., and $V_1 = 1.04\angle 0^0$ p.u. Determine the value of V_2 after the first iteration of Gauss Seidel (GS) method. Line admittances are as shown in the figure. 10M



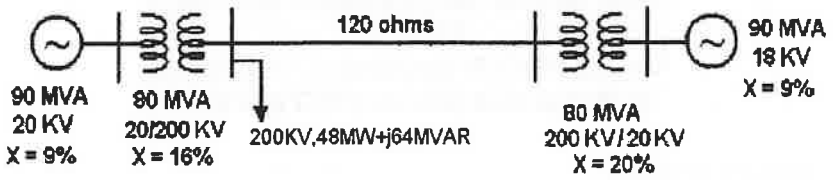
(P.T.O..)

OR

12. B). i) What are the assumptions made in reducing Decoupled method to Fast Decoupled method of power flow solution? 5M

ii) Compare Gauss seidel method with NR method. 5M

13. A). i) Draw the pu impedance diagram for the system shown in figure. Choose Base MVA as 100MVA and Base kV as 20kV. 10M



OR

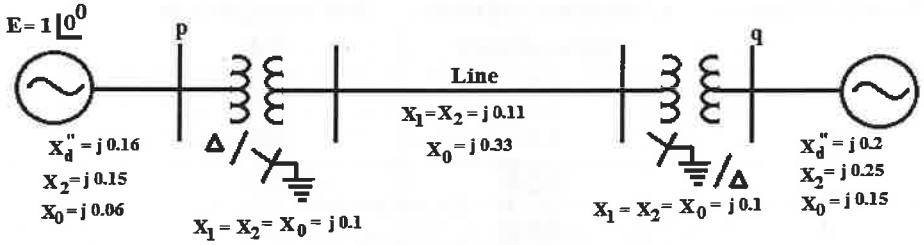
13. B). Estimate short circuit MVA at the bus bars of a generating station 500 MVA and other station is 500 MVA. The generated voltage of each station is 20 kVA. Determine the possible short circuit MVA at each station when they are lined by an interconnected cable with a reactance of 0.3 ohms. 10M

14. A). i) Derive an expression for the fault current for a line-to-line fault at an unloaded generator. 5M

ii) A 20MVA, 11KV, 3-Φ, 50HZ generator has its neutral earthed through a 5% reactor. It is in parallel with another identical generator having isolated neutral. Each generator has a positive sequence reactance of 20%, Negative sequence reactance of 10% and zero sequence reactance of 15%. If a line to ground short circuit occurs in the common bus-bar, determine the fault current. 5M

OR

14. B). Calculate the sub transient fault current in each phase for a dead short circuit on one phase to ground at bus 'q' for the system shown in below figure. 10M



All the reactances are given in p. u on the generator base

15. A). A 20MVA, 50Hz generator delivers 18MW over a double circuit line to an infinite bus. The generator has kinetic energy of 2.52MJ/MVA at rated speed. The generator transient reactance is 0.35 pu. Each transmission circuit has zero resistance and reactance of 0.2 pu on a 20MVA base. The internal transient induced e.m.f is 1.1 pu and infinite bus voltage V=1.0∠0°. A three-phase short circuit occurs at the mid-point of one of the transmission lines. Determine the critical clearing angle of the system using equal area criterion. 10M

OR

15. B). Obtain the solution of swing equation with point-by-point method with neat diagram. 10M

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H.T No: | | | | | | | | | | | **R18** **Course Code: A30217**

CMR COLLEGE OF ENGINEERING & TECHNOLOGY

(UGC AUTONOMOUS)

B.Tech VI Semester Regular/ Supplementary Examinations Jun/ July-2024

Course Name: Power Semiconductor Drives

(Electrical & Electronics Engineering)

Date: 02.07.2024 FN **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 three phase drives over single phase drives? 2 M
2. Draw the output voltage waveforms of single phase semicontrolled rectifier fed DC separately excited motor. 2 M
3. What are the limitations of plugging type braking operation for DC drives? 2 M
4. What are the advantages of closed loop operation of DC motor drive. 2 M
5. Draw the current waveforms of single quadrant chopper fed DC motor. 2 M
6. Compare two quadrant with four quadrant operation of chopper fed DC motor. 2 M
7. Compare VSI with CSI fed operation of induction motor drive. 2 M
8. What are the advantages of static Kramer drive. 2 M
9. Compare self and separate control of Synchronous motor. 2 M
10. List out the advantages of VSI based Synchronous motor. 2 M

PART-B

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

11.A). Explain with neat waveforms the operation of a single phase half controlled converter fed dc separately excited motor. 10M

OR

11. B). A 30 kW, 230V, 860 rpm, 144 A dc motor has an armature resistance of 0.07 Ω. It is fed by a 3-phase fully-controlled rectifier from an ac source of 170.3 V (line), 60 Hz. Assuming continuous conduction, Evaluate the motor speeds for the following cases: i) $\alpha = 60^{o}$, $T_a = 300$ Nm ii) $\alpha = 150^{o}$, $T_a = 400$ Nm iii) $\alpha = 120^{o}$, $T_a = -400$ Nm (obtained by the field current reversal) 10M

12. A). Explain the operation of a separately excited DC motor supplied from 1-Φ Dual converter with necessary diagrams. 10M

OR

12. B). Discuss the closed loop control of separately excited DC motor using block diagram. 10M

13. A). A 230 V, 960 rpm and 200 A separately excited DC motor has an armature resistance of 0.02Ω.The motor is fed from a chopper which provides both motoring and braking operations. The source has a voltage of 230 V DC. Assuming continuous conduction. i) Solve the duty ratio of chopper for motoring operation at rated torque and 350 rpm. ii) Calculate duty ratio of chopper for braking operation at rated torque and 350 rpm. 10M

OR

13. B). Draw and analyze the speed torque characteristics for continuous mode of operation for chopper fed DC drive for motoring operation. 10M

(P.T.O..)

14. A). Explain with neat sketch the Static Scherbius drive used for slip power recovery. 10M

OR

14. B). A 3-ø, 440 V, 6-pole, 970 rpm, 50 Hz, Y-connected induction motor has the following parameters referred to the stator Rs=0.1 Ω, Rr '=0.08 Ω, Xs=0.3Ω, Xr '=0.4 Ω. The stator to rotor turns ratio is 2. The motor speed is controlled by Static Scherbius Drive. The drive is designed for a speed range of 25% below synchronous speed. The maximum value of firing angle is 165°. Evaluate i) Turns ratio of the transformer ii) Torque for a speed of 780 rpm and α =140°. DC link inductor has a resistance of 0.01Ω. 10M

15. A). Explain the operation of closed loop control of Synchronous motor drive. 10M

OR

15. B). Illustrate the operation of PWM based VSI fed variable frequency control for Synchronous motor drive. 10M

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H.T No: | | | | | | | | | | | R18 | Course Code: A30336

CMR COLLEGE OF ENGINEERING & TECHNOLOGY

(UGC AUTONOMOUS)

B.Tech VI Semester Regular/ Supplementary Examinations Jun/ July-2024

Course Name: Engineering Metrology & Measurements

(Mechanical Engineering)

Date: 27.06.2024 FN **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.	Differentiate between precision and accuracy.	2 M
2.	Illustrate the objectives of metrology.	2 M
3.	Outline the concept of selective assembly.	2 M
4.	Write the difference between allowance and tolerance.	2 M
5.	Give any four methods by which surface finish can be measured.	2 M
6.	Write the different roughness measuring methods.	2 M
7.	List out the reasons for the occurrence of progressive errors in screw threads.	2 M
8.	What is meant by the term back lash in gear?	2 M
9.	Write the working principle behind strain gauges.	2 M
10.	What are torque meters?	2 M

PART-B

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

11.A).	Explain briefly about primary standard, secondary standard, territory standard and working standard with example.	10M
	OR	
11. B).	Explain various errors observed in measuring any industrial product.	10M
12. A).	i) What are the general characteristics and selection of measuring instrument?	4M
	ii) Describe with the help of a neat, a Vernier bevel protector.	6M
	OR	
12. B).	Briefly discuss about the various applications of limit gauges.	10M
13. A).	i) Write the difference between surface roughness and surface waviness.	5M
	ii) Describe the various symbols used for representation of surface texture.	5M
	OR	
13. B).	Describe the various methods of numerical assessment of surface finish with neat diagram, and also explain the profilometer with neat sketch.	10M
14. A).	With neat sketch, discuss the gear tooth nomenclature by indicating the different parts.	10M
	OR	
14. B).	Generalize the needs, types & constructional features of Co-ordinated Measuring Machine.	10M

(P.T.O..)

15. A). i) Explain the working principle of an electrical resistance thermometer. 5M

ii) Explain thermocouples? State its applications. 5M

OR

15. B). With neat sketch explain different types of torque measurement techniques and explain any two. 10M

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H.T No: | | | | | | | | | | | R18 | Course Code: A30338

CMR COLLEGE OF ENGINEERING & TECHNOLOGY

(UGC AUTONOMOUS)

B.Tech VI Semester Regular/ Supplementary Examinations Jun/ July-2024

Course Name: Heat Transfer

(Mechanical Engineering)

Date: 29.06.2024 FN **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. Define thermal conductivity? 2 M
2. Write the2-D, transient heat conduction equation in differential form for the circular rod with a volumetric heat generation in it. Assume constant thermo-physical properties of rod material. 2 M
3. What is meant by critical thickness of insulation? 2 M
4. Define transient state of heat transfer. 2 M
5. What is the physical interpretation of Prandtl number when its value is one, lesser or greater than one? 2 M
6. What is the generally accepted value of Reynolds number above which the flow is turbulent for (a) flow over a flat plate (b) for flow through a smooth pipe? 2 M
7. Write the importance of radiation shape factor. 2 M
8. Define the Planck's law and write its main use. 2 M
9. What is the limitation of LMTD method? 2 M
10. Differentiate between Nucleate boiling and pool boiling of a liquid. 2 M

PART-B

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

11.A). Derive an expression for three-dimensional time dependent heat conduction with internal heat generation and constant thermal conductivity in Cartesian coordinate system. Reduce it as a) Poisson equation b) Laplace equation 10M

OR

11. B). Calculate the rate of heat loss through the vertical walls of a boiler furnace of size 4 m X 3 m X 3 m high. The walls are constructed from an inner fire brick wall 25 cm thick of thermal conductivity 0.45 W/mK, a layer of ceramic blanket insulation of thermal conductivity 0.21 W/mK and 8 cm thick, and a steel protective layer of thermal conductivity 54 W/mK and 2 mm thick. The inside temperature of the fire brick layer was measured at 600 °C and the temperature of the outside of the insulation 60 °C. Also find the interface temperature of layers. 10M

12. A). Explain lumped heat capacity method and state its assumptions. 10M

OR

12. B). A fin 30 cm long and 10 cm diameter throughout is made of steel alloy of thermal conductivity 43 W/m-K. The fin attached to a plane heated wall at 200^{O}C temp. extends into surroundings at 25^{O}C and heat transfer coefficient of 120 W/m^2-K. Find fin efficiency and fin effectiveness. Assume that the tip of the fin is insulated and thermal radiation effect is negligible. 10M

(P.T.O..)

13. A). i) Assuming that a man can be represented by a cylinder of 30 cm in diameter and 1.7 m high with a surface temperature of 30 °C, calculate the heat he would be loss while standing in a 36 km/h wind at 10 °C. 6M

Use $Nu_D = 0.027 \mathrm{Re}_D^{0.805} \mathrm{Pr}^{0.33}$. Physical properties of air at 20 °C are k=0.00259 W/mk Pr=0.707, $\upsilon = 0.000015$ m^2/s.

ii) What are the advantages and limitations of dimensional analysis? 4M

OR

13. B). i) Define Nusselt number and Biot number and write their significance. 4M

ii) Consider a 0.6 m x 0.6 m thin square plate in a room at 30°C. One side of the plate is maintained at a temperature of 90°C, while the other side is insulated. Determine the rate of heat transfer from the plate by natural convection if the plate is (a) vertical, (b) horizontal with hot surface facing up and (c) horizontal with hot surface facing down. 6M

14. A). i) Define and explain Radiation shape factor. Write any four important characteristics of shape factor. 5M

i) State & explain Kirchoff 's identity. What are conditions under which it is applicable? 5M

OR

14. B). A pipe carrying steam having an outside diameter of 20 cm runs in a large room and is exposed to air at a temperature of 30 °C. The pipe surface temperature is 400 °C. Calculate the loss of heat to the surrounding per meter length of pipe due to thermal radiation. The emissivity of pipe surface is 0.8. 10M

15. A). i) Define boiling? Draw boiling curve which shows all the boiling regimes and explain nucleate boiling regime in brief. 6M

ii) Define NTU. Explain their effect in Heat Exchanger design. 4M

OR

15. B). Derive an expression for log mean temperature difference of parallel flow heat exchanger. State the assumptions made. 10M

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H.T No: | | | | | | | | | | | **R18** **Course Code: A30343**

CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech VI Semester Regular/ Supplementary Examinations Jun/ July-2024

Course Name: Automation Manufacturing

(Mechanical Engineering)

Date: 02.07.2024 FN **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. Define programmable automation and write its features. 2 M
2. Can adaptive control systems be integrated with existing CNC machines, and if so, how? 2 M
3. What is the primary difference between pneumatic and hydraulic systems? 2 M
4. Describe the function of an automatic tool changer (ATC). 2 M
5. Define the term 'transfer line' in the context of automated flow lines. 2 M
6. How does line balancing contribute to production efficiency? 2 M
7. What role do conveyor systems play in automated material handling? 2 M
8. How do AGVs navigate and operate within a manufacturing facility? 2 M
9. Provide examples of applications where adaptive control is used in machining operations. 2 M
10. What is machine vision in automated inspection? 2 M

PART-B

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

11.A). Identify and explain at least three major applications of CAD in different industries, detailing how CAD has revolutionized these fields. 10M

OR

11. B). Explain the function and importance of Programmable Logic Controllers (PLCs) in CIM. Exemplify how PLCs contribute to automation and control within manufacturing processes. 10M

12. A). Describe the functions of mechanical feeding and automatic tool changing in automated manufacturing systems. 10M

OR

12. B). Discuss the benefits of computer control in machine tools and machine centers, focusing on how it enhances operational efficiency and precision with suitable examples. 10M

13. A). i) Describe the key design and fabrication considerations for implementing automated flow lines in manufacturing. 7M

ii) Discuss the control functions necessary for maintaining smooth and efficient operations in these systems. 3M

OR

13. B). Examine the assembly process and the different systems used in modern manufacturing. Discuss the significance of assembly line balancing and the methods used to achieve it. 10M

(P.T.O..)

14. A). An automated guided vehicle system is being planned for a warehouse complex. The AGVS will be a driverless train system, and each train will consist of a towing vehicle plus four pulled carts. The train will travel at a speed of 160 ft/min. Only the pulled carts carry loads. The average loaded travel distance per delivery cycle is 2000 ft, and the empty travel distance is the same. Anticipated travel factor = 0.95. The load handling time per train per delivery is expected to be 10 min, If the requirements on the AGVS are 25 cart loads/hr, determine the a) cycle time, b) workload of the AGV, c) available time and d) number of trains required. Assume A = 1.0. 10M

OR

14. B). Investigate the challenges and considerations involved in interfacing handling and storage systems with manufacturing operations. Discuss strategies for seamless integration, addressing issues such as synchronization, data exchange, and adaptability to changing production demands. 10M

15. A). Evaluate the role of adaptive control systems in monitoring and adjusting cutting force, temperature, vibration, and acoustic emission parameters in machining processes, exploring their impact on tool wear, surface finish quality, and overall machining efficiency in milling machine. 10M

OR

15. B). Explore the future trends and advancements in adaptive control systems, such as the integration of artificial intelligence, advanced sensor technologies, and predictive analytics, and their potential impact on the next generation of smart manufacturing systems. 10M

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H.T No: | | | | | | | | | | | **R18** **Course Code: A30419**

CMR COLLEGE OF ENGINEERING & TECHNOLOGY

(UGC AUTONOMOUS)

B.Tech VI Semester Regular/ Supplementary Examinations Jun/ July-2024

Course Name: Microwave Engineering

(Electronics & Communication Engineering)

Date: 29.06.2024 FN **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.	Define TE, TM, TEM modes in a waveguide.	2 M
2.	List the applications of microwaves.	2 M
3.	List the properties of direction coupler.	2 M
4.	Define faraday rotation.	2 M
5.	Differentiate O type and M type microwave tubes.	2 M
6.	Draw the output characteristics of reflex klystron.	2 M
7.	Define the amplification process in TWT.	2 M
8.	List the Hartree conditions in M type tubes.	2 M
9.	Write the principle of GUNN effect.	2 M
10.	Draw the microwave bench set up required for measuring high VSWR.	2 M

PART-B

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

11.A).	Derive the wave equations for a TM wave and derive all the field components, parameters in a rectangular waveguide.	10M
	OR	
11. B).	A rectangular waveguide is filled by dielectric material $\varepsilon_r=9$ and has inside dimensions of 6×3 cm. It operates in dominant TE_{10} mode. (i) Determine cut off frequency. (ii) Find the phase velocity in guide operating at a frequency of 2.5 GHz. (iii) Find the guide wavelength at same frequency.	10M
12. A).	Analyze in detail about the operation of isolator and circulator with the help of neat diagrams.	10M
	OR	
12. B).	Derive the S matrix for E plane and H plane tee junctions.	10M
13. A).	Illustrate the velocity modulation and bunching process involved in two cavity klystron with help of applegate diagram.	10M
	OR	
13. B).	i) Draw the reflex klystron diagram and explain in detail about the bunching and amplification process with applegate diagram.	7M
	ii) Elaborate in detail about the effect of repeller voltage on power output in reflex klystron.	3M

(P.T.O..)

14. A). i) Discuss in detail the different types of slow wave structures. 4M
ii) Analyze in detail about the construction and working of travelling wave tube. 6M

OR

14. B). Illustrate in detail about the modes of resonance and Π mode of operation in magnetron. 10M

15. A). Analyze in detail about the frequency and standing wave measurements using microwave bench setup. 10M

OR

15. B). Illustrate in detail about the construction, working principle and characteristics of Gunn diode. 10M

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H.T No: | | | | | | | | | | | **R18** **Course Code: A30420**

CMR COLLEGE OF ENGINEERING & TECHNOLOGY

(UGC AUTONOMOUS)

B.Tech VI Semester Regular/ Supplementary Examinations Jun/ July-2024

Course Name: VLSI Design

(Electronics & Communication Engineering)

Date: 02.07.2024 FN **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 BiCMOS over CMOS circuits? 2 M
2. Differentiate between contact and via in IC manufacturing. 2 M
3. Draw the stick diagram of 2-input CMOS NAND gate. 2 M
4. How does MOSFET operation change by varying its length(L) and width (W)? 2 M
5. Define Sheet Resistance (R_s) and explain its importance in VLSI. 2 M
6. Define fan-in and fan-out of logic gates. How do they affect speed of operation? 2 M
7. What is the use of parity in digital circuits? What is the difference between even and odd parity. 2 M
8. What are the applications of SRAM circuits? 2 M
9. What is dynamic power dissipation in electronics circuits? 2 M
10. Write the expansion of FPGA and CPLD. 2 M

PART-B

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

11.A). Explain IC fabrication steps of NMOS transistor. 10M

OR

11. B). Analyze the operation of CMOS inverter with the help of its Voltage Transfer Curve (VTC) and all of its regions of operation. 10M

12. A). i) What are the different types of scaling MOS transistors? 3M

ii) Prove mathematically that scaling down MOSFET improves speed, power and area. 7M

OR

12. B). i) What are the advantages of CMOS design rules? 3M

ii) Mention the differences between lambda-based design rules and micron design rules. List all the 2 μm based design rules. 7M

13. A). i) Define sheet resistance and unit Gate Capacitance? Derive the expressions for sheet resistance. 7M

ii) Describe a how delays are modeled in VLSI circuits? 3M

OR

13. B). i) Discuss the advantages and disadvantages of 'Switch Logic'. 3M

ii) Derive 3-input AND gate using switch logic. Also draw the circuit of Transmission Gate (TG) using switch logic. 7M

(P.T.O..)

14. A).	i) Distinguish DRAM and SRAM.	3M
	ii) Draw the circuit diagrams and explain the working of one-bit DRAM and SRAM cell.	7M
	OR	
14. B).	i) Compare Content Addressable Memory (CAM) with that of RAM.	3M
	ii) Explain CAM operation with the help of its diagram.	7M
15. A).	i) Differentiate between various PLDs like PAL, PLA and ROM.	3M
	ii) Realize PLA, PAL, and PROM of full-adder with inputs A, B, C and outputs Sum and Carry.	7M
	OR	
15. B).	i) Compare and contrast standard cell-based designs and sea-of-gate designs.	7M
	ii) Which ones are widely used and state the reasons for the same.	3M

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H.T No: | | | | | | | | | | | **R18** | **Course Code: A30523**

CMR COLLEGE OF ENGINEERING & TECHNOLOGY

(UGC AUTONOMOUS)

B.Tech VI Semester Regular/ Supplementary Examinations Jun/ July-2024

Course Name: Web Technologies

(Common for CSE & IT)

Date: 25.06.2024 FN **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. Analyze the control structures in PHP. 2 M
2. Design a PHP program to print reverse of any number. 2 M
3. List the types of Style sheets. 2 M
4. Compare XML to HTML and highlight its role in data interchange. 2 M
5. Apply the Servlet API to handle HTTP requests and responses. 2 M
6. List the different deployment options for servlets. 2 M
7. List the key components of a JSP page. 2 M
8. Distinguish between servlets and JSP. 2 M
9. What is scope of variables in Javascript? 2 M
10. How to validate different types of form inputs and handle errors effectively to improve user experience. 2 M

PART-B

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

11.A). Evaluate the significance of functions in PHP. Discuss how functions contribute to code modularity and reusability. 10M

OR

11. B). Explain how cookies and session works on various funtions in PHP? Write different types of List in HTML. 10M

12. A). Discuss various form controls, including text fields, radio buttons, and checkboxes. Analyze how these controls are implemented and how they contribute to data collection on websites. 10M

OR

12. B). Discuss the process of defining elements, attributes, and nesting within XML. Provide examples to illustrate the creation of XML documents representing various data hierarchies. 10M

13. A). Identify and explain the key packages in the Servlet API. 10M

OR

13. B). Apply the JDBC API to connect to a database from a servlet. Discuss the necessary steps, including establishing a connection, executing queries, and handling results. 10M

(P.T.O..)

14. A). Discuss the different phases a JSP page goes through during its execution. 10M

OR

14. B). Create a JSP page that uses scriptlets to embed Java code within HTML. 10M

15. A). Explain how event-driven programming works, and elaborate on the process of handling user interactions through events 10M

OR

15. B). Explain the significance of client-side scripting in web development and provide a comprehensive overview of JavaScript. 10M

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H.T No: | | | | | | | | | | | **R18** **Course Code: A30519**

CMR COLLEGE OF ENGINEERING & TECHNOLOGY

(UGC AUTONOMOUS)

B.Tech VI Semester Regular/ Supplementary Examinations Jun/ July-2024

Course Name: Compiler Design

(Common for CSE & CSD)

Date: 27.06.2024 FN **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 do you mean by Lexeme, Tokens and Patterns?	2 M
2.	What is Sentinels? Give an example.	2 M
3.	Define augmented grammar.	2 M
4.	Apply left factoring to the grammar A->aAB|aA|a, B->bB|b	2 M
5.	Compare parse tree and annotated parse tree?	2 M
6.	Explain Type Checking.	2 M
7.	List the issues related to run time environment.	2 M
8.	Define trace based collection.	2 M
9.	What is the constant propagation?	2 M
10.	How do machine-dependent and machine-independent code optimizations contrast with each other?	2 M

PART-B

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

11.A).	i) How can you analyze and predict the output at various compilation stages for the statement 'X = a + b * c'?	5M
	ii) How would you compare and contrast the distinct functionalities and operational differences between compilers and interpreters?	5M
	OR	
11. B).	i) Explain the input buffering techniques in detail.	5M
	ii) Explain role of lexical analyzer in detail.	5M
12. A).	Construct SLR parser for the following grammar: E-> E+T | T T-> T*F | F F->(E) | id	10M
	OR	
12. B).	Construct predictive parser for the following grammar: S->(L) | a L->L, S | S	10M
13. A).	i) Illustrate the concept of a Dependency Graph with an example	3M
	ii) How do you compare Synthesized attribute and inherited attributes? And Explain about S attributed and L attributed definition.	7M

(P.T.O..)

OR

13. B). Create quadruples, triples and indirect triples for the following expression: 10M
-(a*b)+(c+d)-(a+b+c+d)

14. A). Discuss about the Stack allocation and Heap allocation in detail with an example. 10M

OR

14. B). i) What do you mean by Basic Block and Control Flow Graph (CFG)? 5M
ii) Explain Peephole Optimization in detail. 5M

15. A). Illustrate and elaborate on the concept of data flow analysis, providing comprehensive insights and relevant examples? 10M

OR

15. B). Discuss about the following topics in detail: 10M
i) Principle sources of optimization techniques.
ii) Partial Redundancy Elimination.

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H.T No: | | | | | | | | | | | R18 Course Code: A30521

CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech VI Semester Regular/ Supplementary Examinations Jun/ July-2024

Course Name: Scripting Languages

(Common for CSE & IT)

Date: 29.06.2024 FN **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.	Why does Ruby earn its reputation as a Language of Flexibility?	2 M
2.	How do nil and false differ in Ruby?	2 M
3.	What are some common class libraries utilized within Ruby?	2 M
4.	Explain briefly about the ALLOC_N routine.	2 M
5.	Write a note on running and debugging Perl.	2 M
6.	List the types of primary Data types in PERL and give any two syntax?	2 M
7.	Explain the eval function and its syntax in Perl.	2 M
8.	Define Hashes in perl.	2 M
9.	Discuss briefly about the regular expression command in TCL.	2 M
10.	Outline the differences between TCL and TK?	2 M

PART-B

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

11.A).	Elaborate extensively on implementing SOAP-based web services with Ruby.	10M
	OR	
11. B).	Write a Ruby program to print 'Hello World' and explain the structure of a Ruby program.	10M
12. A).	Explain about embedded Ruby API.	10M
	OR	
12. B).	Provide a detailed description of the Ruby objects in C.	10M
13. A).	Explain various built-in operators and pattern matching modifiers in Perl.	10M
	OR	
13. B).	Illustrate control statements and looping in Perl with an example.	10M
14. A).	Explain about the dirty hand internet exploration. Explain pack and unpack.	10M
	OR	
14. B).	What are the security issues exist within Perl?	10M
15. A).	Provide an explanation of TCL data structures and also explore event handling and binding in TK.	10M
	OR	
15. B).	Explain string concept in TCL. How to check whether a string is palindrome or not using TCL script.	10M

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H.T No: | | | | | | | | | | | **R18** | Course Code: A31202/ A36705

CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech VI Semester Regular/ Supplementary Examinations Jun/ July-2024

Course Name: Data Mining

(Common for IT & AID)

Date: 27.06.2024 FN **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. List the methods of filling missing values. 2 M
2. Define a data warehouse and how it differs from DBMS. 2 M
3. Justify the importance of frequent patterns and give an example. 2 M
4. Define confidence and support of an association rule. 2 M
5. Drawbacks of lazy learner classifier. 2 M
6. Differentiate between classification and clustering. 2 M
7. Compare agglomerative and divisive clustering methods. 2 M
8. Importance of outlier and list two applications of it. 2 M
9. Summarize mining time series data. 2 M
10. Give the taxonomy of web mining. 2 M

PART-B

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

11.A). i) Describe the major issues in data mining. 5M

ii) Explain data mining as a step-in knowledge discovery process. 5M

OR

11. B). i) Compare and contrast online transaction processing with online analytical processing. 5M

ii) Explain about data mining functionalities. 5M

12. A). Find the frequent itemsets and strong association rules for the following transactional database table using Apriori algorithm. Consider the thresholds as support = 30% and confidence = 40%. 10M

TID	ITEM IDs
1	i1, i2, i3, i5
2	i2, i5, i7, i9
3	i1, i3, i5, i7
4	i2, i4, i6, i8
5	i1, i2, i3, i4
6	i2, i3, i4, i5
7	i3, i4, i5, i6
8	i4, i5, i6, i7
9	i5, i6, i7, i8, i9
10	i9, i1, i2, i5
11	i8, i2, i9, i7
12	i5, i6, i3, i2

(P.T.O..)

OR

12. B). Demonstrate construction of FP-tree for the data from Question number-12 A. 10M

13. A). Explain Decision tree induction algorithm for classification. Discuss the usage of information gain in this. 10M

OR

13. B). i) Discuss K- Nearest neighbor classification-Algorithm and its Characteristics 5M
ii) Differentiate between classification and prediction. 5M

14. A). i) Discuss about key issues in Hierarchical clustering. 5M
ii) Demonstrate DIANA clustering algorithm with example. 5M

OR

14. B). i) Compare k-means with k-medoids algorithms for clustering. 5M
ii) Appraise the importance of outlier detection and its application. Explain any one approach for outlier detection. 5M

15. A). Discuss various kinds of patterns to be mined from web/server logs in web usage mining. 10M

OR

15. B). i) Compare and contrast text mining with web content mining using lucid examples. 5M
ii) Explain the concepts of Mining data streams. 5M

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H.T No: | | | | | | | | | | | R18 | Course Code: A36210

CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)
B.Tech VI Semester Regular/ Supplementary Examinations Jun/ July-2024
Course Name: Concepts of Ethical Hacking
(CSC)

Date: 25.06.2024 FN **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.	Enumerate at least two methods used in reconnaissance.	2 M
2.	Describe the concept of application security	2 M
3.	How previous test results contribute to the evolution of security policies in organizations?	2 M
4.	What are ethical and legal considerations in Controlled Attacks	2 M
5.	How does documentation contribute to effective technical preparation for a hack?	2 M
6.	List various techniques used in internet reconnaissance for hacking.	2 M
7.	Why is it important to effectively prepare for the next phase after enumeration	2 M
8.	What is the primary objective of wardialing.	2 M
9.	What is Defense Planning?	2 M
10.	How ethical hacking assessment findings influence the development or revision of security policies?	2 M

PART-B

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

11.A).	Explain the importance of vulnerability analysis in ethical hacking and discuss the methodologies and tools commonly used.	10M
	OR	
11. B).	Describe the key components of network security and provide examples of encryption algorithms commonly used in network security protocols.	10M
12. A).	Discuss inherent and imposed limitations.	10M
	OR	
12. B).	Analyze the factors involved in planning and executing controlled attacks.	10M
13. A).	What technical preparations are necessary before conducting a hack? Discuss the tools, equipment, and skills required	10M
	OR	
13. B).	Illustrate the role of social engineering in the reconnaissance phase of hacking.	10M
14. A).	Discuss at least three common enumeration techniques and how they are used to gather information about target systems.	10M
	OR	
14. B).	What are rootkits, and how do they facilitate exploitation in computer systems? Discuss its mitigation strategies.	10M
15. A).	Elaborate the importance of the document in the deliverable phase and describe the overall structure of a penetration testing deliverable.	10M
	OR	
15. B).	What is incident management, and how does it relate to ethical hacking?	10M

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H.T No: | | | | | | | | | | | **R18** **Course Code: A36212**

CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech VI Semester Regular Examinations Jun/ July-2024

Course Name: Mobile & Wireless Security

(CSC)

Date: 27.06.2024 FN **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 reasons for using projective coordinates in ECC scalar multiplication? 2 M
2. How does the adaptation proxy use the AppMeta from the application server to build a Protocol Adaptation Tree (PAT)? 2 M
3. List out possible attacks in MAP. 2 M
4. Write about WEP Policies? 2 M
5. What are the security challenges of Ad Hoc Network? 2 M
6. What do you mean by Identity-Based Cryptography? 2 M
7. What are the key features of GSM? 2 M
8. Compare 4G and 5G networks in terms of their speed and technological advancements. 2 M
9. Mention the three stages of key distribution. 2 M
10. What is data integrity in sensor network and IOT? 2 M

PART-B

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

11.A). Design a strategy utilizing the specialized arithmetic units and dual-port storage in the co-processor's data path to maximize efficiency and performance in elliptic curve arithmetic operations. 10M

OR

11. B). Explain the functionality of the adaptation proxy in enhancing security in a network environment using a neat diagram. Provide examples based on its role in negotiating with clients. 10M

12. A). What are the types of messages exchanged during initial and re- authentication in MAP? Illustrate an example of exchanging messages in case of a successful authentication in MAP 10M

OR

12. B). Discuss about IEEE 802.11 Horizontal Roaming and explain how Mobile IP handoff performance can be improved when a mobile station roams between a wireless LAN and a cellular network. 10M

13. A). What roles does a Trusted Third Party (TTP) play in protocol implementation for ad hoc networks, and why is its availability considered a new challenge? Discuss four different settings for the availability of a TTP. 10M

(P.T.O..)

OR

13. B). Describe how the SRP enhances security by protecting against attacks during the route establishment phase. Explain how SRP ensures that nodes can distinguish legitimate replies from malicious ones that attempt to provide false topological information. 10M

14. A). Compare and contrast the authentication methods used in 3G, and 4G networks. Explain how these methods impact the security and privacy of user data. 10M

OR

14. B). What are the primary security issues in GSM networks related to authentication and encryption? Discuss how these vulnerabilities affect overall network security in GSM networks? 10M

15. A). Explain the Q-Composite Random Key Predistribution Scheme and how it improves network resilience compared to the Basic Scheme in detail. 10M

OR

15. B). Describe the Polynomial Pool-Based Key Predistribution Scheme proposed. What efficient features does it offer that address the trade-offs or compromises found in other key distribution schemes? 10M

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H.T No: | | | | | | | | | | | R18 | Course Code: A36215

CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech VI Semester Regular/ Supplementary Examinations Jun/ July-2024

Course Name: Principles of Software Engineering
(CSC)

Date: 29.06.2024 FN **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. List out all the umbrella activities in process framework. 2 M
2. Describe the use of incremental process model. 2 M
3. Describe different types of system requirements. 2 M
4. List out the kinds of behavioral and object models. 2 M
5. Give the various types of architectural styles with example. 2 M
6. Write about class diagrams. 2 M
7. Differentiate verification and validation. Which type of testing address verification? Which type of testing address validation. 2 M
8. What are software metrics? 2 M
9. Discuss software reliability. 2 M
10. Explain software quality assurance. 2 M

PART-B

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

11.A). Express your views on "Software myth"? Discuss on various types of software myths and the true aspects of these myths. 10M

OR

11. B). Summarize briefly about Evolutionary process models with neat diagram. 10M

12. A). Explain briefly about the software requirements document. 10M

OR

12. B). i) Differentiate functional and non-functional requirements. 5M
ii) Give the steps involved in initiating requirements engineering. 5M

13. A). Define software architecture. Discuss about architectural design and architectural mapping using data flow in design process. 10M

OR

13. B). i) Explain different elements of class diagram and their relationships with neat sketch. 5M
ii) Draw Use case diagram for Hotel management system. 5M

(P.T.O..)

14. A). i) What is the role of testing in software development? 4M
ii) Compare black box testing with white box testing and Compare Alpha Testing with Beta Testing 6M

OR

14. B). What are the metrics used for software maintenance? Discuss. 10M

15. A). What is the need for risk management? Explain the process of risk identification, risk projection and risk refinement. 10M

OR

15. B). i) Explain about Software Reviews and formal technical reviews. 5M
ii) How the risk will be identified and Explain the RMMM Plan in brief. 5M

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H.T No: | | | | | | | | | | | **R18** | **Course Code: A36608**

CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech VI Semester Regular/ Supplementary Examinations Jun/ July-2024

Course Name: Deep Learning

(CSM)

Date: 25.06.2024 FN **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 is the difference between AI, ML, and DL?	2 M
2.	Recall Constrained Optimization and how is it used in machine learning?	2 M
3.	What is forward propagation in Deep Learning?	2 M
4.	How optimizers improve the efficiency of stochastic gradient descent?	2 M
5.	State how over fitting can be prevented in Machine Learning models?	2 M
6.	Define data normalization.	2 M
7.	What is the purpose of autoencoders in unsupervised learning applications?	2 M
8.	Compare RNNs and traditional feed forward neural networks	2 M
9.	List out some common techniques for model optimization	2 M
10.	What is the main goal of Generative Adversarial Networks?	2 M

PART-B

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

11.A).	Define Artificial Intelligence (AI)? Explain how has AI evolved over the years? Outline some of the current and future applications of AI?	10M
	OR	
11. B).	Assess the importance of derivatives in Machine Learning and Deep Learning. Explain how they are used in gradient-based optimization techniques to train Deep Learning models.	10M
12. A).	Analyze Linear Regression and its applications. Explain how the loss function and cost function are used in Linear Regression.	10M
	OR	
12. B).	Discuss the challenges of over fitting and under fitting in Deep Learning. Explain how these issues can be addressed.	10M
13. A).	Explain how L1 and L2 regularization techniques work, and how they can be used to prevent over fitting.	10M
	OR	
13. B).	Apply the concept of dropout regularization in Machine Learning and explain how does it help to improve the model performance?	10M

(P.T.O..)

14. A). Elaborate the process of Back propagation Through Time (BPTT) in RNNs, and explain how it is used to train RNN models? 10M

OR

14. B). What are denoising autoencoders, and how are they used to address the issue of noisy data in unsupervised learning applications like document clustering and sentiment analysis? 10M

15. A). Discuss how Markov Decision Processes are used in Reinforcement Learning. 10M

OR

15. B). Describe the process of training Variational Auto-encoders and explain how they can be used to generate new data. 10M

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H.T No: | | | | | | | | | | | **R18** | **Course Code: A36610**

CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech VI Semester Regular/ Supplementary Examinations Jun/ July-2024

Course Name: Internet Technologies

(CSM)

Date: 27.06.2024 FN **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 data types in PHP?	2 M
2.	What are the differences between echo and print in PHP?	2 M
3.	Write a syntax to create a nested webpage in HTML?	2 M
4.	Describe HTML layout structure with block diagram?	2 M
5.	Explain the life cycle of Servlet with suitable diagram?	2 M
6.	Distinguish between ServletConfig and ServletContext?	2 M
7.	What is the difference between include directive and include action in JSP?	2 M
8.	List down the major differences between the JSP Custom Tags and Java Beans?	2 M
9.	What is the difference between exec () and test () methods in javascript?	2 M
10.	List out the different ways an HTML element can be accessed in a JavaScript code?	2 M

PART-B

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

11.A).	Write a PHP program to swap two numbers with and without using the third variable?	10M
	OR	
11. B).	Explain the various modes of Opening a file in PHP with syntax.	10M
12. A).	Compare and contrast the difference between XML and HTML? Also mention the benefits of XML over HTML.	10M
	OR	
12. B).	Describe the three ways of adding CSS styling in HTML? Give the proper syntax for the same.	10M
13. A).	Write a servlet code which displays current system date and time.	10M
	OR	
13. B).	Discuss the concept of Cookies handling in Servlet? Also explain at least five servlet cookies handling methods.	10M
14. A).	Explain the Java Server Page Life Cycle with block diagram.	10M
	OR	
14. B).	Write a JSP program that calculates Powers of 2 for integers in the range (0-10).	10M
15. A).	Write a function in JavaScript that performs binary search on a sorted array.	10M
	OR	
15. B).	Write a JavaScript code to check number whether it is Armstrong or not?	10M

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H.T No: | | | | | | | | | | | **R18** **Course Code: A36611**

CMR COLLEGE OF ENGINEERING & TECHNOLOGY

(UGC AUTONOMOUS)

B.Tech VI Semester Regular/ Supplementary Examinations Jun/ July-2024

Course Name: Soft and Evolutionary Computing

(CSM)

Date: 29.06.2024 FN **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.	Interpret the Characteristics of Soft Computing.	2 M
2.	Distinguish between Crisp and fuzzy relations.	2 M
3.	Outline the idea of Hebb Networks.	2 M
4.	What are Auto associative Memory Network?	2 M
5.	Determine the need of Fuzzification.	2 M
6.	Classify the Fuzzy measures.	2 M
7.	Show the Architecture of ANFIS.	2 M
8.	Discuss the Importance of Hybrid Learning Algorithms.	2 M
9.	Summarize the mutation properties.	2 M
10.	Identify the need of Particle Swarm Optimization.	2 M

PART-B

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

11.A).	i) Summarize the Non-Iterative Fuzzy sets.	5M
	ii) Compare different technologies and applications of Neural Networks.	5M
	OR	
11. B).	i) Illustrate the Principle of Cartesian product of relations.	5M
	ii) Discuss about Traditional Optimization and Search Technologies.	5M
12. A).	i) Discuss about CP & ART Networks.	5M
	ii) Outline the Multiple Adaptive Linear Neuron.	5M
	OR	
12. B).	i) Develop the steps involved Kohonen Self Organizing Networks.	5M
	ii) What is the purpose to use TDNN?	5M
13. A).	i) Demonstrate the Aggregation of Fuzzy rules.	5M
	ii) Illustrate the Fuzzy Decision Making.	5M
	OR	
13. B).	i) Discuss about Formation and Decomposition of rules.	5M
	ii) Show the working of Fuzzy Expert Systems.	5M

(P.T.O..)

14. A).	i) Evaluate the working principle of Automobile LPG Prediction.	5M
	ii) Identify the Scope of ANFIS as a Universal Approximator.	5M
	OR	
14. B).	i) Can you Analyze the Applications of ANFIS?	5M
	ii) Show the working of Printed Character Recognition.	5M
15. A).	i) Construct the Applications of genetic algorithms.	5M
	ii) Summarize the importance of Fitness function.	5M
	OR	
15. B).	i) Demonstrate the Operators for genetic algorithms.	5M
	ii) Determine the Genetic Algorithm Cycle.	5M

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H.T No: | | | | | | | | | | | **R18** **Course Code: A36612**

CMR COLLEGE OF ENGINEERING & TECHNOLOGY

(UGC AUTONOMOUS)

B.Tech VI Semester Regular/ Supplementary Examinations Jun/ July-2024

Course Name: Natural Laguage Processing

(CSM)

Date: 02.07.2024 FN **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.	Define various ambiguities in NLP for Indian language Processingwith appropriate example.	2 M
2.	Define the Low-resource languages challenge in NLP. How can itbe addressed?	2 M
3.	Define Various Components of Information Retrieval System withits significance for NLP.	2 M
4.	What do you understand by Data annotation? How it is performedin NLP?	2 M
5.	Illustrate Word level and Document level tasks in NLP.	2 M
6.	Interpret the context free grammar situations in NLP with anexample.	2 M
7.	Define lexical semantics in brief.	2 M
8.	Outline various methods for discourse processing in NLP.	2 M
9.	Outline the major steps in Natural Language Generation models.	2 M
10.	Briefly Categorize the various issues in Machine Translationsystems.	2 M

PART-B

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

11.A).	Explain various Steps to perform Natural Language processingwith its various challenges.	10M
	OR	
11. B).	What are the different language models? Explain in detail about grammar-based language model.	10M
12. A).	Discuss the following Information Retrieval evaluation measureswith its significance in NLP: (i) Precision (ii) Recall (iii) F-score.	10M
	OR	
12. B).	Explain Stemming and lemmatization in NLP. Put some contrast on Wordnet lemmatization in detail.	10M
13. A).	Explain Text level Tasks analysis in NLP.	10M
	OR	
13. B).	What do you understand by Parsing? Explain Breadth First Search based Top-Down Parsing approach with example.	10M
14. A).	Illustrate Lesk's Algorithm for Word Sense Disambiguation.	10M
	OR	
14. B).	What is reference resolution in NLP? Define following terms in it with an example: (i) Referring expression (ii) Referent (iii) Co- refer (iv) Antecedent (v) Discourse model.	10M
15. A).	Discuss Natural language Generation system with its various blocks of processing in detail.	10M
	OR	
15. B).	Discuss the machine-based translation in NLP. Compare Rulebased and Corpus based translation methods.	10M

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H.T No: | | | | | | | | | | | **R18** | **Course Code: A36608**

CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech VI Semester Regular/ Supplementary Examinations Jun/ July-2024

Course Name: Deep Learning

(AIM)

Date: 27.06.2024 FN **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. Differentiate Deep learning vs Machine Learning. 2 M
2. Explain chain rule of conditional probability. 2 M
3. How do you choose between precision and recall? 2 M
4. How did you select training and validation data from data set? 2 M
5. How to reduce bias and variance in machine learning? 2 M
6. What is dropout? 2 M
7. Which kind of problems can be solved with RNN? 2 M
8. Explain document clustering. 2 M
9. Which technique is commonly used in generative learning? 2 M
10. Give real world examples of reinforcement learning. 2 M

PART-B

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

11.A). State and explain Baye's theorem? How this theorem is useful in deep learning explain with examples? 10M

OR

11. B). i) List out applications of deep learning. 5M
ii) Explain the history of deep learning. 5M

12. A). What is logistic regression? What are the factors we look for to classify a problem as logistic regression. Explain with example? 10M

OR

12. B). State and explain various evaluation measures in deep learning. 10M

13. A). Draw and explain the architecture of Convolution Neural Network. 10M

OR

13. B). Give short notes on i) Augmentation ii) Face detection iii) Bias 10M

14. A). Explain the characteristics of long short-term memory network. 10M

OR

14. B). i) Discuss any two applications of auto encoder. 5M
ii) List out applications of Recurrent neural networks. 5M

15. A). What is the role of generator and discriminator in a generative learning? 10M

OR

15. B). What is model optimization? Discuss the popular optimization techniques? 10M

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H.T No: | | | | | | | | | | | **R18** **Course Code: A30514**

CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech VI Semester Regular/ Supplementary Examinations Jun/ July-2024

Course Name: Computer Networks

(AIM)

Date: 29.06.2024 FN **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 limitations of Arpanet? 2 M
2. Write the advantages of optical fiber over twisted-pair Cable. 2 M
3. Write about Piggybacking Protocol. 2 M
4. Give the classification of multiple access protocols. 2 M
5. Give the advantages of hierarchical routing. 2 M
6. What is optimality principle? 2 M
7. What is the role of UDP in internet transport protocol? 2 M
8. What are the key functions of transport services in computer networking? 2 M
9. What is TELENET? 2 M
10. What is the architecture of WWW? 2 M

PART-B
Answer the following. Each question carries TEN Marks. **5x10=50M**

11.A). i) Compare and contrast the OSI and TCP/IP reference models. 6M
ii) How did the ARPANET contribute to the establishment of modern communication and networking protocols? 4M

OR

11. B). Discuss in detail about Guided Transmission media and Unguided Transmission media. 10M

12. A). i) What are the different types of error detection methods? 3M
ii) A bit stream 10011101 is transmitted using the standard CRC method described in the text. The generator polynomial is $x^3 + 1$. Show the actual bit string transmitted. Suppose that the third bit from the left is inverted during transmission. Show that this error is detected at the receiver's end. Give an example of bit errors in the bit string transmitted that will not be detected by the receiver. 7M

OR

12. B). i) Compare between Learning Bridges and Spanning Tree Bridges. 4M
ii) Explain about Go-Back N ARQ Protocol. 6M

13. A). i) Differentiate between Virtual Circuit Versus Datagram Subnets. 4M
ii) Explain leaky bucket and token bucket algorithms. 6M

OR

13. B). Explain Congestion control in open loop and closed loop. 10M

(P.T.O..)

14. A). i) Explain in detail about Connection management. 6M
ii) Discuss about TCP and UDP Protocols 4M

OR

14. B). Compare the TCP header and the UDP header. List the fields in the TCP header that are missing from UDP header. Give the reason for their absence. 10M

15. A). Write short notes on the following: 10M
(i) MIME (ii) Audio compression (iii) DNS (iv) Voice over IP.

OR

15. B). Explain architecture, services and protocols used by EMAIL. 10M

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H.T No: | | | | | | | | | | | **R18** | **Course Code: A36710**

CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech VI Semester Regular/ Supplementary Examinations Jun/ July-2024

Course Name: Web & Social Media Analytics

(CSD)

Date: 25.06.2024 FN **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 is a text mining?	2 M
2.	Compare business analytics and business intelligence in terms of their functions and outcomes.	2 M
3.	Name two common text mining tools used in industry	2 M
4.	Discuss the main goals of Natural Language Processing (NLP)	2 M
5.	What is the primary objective of sentiment analysis?	2 M
6.	Describe the main steps involved in the Sentiment Analysis process.	2 M
7.	What is the goal of search engine optimization?	2 M
8.	Discuss the potential benefits and applications of Web Usage Mining for businesses	2 M
9.	List two benefits of using social analytics in business decision-making	2 M
10.	Discuss the differences between sensitivity analysis and what-if analysis in decision support systems.	2 M

PART-B

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

11.A).	Describe the application of analytics in managing a vaccine supply chain, emphasizing its role in maintaining effectiveness and safety.	10M
	OR	
11. B).	Discuss the various components of a computerized decision support system (DSS).	10M
12. A).	Discuss the fundamental steps involved in the text mining process and explain the importance of each step.	10M
	OR	
12. B).	Summarize the main steps involved in the Natural Language Processing.	10M
13. A).	Design a sentiment analysis system for analyzing social media posts to assess public sentiment towards a controversial social issue.	10M
	OR	
13. B).	A marketing team is launching a new advertising campaign and wants to measure its effectiveness on social media. Develop a Sentiment Analysis strategy to analyze public reaction to the campaign on platforms like Twitter and Facebook.	10M

(P.T.O..)

14. A). Critically analyze the effectiveness of web structure mining in improving website usability and user experience for e-commerce platforms. 10M

OR

14. B). Explain search engines and its different optimization techniques. 10M

15. A). Explain the concept of social analytics and its role in leveraging social media for business intelligence. 10M

OR

15. B). Implement goal-seeking techniques to determine the optimal production levels that maximize profit for a technology company. 10M

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H.T No: | | | | | | | | | | | R18 | Course Code: A36601

CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech VI Semester Regular/ Supplementary Examinations Jun/ July-2024

Course Name: Machine Learning

(CSD)

Date: 29.06.2024 FN **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. Classify different learning paradigms. 2 M
2. What are the effects of noise on a hypothesis. 2 M
3. Define association rule and list the measures involved in learning association rule. 2 M
4. List out the assumptions associated with linear regression. 2 M
5. Relate how dimensionality reduction is useful in machine learning. 2 M
6. Outline various distance measures used in clustering. 2 M
7. What are the benefits of pruning in decision tree induction? 2 M
8. Define Logistic Discrimination and list its merits. 2 M
9. Interpret perceptron learning rule. 2 M
10. Compare bagging and boosting. 2 M

PART-B

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

11.A). Define VC dimension. What are the elements of version space. Let X be the set of all real numbers. Describe a hypothesis for X for which the VC dimension is 2. 10M

OR

11. B). Compare supervised, unsupervised and reinforcement learning. Explain with suitable examples. 10M

12. A). Explain how Support Vector Machine can be used for classification of linearly separable data. 10M

OR

12. B). Use naive Bayes algorithm to determine whether a red domestic SUV car is a stolen car or not using the following data: 10M

Example No.	Colour	Type	Origin	Whether stolen
1	red	Sports	domestic	yes
2	red	Sports	domestic	no
3	red	Sports	domestic	yes
4	yellow	Sports	domestic	no
5	yellow	Sports	imported	yes
6	yellow	SUV	imported	no
7	yellow	SUV	imported	yes
8	yellow	SUV	domestic	no
9	red	SUV	imported	no
10	red	Sports	imported	yes

(P.T.O..)

13. A). Illustrate how principal component analysis is carried out to reduce dimensionality of data sets. 10M

OR

13. B). Given the dataset {a, b, c, d, e} and the following distance matrix, construct a dendrogram by complete linkage hierarchical clustering using the agglomerative method. 10M

	a	b	c	d	e
a	0	9	3	6	11
b	9	0	7	5	10
c	3	7	0	9	2
d	6	5	9	0	8
e	11	10	2	8	0

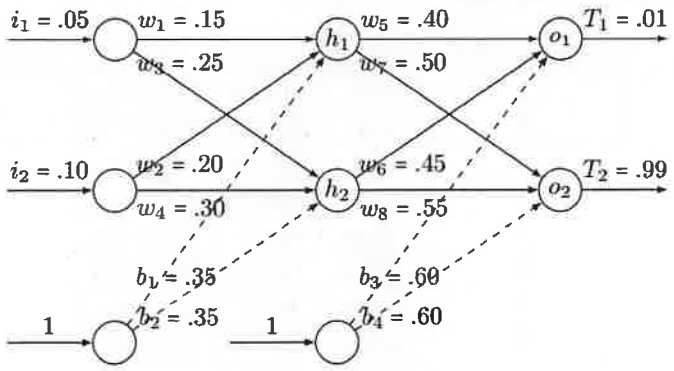
14. A). Develop a decision tree for the following data 10M

Age	Competitions	Type	Class (Profit)
Old	Yes	Software	Down
Old	No	Software	Down
Old	No	Hardware	Down
Mid	Yes	Software	Down
Mid	Yes	Hardware	Down
Mid	No	Hardware	Up
Mid	No	Software	Up
New	Yes	Software	Up
New	No	Hardware	Up
New	No	Software	Up

OR

14. B). Illustrate mathematical formulation for discrimination by regression. 10M

15. A). For the network with two inputs, two outputs and one hidden layer as shown in figure below use backpropagation algorithm to determine the value of weight update at w5. 10M



OR

15. B). Analyze the limitations of single layer Perceptrons in computing logical functions. Suggest an alternative network to overcome the above limitations. 10M

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H.T No: | | | | | | | | | | | **R18** Course Code: A36702

CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech VI Semester Regular/ Supplementary Examinations Jun/ July-2024

Course Name: Big Data Processing

(AID)

Date: 29.06.2024 FN **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 Big Data? 2 M
2. Write the importance of Big Data over Relational database. 2 M
3. Explain any two HDFS commands with example. 2 M
4. With an example, explain reading from HDFS. 2 M
5. Write the features of key-value data base. 2 M
6. Write disadvantages of Graph database. 2 M
7. List the features of Hadoop. 2 M
8. What are the components of Hadoop? 2 M
9. Write difference Between Hbase and HDFS. 2 M
10. List the features of Cassandra. 2 M

PART-B

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

11.A). What are the various forms of Big Data? Explain the benefits of big data and give industry examples. 10M

OR

11. B). What is Crow sourcing analytics and explain its features? List the Indian big data companies. 10M

12. A). What is NOSQL data base and explain features of NOSQL data base. 10M

OR

12. B). Explain NOSQL data base management techniques in detail. 10M

13. A). Explain the following with an example: 10M
i) Key-value data base
ii) Document data base

OR

13. B). Explain column-family and graph data bases in detail. 10M

14. A). Explain Map reduce data flow with single reduce and multiple reduce. 10M

OR

14. B). Describe MapReduce Execution steps with neat sketch. 10M

15. A). Illustrate Hbase architecture with neat diagram and explain its data model. 10M

OR

15. B). What is Cassandra? Explain data replication in Cassandra. 10M

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H.T No: | | | | | | | | | | | **R18** **Course Code: A36637**

CMR COLLEGE OF ENGINEERING & TECHNOLOGY

(UGC AUTONOMOUS)

B.Tech VI Semester Regular Examinations Jun/ July-2024

Course Name: Artificial Intelligence Applications

(Minor Programme in AIML)

Date: 06.07.2024 FN **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 is linguistic in natural language processing?	2 M
2.	What are the advantages of quantum computing in Artificial Intelligence?	2 M
3.	Explain the role of AI in disease detection.	2 M
4.	Illustrate the key performance indicators (KPIs) that companies should be tracking when implementing AI in their sales and customer support process.	2 M
5.	Explain the RPA implementation in purchase order processing.	2 M
6.	How do RPA handle support requests and after sale services.	2 M
7.	What role does the AI and machine learning have in information security?	2 M
8.	List the technologies used in digital twin.	2 M
9.	Explain the challenges with AI for social good that need to be tackled	2 M
10.	How blockchain and AI are changing business?	2 M

PART-B

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

11.A).	Justify your answer, whether linguistics is important for natural language processing.	10M
	OR	
11. B).	Assess the applications of quantum computing and Justify how Artificial Intelligence uses quantum computing.	10M
12. A).	Explain the limitations and challenges of using machine learning algorithms to recognize emotions based on human facial expressions and body language, and how can these challenges be addressed?	10M
	OR	
12. B).	Illustrate the key components of an AI-based system designed to predict diseases early, and how do they work together to achieve this goal?	10M
13. A).	Illustrate the uses of Robotic process Automation in supply chain management.	10M
	OR	
13. B).	Outline the Implementation Steps of Robotic process Automation in Supply Chain Management.	10M
14. A).	Analyze, how AI is used for improved threat defense.	10M
	OR	
14. B).	Compare and contrast 3D model and digital twin.	10M
15. A).	How AI and ML can be used to solve problems?	10M
	OR	
15. B).	How AI and block chain work together?	10M

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H.T No: | | | | | | | | | | | R18 | Course Code: A30540

CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech VI Semester Regular Examinations Jun/ July-2024

Course Name: Big Data Analytics

(Minor Programme in Data Science)

Date: 06.07.2024 FN **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 4 Vs in big data. 2 M
2. Why is Big Data important for data analysis? 2 M
3. Identify the daemon services needed to run a job on HDFS? 2 M
4. What is the default block size of HDFS block? Mention why a larger block size is needed for HDFS. 2 M
5. Give the syntax for text input format and explain with an example. 2 M
6. Mention the benefits of Map Reduce programming. 2 M
7. Provide an example for creating a table and loading data into it using HiveQL. 2 M
8. Explain managed and external tables in hive. 2 M
9. Explain column oriented and row oriented data stores in HBASE. 2 M
10. Write about Data replication in Cassandra. 2 M

PART-B

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

11.A). i) Choose the applications that do not fit into Big Data Analytics. 5M
ii) Differentiate Relational databases and Big data. 5M

OR

11. B). Explain about NoSQL database systems. 10M

12. A). Illustrate the various components of Hadoop Ecosystem with their purposes. 10M

OR

12. B). Mention the different commands used on Hadoop Command Line Interface. 10M

13. A). How is a Map Reduce application developed? Explain with the help of an example. 10M

OR

13. B). i) Explain how failures are handled in Map Reduce in detail. 5M
ii) What are the different counters used by Map Reduce? Explain. 5M

14. A). i) Explain about metastores in Hive. 5M
ii) What is a Hive data type and explain the table creation in detail. 5M

OR

14. B). Discuss the procedure to build an online query application with HBase. 10M

15. A). Explain about HBASE and Architecture of HBASE with neat diagram.

OR

15. B). Explain the features and importance of Cassandra. 10M

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H.T No: | | | | | | | | | | | **R18** **Course Code: A36228**

CMR COLLEGE OF ENGINEERING & TECHNOLOGY

(UGC AUTONOMOUS)

B.Tech VI Semester Regular Examinations Jun/ July-2024

Course Name: Foundation of Cyber Security

(Minor Programme in Cyber Security)

Date: 06.07.2024 FN **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.	Define attack. How an attack is different from a threat	2 M
2.	What is access control service?	2 M
3.	Define Worm. List all types of worms.	2 M
4.	Define Flooding attack.	2 M
5.	Define intruder. What is the use of intrusion detection system.	2 M
6.	List the applications of firewalls.	2 M
7.	List the Software security issues.	2 M
8.	What is physical security?	2 M
9.	What are E-Mail and Internet usage policies?	2 M
10.	Differentiate Cybercrime and Computer crime.	2 M

PART-B

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

11.A).	i) Explain the functional requirements for providing security against attacks.	5M
	ii) Describe the fundamental design principles of security.	5M
	OR	
11. B).	i) What are access control principles of an organization?	5M
	ii) Explain Role Based Access Control model to assign access permissions to users with neat diagram.	5M
12. A).	i) Define Virus. Explain how it propagates and exploits the system.	5M
	ii) What is Social Engineering attack. Explain different types of Social Engineering attacks?	5M
	OR	
12. B).	i) Define Denial-of-Service attack. Explain how an attacker performs DoS attack to degrade the performance of the system.	5M
	ii) Differentiate DoS attack and DDoS attack.	5M
13. A).	Explain the following intrusion detection systems i) Network-Based Intrusion Detection ii) Hybrid Intrusion Detection.	10M
	OR	
13. B).	Explain the characteristics, types and configurations of firewalls.	10M

(P.T.O..)

14. A). Explain how a program input and output can be handled in software security. 10M

OR

14. B). What are the possible threats to physical security and explain the procedure for recovery from physical security breaches. 10M

15. A). i) Explain the necessity of providing security awareness of Human Resources Security. 5M
ii) Explain employment practices and policies for Human Resources Security. 5M

OR

15. B). i) List out the responsibilities of Computer Security Incident Response Teams (CSIRT). 5M
ii) Explain about intellectual property rights, privacy, and ethical issues. 5M

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H.T No: | | | | | | | | | | | **R18** | **Course Code: A30535**

CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech VI Semester Regular Examinations Jun/ July-2024

Course Name: Machine Learning

(Honors Programme in CSE)

Date: 06.07.2024 FN **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.	List any two issues in machine learning.	2 M
2.	Define information gain.	2 M
3.	Define Artificial neural network.	2 M
4.	What is the purpose of bias in an Artificial Neural Network?	2 M
5.	State Bayes theorem.	2 M
6.	List any four lazy learning algorithms.	2 M
7.	How does mutation play a role in maintaining diversity within a population of solutions in Genetic Algorithms?	2 M
8.	What is the role of a reward function in reinforcement learning?	2 M
9.	Define analytical learning.	2 M
10.	What are the limitations of analytical learning in situations where explicit rules or knowledge may be incomplete or inconsistent?	2 M

PART-B

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

11.A).	Write Candidate-Elimination Algorithm.	10M
	OR	
11. B).	Analyze different issues in Decision Tree Learning.	10M
12. A).	Explain the backpropagation algorithm in training neural networks.	10M
	OR	
12. B).	Explain how to estimate hypothesis accuracy.	10M
13. A).	Briefly outline the major ideas of naïve Bayesian classification with suitable example.	10M
	OR	
13. B).	Illustrate the supervised and unsupervised machine learning with a suitable example.	10M
14. A).	Illustrate the Genetic algorithm with a suitable example.	10M
	OR	
14. B).	Write a sequential covering algorithm.	10M
15. A).	Discuss about the explanation-based learning of search control knowledge.	10M
	OR	
15. B).	Compare and contrast the inductive and analytical learning.	10M

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H.T No: | | | | | | | | | | | **R18** | **Course Code: A30565**

CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech VI Semester Regular Examinations Jun/ July-2024

Course Name: Research Methodologies

(Honors Programme in CSE)

Date: 08.07.2024 FN **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 objectives of Research? 2 M
2. Identify the features of a good research study. 2 M
3. Explain about Problem Definition process. 2 M
4. Define Plagiarism. 2 M
5. List and describe some sources of primary data collection. 2 M
6. Relate the systematic sampling and stratified sampling. 2 M
7. Estimate the importance of research design and need for research design. 2 M
8. Build the methodology of research. 2 M
9. List out the steps involved in writing a report. 2 M
10. Outline Bibliography and References. 2 M

PART-B

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

11.A). List the types of research. Explain the terms Fundamental Research, Basic Research, Applied Research and Industrial Research with examples. 10M

OR

11. B). Develop the Criteria of Good Research. 10M

12. A). What is a literature review? Explain the effective literature studies approach for a research problem. 10M

OR

12. B). Illustrate the Characteristics of Good Research Problem. 10M

13. A). What is data processing and write about analysis methods? 10M

OR

13. B). Model the "Sample Design", Under what circumstances one should use a probability sample? 10M

14. A). Explain in detail about research design. 10M

OR

14. B). Demonstrate some of the important research designs used in experimental hypothesis-testing research study. 10M

15. A). What is IPR? Describe in detail about intellectual property rights. 10M

OR

15. B). Examine the basic principles and techniques of writing the technical report and brief on the various stages. 10M

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