Code No: RT22014 $\boxed{\textbf{R13}}$ $\boxed{\text{SET - 1}}$

II B. Tech II Semester Regular Examinations, April/May – 2016
MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS
(Com. to CE, EIE)

Time: 3 hours   Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
      2. Answer **ALL** the question in **Part-A**
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PART –A

1. a) Distinguish Price Elasticity to that of Income Elasticity of Demand   (4M)

    b) Draw Iso-Quant Graph and list out characteristics of Iso-qunats   (4M)

    c) Explain the managerial theories of firm.   (3M)

    d) Draw graph for Product Life Cycle(PLC) and list out various stages of PLC   (3M)

    e) Determine Stock Velocity if Sales is Rs.20.00 Lakhs, Gross Profit is 25%, Opening Stock is Rs. 4.50 Lakhs and Closing Stock is Rs.3.50 Lakhs and assume number of days in a year is 365 Days   (4M)

    f) Determine Accounting Rate of Return if Average Income is Rs.5.00 Lakhs, Initial Cost of Investment is Rs.15.00 Lakhs, Scrap Value is Rs.2.00 Lakhs and assume that the company follows Straight Line Method of Depreciation   (4M)

PART –B

2. a) List out various scope areas of managerial economics & its relevance to Civil Engineering Discipline   (8M)

    b) Draw Demand Graph and enlist various assumptions, properties and limitations to law of demand.   (8M)

3. a) Draw graph for law of variable proportions and describe the behavior of average, marginal and total production curves behavior in different phases.   (8M)

    b) Explain the Break Even Analysis role in developing organization   (8M)

4. a) How price and output is determined under perfect competition for industry and firm in short run?   (8M)

    b) List different methods of pricing and explain any two methods of pricing in detail?   (8M)

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5. a) Differentiate features, merits and demerits Sole-trader and Partnership form of business organization? (8M)

   b) What are the different objectives and features of establishing Public Sector Undertakings (PSUs) by Government? (8M)

6. a) Differentiate Accounting Concepts & Conventions and explain any six of them. (8M)

   b) Journalize the following entries in the Books of M/s. Rock Well Industries Ltd. (8M)

No	Date	Description	Rs Lakhs.
1	01-01-2016	Started Business with cash	5.00
2	02-01-2016	Deposited in Andhra Bank	3.00
3	05-01-2016	Purchased Goods on Credit from ABC Ltd	15.00
4	08-01-2016	Sold goods on Credit to XYZ Ltd	5.00
5	10-01-2016	Paid Freight Charges by Cheque	0.25
6	25-01-2016	Paid Salaries from Bank	2.00
7	30-01-2016	Drawn Cash from Bank	5.00
8	31-01-2016	Purchased Furniture on Credit from GBL	1.20

7. a) Compare features merits and demerits of Pay Back Period and Accounting Rate of Return methods of capital budgeting. (8M)

   b) Determine Pay Back Period, Accounting Rate of Return for the following information (8M)

Year	Investment	2011	2012	2013	2014	2015	Scrap
Cash flow (Rs Lakhs)	30.00	7.00	6.50	8.50	3.00	5.75	5.00

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PART –A

1. a) Explain the demand factors.   (4M)
    b) Differentiate internal and external economies of scale of production   (3M)
    c) Features of perfect competition   (3M)
    d) List various contents in partnership deed   (4M)
    e) Determine Debtors Velocity if Sales is Rs.30.00 Lakhs, Credit Sales is 80%,   (4M)
        Opening Balance of Debtors is Rs.7.50 Lakhs and Closing Balance of Debtors is
        Rs.4.50 Lakhs and assume number of days in a year is 365 Days.
    f) Determine Pay Back Period for the following information in Lakhs of Rupees   (4M)

Initial Cost	I-Year	II-Year	III- Year	IV-Year	V-Year
15.00	3.00	4.50	5.50	3.50	2.75

PART -B

2. a) Explain the Law of Demand? Explain the difference type of income and price   (8M)
        Elastic types.
    b) Estimate Demand for year 2025 using method of least squares with the help of   (8M)
        following information:

Year	1991	1995	1999	2011	2015
Sales in Rs. Lakhs	2	5	8	12	20

3. a) What are the reasons, sources for economies of scale? List and explain various   (8M)
        types of internal economies of scale?
    b) Determine BEP, Fixed Cost, and PV Ratio for the following information: (8M)

Description	2014-15	2015-16
Sales(Rs. Lakhs)	12.00	24.00
Profit(Rs. Lakhs)	4.00	12.00

4. a) How price and output is determined under Monopolistic competition for group and (8M)
        firm in both short run & long run?
    b) What are the situations, objectives and reasons for fixing price? Also explain any   (8M)
        four modern methods of price fixation?

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5. a) Differentiate features, merits and demerits Private Limited and Public Limited Companies?   (8M)

    b) Discuss the Business cycles role in changing Scenario of Business   (8M)

6. a) What are subsidiary books? Explain in detail about any four of them along with proper formats?   (8M)

    b) Compute Current ratio, Quick Ratio and Cash Ratio with the help of following information: (8M)

No	Description	Rs. Lakhs
1	Cash	2.25
2	Bank	15.50
3	Creditors	2.50
4	Bills Payables	4.50
5	Debtors	8.00
6	Bills Receivables	2.00
7	Loan from Bank	3.50
8	Loans and Advances to Suppliers	5.00
9	Bank Over Draft	1.50
10	Prepaid Expenses	0.50
11	Outstanding Incomes	0.25
12	Outstanding Expenses & Salaries	1.00
13	Marketable Securities	6.00
14	Short Term Investments	4.00
15	ST Fixed Deposits	2.00

7. a) Compare features, merits and demerits of Accounting Rate of Return, Profitability Index and Internal Rate of Return methods of capital budgeting.   (8M)

    b) Determine Internal Rate of Return for the following information regarding Project-Z   (8M)

Year	Investment	2011	2012	2013	2014	2015	Scrap
Cash flow (Rs Lakhs)	25.00	6.00	5.50	4.50	6.00	2.75	2.00
PV Factor 10%	1.00	0.909	0.826	0.751	0.683	0.621	0.621
PV Factor 14%	1.00	0.877	0.769	0.675	0.592	0.519	0.519

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PART –A

1. a) Differentiate Income Elasticity & Promotional elasticity (4M)
   b) Differentiate Average Cost and Marginal Cost (4M)
   c) Explain Methods of pricing (3M)
   d) Explain clauses in Memorandum of Association (3M)
   e) Determine Current Ratio If Cash Rs.2.50 Lakhs, Bank Rs. 6.50 Lakhs, Debtors (4M) Rs. 10.00 Lakhs, Stock Rs.2.00 Lakhs, Bills Receivables Rs. 2.00 Lakhs, Bills Payable Rs. 3.00 Lakhs, Creditors Rs.6.00 Lakhs and Bank Over Draft Rs.2.50 Lakhs
   f) Determine Net Present Value for the following information in Lakhs of Rupees (4M)

Initial Cost	I-Year	II-Year	III- Year
6.00	3.50	2.50	1.50
Present Value @ 10%	0.909	0.826	0.751

PART -B

2. a) What is Managerial Economics? What are the objectives, scope and uses of (8M) managerial economics?
   b) What is Demand Elasticity? Explain different methods of Demand Elasticity. (8M)

3. a) What is a production function? What are the different types of production (8M) functions used in short and long run?
   b) Determine Sales Volume to get a desired profit as given in the table: (8M)

Description	ABC Ltd	XYZ Ltd	PQR Ltd
Sales Price Per Unit	50	100	25
Variable Cost Per Unit	40	90	20
Fixed Cost (Rs. Lakhs)	10.00	25.00	15.00
Desired Profit(Rs. Lakhs)	25.00	15.00	5.00

4. a) How price and output is determined under Monopoly and Monopolistic (8M) competition for in short run?
   b) How different methods of pricing is useful for fixing price for existing and new (8M) products depending on Product Life Cycle Stages and Business Cycle stages?

5. a) Differentiate features, merits and demerits Cooperative Society and Joint Stock (8M) Companies?
   b) Compare contents in Memorandum of Association and Articles of Association? (8M)

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6. a) Explain the difference between Funds flow and cash flow statements. (8M)
   b) Prepare Three Column Cash in the Books of M/s. MIC Ltd. (8M)

No	Date	Description
1	01-12-2015	Opening Balance of cash Rs.4.00 Lakhs
2	03-12-2015	Opening Balance of Bank Rs.8.00 Lakhs
3	06-12-2015	Purchased Goods on Credit from ABC Ltd for Rs. 15.00 Lakhs and Paid Cash of Rs. 1.50 Lakhs and rest on credit
4	10-12-2015	Sold goods on Credit to XYZ Ltd Rs. 30.00 Lakhs, Received Cash of Rs.2.00 Lakhs &a bank cheque for Rs.18.00 Lakhs and rest on credit
5	13-12-2015	Paid Freight Charges by Cheque Rs.1.25 Lakhs
6	17-12-2015	Paid Salaries from Bank Rs.1.15 Lakhs
7	20-12-2015	Drawn Cash from Bank Rs.0.50 Lakhs
8	24-12-2015	Purchased Furniture on Credit from M/S. Tumbi Rs. 4.00 Lakhs
9	26-12-2015	Purchased A/C from M/S. Godrej Ltd Rs. 1.00 Lakhs paid through bank
10	28-12-2015	Purchased Motor Car on Credit from M/S. BMW Rs. 40.00 Lakhs and paid cash of Rs.1.00 Lakhs
11	30-12-2015	Received a cheque from XYZ Ltd for Rs.9.00 Lakhs and Rs.1.00 Lakhs discount
12	31-12-2015	Paid a cheque from ABC Ltd for Rs.12.00 Lakhs and Rs.1.50 Lakhs discount

7. a) Compare features merits and demerits of Net Present Value and Internal Rate of Return methods of capital budgeting. (8M)
   b) Determine Net Present Value for the following information (8M)

Project	Investment	2011	2012	2013	2014	2015	Scrap
X Cash flow (Rs Lakhs)	25.00	6.00	5.50	4.50	6.00	2.75	2.00
Y Cash flow (Rs Lakhs)	15.00	2.00	3.50	7.50	8.00	2.00	4.00
PV Factor 10%	1.00	0.909	0.826	0.751	0.683	0.621	0.621

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PART –A

1. a) Explain the Explicit Cost Vs Implicit Cost   (4M)
    b) Identify formula for Profit Volume Ratio and list uses of PV Ratio   (4M)
    c) Features of monopoly competition   (3M)
    d) Differences between private limited and public limited companies   (3M)
    e) Determine Debt-Equity Ratio and Proprietary Ratio If Fixed Assets Rs.25.00   (4M)
        Lakhs, Equity Capital Rs. 15.00 Lakhs, Debentures Rs. 10.00 Lakhs, Reserves and
        Surplus Rs.7.50 Lakhs, Premium on Shares & Debentures Rs. 4.00 Lakhs, and
        Goodwill Rs.1.50 Lakhs
    f) Determine Profitability Index for the following information in Lakhs of Rupees   (4M)

Initial Cost	I-Year	II-Year	III- Year
8.00	5.50	4.50	3.50
Present Value @ 10%	0.909	0.826	0.751

PART –B

2. a) What do you understand by different distinctions of demand how they are useful   (8M)
        in estimation of demand for a product in hypothetical market?
    b) Estimate Demand for year 2030 using method of least squares with the help of   (8M)
        following information:

Year	2001	2004	2008	2010	2015
Sales in Rs. Lakhs	4	2	6	10	12

3. a) What is Cost-Output Relationship? Explain the behavior of various curves in both   (8M)
        short and lung run.
    b) Determine BEP, Fixed Cost, and PV Ratio for the following information: (8M)

Description	2014-15	2015-16
Sales(Rs. Lakhs)	10.00	48.00
Profit(Rs. Lakhs)	4.00	20.00

4. a) Differentiate features of Perfect competition, Monopoly and Monopolistic   (8M)
        Markets?
    b) Explain the Cost-Volume profit analysis role in Business decision.   (8M)

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5. a) Differentiate features of Sole-trader, Hindu Undivided Family(HUF) and Cooperative Society form of organizations?   (8M)
    b) Explain the concepts of Business cycles.   (8M)

6. a) What are the financial statements and explain different techniques of analyzing them?   (8M)
    b) Compute Current ratio, Quick Ratio and Cash Ratio with the help of following information: (8M)

No	Description	Rs. Lakhs
1	Cash	5.25
2	Bank	15.00
3	Creditors	12.00
4	Bills Payables	4.00
5	Debtors	6.00
6	Bills Receivables	4.00
7	Loan from Bank	1.50
8	Loans and Advances to Suppliers	2.00
9	Bank Over Draft	4.50
10	Prepaid Expenses	1.50
11	Outstanding Incomes	2.25
12	Outstanding Expenses & Salaries	1.50
13	Marketable Securities	8.00
14	Short Term Investments	3.00
15	ST Fixed Deposits	5.00

7. a) Compare features merits and demerits of Pay Back Period and Accounting Rate of Return methods of capital budgeting.   (8M)
    b) Determine Pay Back Period and Profitability Index for the following information about Project X   (8M)

Year	Investment	2011	2012	2013	2014	2015	Scrap
Cash flow (Rs Lakhs)	10.00	2.00	3.00	4.50	5.00	3.75	1.50

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II B. Tech II Semester Regular Examinations, April/May – 2016
PULSE AND DIGITAL CIRCUITS
(Com. to EEE, ECC)

Time: 3 hours   Max. Marks: 70

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PART –A

1.	a)	What is meant by synchronization?	(4M)
	b)	Differentiate between sampling and logic gates.	(4M)
	c)	Draw the ringing circuit and derive its transfer function.	(4M)
	d)	What are various configurations of a clipping circuit.	(4M)
	e)	Why clamping circuit is called as DC restorer.	(3M)
	f)	What is hysteresis?	(3M)

PART -B

2. a) Derive expression for rise time and percent tilt of a RC high pass circuit when   (8M)
    square as input?
    b) A symmetrical square wave whose peak to peak amplitude is 1V and whose   (8M)
    average value is zero is applied to an RC integrating circuit. The time constant is
    equal to time period of the square wave form. Find the peak to peak value of the
    output wave form.

3. a) With neat diagram and derivation explain the working of a clipping circuit at two   (8M)
    independent levels.
    b) Design a diode clamper circuit to clamp the positive peaks of the input signal   (8M)
    at zero level. The frequency of the input voltage is 1000 Hz.

4. a) What is a Bistable Multivibrator.? Explain the operation of any one of the Bistable   (8M)
    Multivibrators.
    b) Design a Bistable Multivibrator if V_{CC}=V_{BB} =11V. The DC current gain of each   (8M)
    Transistor is30.

5. a) Explain the working of AND gate with diode.   (8M)
    b) Explain the working of NOR gate using DTL Logic.   (8M)

6. a) Design a bootstrap sweep generator given V_{CC}=15V, I_{Csat}=6mA and h_{femin}=30   (8M)
    b) Explain the working of a UJT based time base generator.   (8M)

7. a) Draw and explain the operation of a four diode sampling gate.   (8M)
    b) With the help of a circuit diagram and waveform explain frequency division by an   (8M)
    astable blocking oscillator.

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PART –A

1. a) What is an attenuator?   (4M)
    b) Explain the operation of a diode clipper.   (4M)
    c) What is the importance of commutating capacitors?   (4M)
    d) Explain the working of miller sweep circuit.   (4M)
    e) Explain what a pedestal gate circuit is.   (3M)
    f) What is fan-in & fan-out?   (3M)

PART -B

2. a) Find the expression for output voltage when a ramp signal is applied to a RC Low   (8M)
        Pass filter circuit.
    b) A 10Hz Square wave is applied to an amplifier. Calculate and plot the output wave   (8M)
        form under the following conditions. The Lower 3dB frequency is a) 0.5Hz b) 5Hz
        and c) 50Hz.

3. a) What is clamping circuit theorem? Derive an expression.   (8M)
    b) Draw and explain the working of a diode comparator.   (8M)

4. a) Draw the circuit of a self-biased binary and explain its operation   (8M)
    b) Design a Flip-Flop with the following specifications, $V_{CC}=V_{BB}=12V$, (8M)
        $I_{C(sat)}$ =10mA, $h_{FE(min)}$=25. Maximum Trigger frequency = 20KHz.

5. a) Explain the operation of OR gate using diode logic.   (8M)
    b) Explain the circuit of NAND gate using TTL logic.   (8M)

6. a) Define and derive expressions for displacement error, slope error and transmission   (8M)
        errors.
    b) With neat diagram and waveforms explain the working principle of a transistor   (8M)
        current sweep circuit.

7.   Write short notes on.
    a) Unidirectional diode gate   (6M)
    b) Sweep circuit Frequency division   (6M)
    c) Bidirectional sampling gate using transistor.   (4M)

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SET - 3

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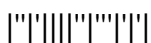3. Answer any **THREE** Questions from **Part-B**

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PART –A

1. a) Explain any one application of a CRO   (4M)
    b) Explain about regenerative and non-regenerative comparators.   (4M)
    c) Explain the difference between one-way and two-way clamping circuits.   (4M)
    d) Explain a triggering mechanism of a monostable multivibartor   (4M)
    e) What is positive logic?   (3M)
    f) Explain how linearly varying current waveforms are generated?   (3M)

PART -B

2. a) A Pulse of 6V amplitude and 0.8ms duration is applied to an RC High pass circuit   (8M)
       with R=10K Ohm and C=0.47 Micro farad. Determine the Percent Tilt in the
       output.
    b) Explain the operation of a Compensate attenuator   (8M)

3. a) With the help of a neat diagram explain the working of a emitter coupled clipper   (8M)
       circuit.
    b) A 200V peak square wave with an average value of 0V and a period of 30ms   (8M)
       is to be negatively clamped at 50V. Draw the circuit diagram necessary and also
       draw input and output waveforms.

4. a) Draw and explain the operation of collector coupled Astable multivibrator. (8M)
    b) Draw and explain the operation of a Schmitt trigger and find an expression for its   (8M)
       UTP.

5. a) Design and Explain CMOS inverter circuit   (8M)
    b) What is Emitter Coupled Logic? State its advantages compared to TTL and other   (8M)
       logic families.

6. a) Derive the expressions for slope or sweep speed error of transistor miller time base   (8M)
       generator
    b) Explain the operation of bootstrap sweep circuit with necessary derivations (8M)

7.   Write short notes on
    a) Two diode sampling gate   (8M)
    b) Frequency division with Astable.   (8M)

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PART –A

1.　a)　Explain diode reverse recovery time　　　　　　　　　　　　　　　(4M)
　　b)　What is meant by biased clamping?　　　　　　　　　　　　　　　(4M)
　　c)　What is the integrator condition?　　　　　　　　　　　　　　　(4M)
　　d)　Explain triggering of binary using diode.　　　　　　　　　　　　(4M)
　　e)　What is synchronization on a one-to-one basis?　　　　　　　　　　(3M)
　　f)　Compare sine wave synchronization with pulse synchronization.　　　(3M)

PART -B

2.　a)　Explain diode switching times and transistor switching times　　　　(8M)
　　b)　What is an attenuator? Explain about over compensation, perfect and under　(8M)
　　　　compensation circuits.

3.　a)　Design a diode clamper to restore a dc level of +6V to an input signal of peak　(8M)
　　　　value 16V. Assume the drop across the diode as 0.5V.
　　b)　Explain the necessity of practical Clamping circuits with necessary waveforms　(8M)

4.　a)　Derive an expression for gate width of an emitter-coupled monostable　(8M)
　　　　multivibrator.
　　b)　Silicon npn Transistors with h_{femin}=40 are available. Design an Astable　(8M)
　　　　multivibrator to generate a square wave of 1KHz frequency with a duty cycle of
　　　　25%.

5.　a)　What are various performance factors of a digital logic family?. Define them.　(8M)
　　b)　With an example explain about the realization of a function using AOI logic.　(8M)

6.　a)　Draw the exponential sweep circuit and derive expression for e_t, e_d and e_s　(8M)
　　b)　Draw and explain the operation of a Transistor boot strap sweep generator circuit　(8M)
　　　　and find the expressions for slope error, sweep amplitude.

7.　　　Write short notes on
　　a)　Bidirectional gates using Transistors.　　　　　　　　　　　　　　(6M)
　　b)　Frequency division using sweep circuit　　　　　　　　　　　　　(6M)
　　c)　Synchronization of sweep circuit　　　　　　　　　　　　　　　　(4M)

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PRODUCTION TECHNOLOGY
(Mechanical Engineering)

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PART –A

1.　a)　What are the required properties of good molding sand?　　　　　　　　(4M)
　　b)　Explain solidification of pure metals in casting.　　　　　　　　　　(3M)
　　c)　List the advantages and disadvantages of gas welding.　　　　　　　(4M)
　　d)　Define soldering and name the types of soldering operations.　　　　　(4M)
　　e)　Give the causes and remedies of rolling defects.　　　　　　　　　(4M)
　　f)　What is spring back effect? How to prevent it?　　　　　　　　　　(3M)

PART -B

2.　a)　Define gating ratio and differentiate between pressurized and un-pressurized　(8M)
　　　　gating systems.
　　b)　List out and explain various pattern allowances with sketches.　　　　(8M)

3.　a)　Explain cupola furnace with neat sketch and give the reactions takes place at　(10M)
　　　　different stages of the furnace.
　　b)　What will be the solidification time for a 1200 mm diameter and 33 mm thick　(6M)
　　　　casting of aluminum if the mould constant is 2.2 sec/mm^2?

4.　a)　Explain the characteristics of welding joints.　　　　　　　　　　　(7M)
　　b)　The arc length characteristic of a D.C arc is given by V=24+4L, where V is the　(9M)
　　　　voltage in volts and L is arc length in mm. The static volt-ampere characteristic of
　　　　the power source is approximated by a straight line with a no load voltage of 80 V
　　　　and a short circuit current of 600 A.

5.　a)　Explain the design guidelines of welded joints.　　　　　　　　　　(8M)
　　b)　What is brazing? Explain the types of brazing with applications.　　　　(8M)

6.　a)　What is strain hardening? Explain its mechanism.　　　　　　　　　(6M)
　　b)　What s extrusion? Discuss the types of extrusion with sketch. Also list the　(10M)
　　　　advantages, limitations and application of each type of extrusion process.

7.　a)　What are thermoplastic materials? How do they differ from thermosetting plastics?　(8M)
　　b)　Explain Stretch forming and hydro forming operation with neat sketch mentioning　(8M)
　　　　their applications.

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II B. Tech II Semester Regular Examinations, April/May – 2016
PRODUCTION TECHNOLOGY
(Mechanical Engineering)

Time: 3 hours   Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
    2. Answer **ALL** the question in **Part-A**
    3. Answer any **THREE** Questions from **Part-B**

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PART –A

1.	a)	Discuss briefly the materials which are added to molding sand to improve its properties.	(4M)
	b)	Explain solidification of alloys in casting.	(4M)
	c)	Compare between A.C and D.C arc welding.	(4M)
	d)	Give the causes and remedies of any two welding defects.	(3M)
	e)	Name the methods to produce metal powders and list compaction techniques.	(4M)
	f)	Explain coining and embossing operations.	(3M)

PART -B

2.	a)	What is casting? Give the advantages, limitations and applications of casting?	(8M)
	b)	Find the dimensions of pattern to cast cubical steel casting of 50 cm size considering all the allowances. Take draft as 2^0 and machining allowance of 2mm.	(8M)
3.	a)	Explain the principle of operation for reverberatory furnace with neat sketch. Also give the applications of this furnace.	(8M)
	b)	With cylindrical riser, prove that for a longer solidification time, diameter of riser is equal to height of riser.	(8M)
4.	a)	Explain the principle, advantages and applications of gas cutting.	(8M)
	b)	Explain the principle, advantages and applications of Gas metal arc welding.	(8M)
5.	a)	Define soldering. Enumerate the fluxes commonly used in soldering.	(8M)
	b)	What do you know about friction stir welding (FSW) process? Explain in detail about the working principle with neat sketch. Also name the applications of FSW.	(8M)
6.	a)	Discuss wire drawing and tube drawing processes with neat sketch.	(8M)
	b)	What is the importance of forging operation? Explain the causes and preventive methods for forging defects.	(8M)
7.	a)	Define plastic. How are they classified? Give their applications.	(8M)
	b)	What is bending operation? How to find bending allowance? Explain the types of bending operations with sketch.	(8M)

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             2. Answer **ALL** the question in **Part-A**
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PART –A

1. a) Discuss briefly the influence of molding sand on sand properties.   (4M)
   b) Give the causes and remedies for the following casting defects: (4M)
       i. Blow hole   ii. Misrun
   c) What is neutral flame? Give the reactions and applications of it.   (4M)
   d) What is brazing? Give the applications of brazing.   (4M)
   e) Give the causes and remedies of forging defects.   (3M)
   f) Explain the following operations   (3M)
       i. Nibbling   ii. Perforating   and iii. Trimming

PART -B

2. a) Grey Cast Iron block of size 200x100x10 cubic cm is to be cast in a sand mould.   (9M)
      Shrinkage allowance for pattern making is 2 %. Find the ratio of volume of the
      pattern to the volume of the casting. Also for the same problem, find the ratio if
      the block is steel. Give your comment on the problem.
   b) List out and explain various pattern materials with applications.   (7M)

3. a) Briefly explain investment casting with neat sketch. Also give its limitations and   (8M)
      applications.
   b) Compare the solidification times for castings of three different shapes of same   (8M)
      volume: Cube, cylindrical (with h=d) and spherical.

4. a) List the advantages and limitations of D.C and A.C power sources in arc welding.   (8M)
   b) How to designate an electrode? Explain in detail.   (8M)

5. a) List out and explain the causes and remedies for welding defects.   (8M)
   b) Explain the principle, limitations and applications of explosive welding.   (8M)

6. a) Explain the step by step procedure to be followed for powder metallurgy   (10M)
      technique. Give the advantages, limitations and applications of powder metallurgy
      technique.
   b) Enumerate the differences between hot working and cold working processes.   (6M)

7. a) Define plastic. Explain the characteristics of plastic materials.   (8M)
   b) Explain metal spinning and shear spinning operations with suitable sketches. Also   (8M)
      mention their applications.

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2. Answer **ALL** the question in **Part-A**
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PART –A

1. a) List some of specific properties which moulds should posses to produce sound castings. (4M)
    b) Give the causes and remedies for the following casting defects: (4M)
       i) Hot tear   ii) Cold shut
    c) What is carburizing flame? Give the reactions and applications of it. (4M)
    d) Why a flux is used in brazing and soldering? Explain. (3M)
    e) Briefly explain strain hardening. (4M)
    f) Explain the following operations (3M)
       i) Notching   ii) Slitting and   iii) Shaving

PART -B

2. a) Design the down sprue avoiding aspiration to deliver liquid Cast Iron of density 7800 kg/m^3 at a rate of 10 kg/sec against no head at the base of the sprue. The height of the sprue is 10 cm and that of pouring basin is 6 cm. Neglect frictional and orifice effects. (8M)
    b) Briefly explain the types of gating systems with neat sketch. (8M)

3. a) Briefly explain various die casting process with neat sketch. Also give their limitations and applications. (8M)
    b) Compare the solidification times for two optimum side risers of same volume when one was a cylindrical shape and other is a square parallelepiped. (8M)

4. a) Determine the melting efficiency in the case of arc welding of steel with a potential of 22V and current of 230 A. The cross-sectional area of the joint is 22 mm^2 and the travel speed is 5 mm/s. Heat required to melt steel may be taken as 12 J/mm^3 and the heat transfer efficiency as 85%. (8M)
    b) Explain the principle, advantages and applications of submerged arc welding. (8M)

5. a) Explain the importance of pre and post heating of weld. What is the effect of this heating on grain structure? Explain. (8M)
    b) Discuss solid state welding processes in detail with sketch. (8M)

6. a) Explain the types of powder preparation methods with neat sketch. What is the type of grain shape obtained through various methods of powder preparation? (8M)
    b) Explain the process of rolling with sketch. Derive the expression for arc of contact in rolling. (8M)

7. a) List out and explain any two processing methods of plastic materials with suitable sketch. (9M)
    b) Explain deep drawing operation with neat sketch. Give the expression for drawing force and blank holding force. (7M)

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II B. Tech II Semester Regular Examinations, April/May – 2016
ANALOG COMMUNICATIONS
(Electronics and communication Engineering)

Time: 3 hours　　　　　　　　　　　　　　　　　　　　　　　　　　Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
　　　 2. Answer **ALL** the question in **Part-A**
　　　 3. Answer any **THREE** Questions from **Part-B**

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PART –A

1.	a)	Define modulation. Why is modulation required?	(3M)
	b)	What are the Advantages of SSB systems? List Application of SSB?	(4M)
	c)	Define frequency deviation? What is wideband FM and Narrowband FM?	(4M)
	d)	Define (i) Average noise figure. (ii) Average Noise Temperature	(4M)
	e)	Define Sensitivity and Selectivity.	(3M)
	f)	Compare Continuous wave and pulse modulation technique.	(4M)

PART –B

2. a) With necessary expressions, waveforms and spectrums, Explain AM for an arbitrary baseband signal m(t). (10M)

　 b) The output power of an AM transmitter is 1KW when sinusoidally modulated to a depth of 100%. Calculate the power in each side band when the modulation depth is reduced to 50%. (6M)

3. a) Derive the expression for SSB containing upper sideband in time domain. (10M)

　 b) Explain the phase discrimination method for generating SSB. (6M)

4. a) Explain clearly about pre-emphasis and de-emphasis in FM wave. (8M)

　 b) Explain different modes in a phase locked loop. (8M)

5. a) Define the following along the related equations (10M)
　　　　(i)　　noise equivalent bandwidth (ii) narrow band noise
　　　　(iii)　　ideal band pass filtered noise.

　 b) A mixer has a noise figure of 30db. It is preceded by an amplifier which has a noise figure of 10db and an available power gain of 12db. Calculate the overall noise figure with referred to the input. (6M)

6. a) Derive the expression for the figure of merit of DSBSC receiver that uses coherent detection. (10M)

　 b) Write a short notes on amplitude limiting. (6M)

7. Mention and explain different methods for generation of PWM (16M)

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SET - 2

II B. Tech II Semester Regular Examinations, April/May – 2016
ANALOG COMMUNICATIONS
(Electronics and communication Engineering)

Time: 3 hours   Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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PART –A

1.	a)	Define modulation index and mention the range of modulation index?	(4M)
	b)	Write the expression for SSB and VSB Waves.	(4M)
	c)	Compare AM and FM?	(3M)
	d)	Define White noise and Shot noise.	(4M)
	e)	State Sampling Theorem with suitable figure.	(4M)
	f)	Write Merits and Demerits of PAM.	(3M)

PART -B

2. a) Define a standard form of amplitude modulation and explain the time and
frequency domain expression of an AM wave.   (8M)
    b) Explain with the help of a neat sketch, how a square law modulator is used to   (8M)
generate an AM.

3. a) With a neat diagram explain the   balanced modulator method of generating   (8M)
DSBSC
    b) With block diagram and relevant equations explain the coherent detection of a   (8M)
DSB-SC wave. What is its disadvantage? Explain the synchronous receiving
system.

4. a) Derive an expression for the spectrum of FM wave with sinusoidal modulation   (10M)
    b) Compare narrow band and wide band FM   (6M)

5.   Explain the terms   (16M)
        (a) shot noise   (b) thermal noise
        (c) white noise   (d) noise figure and
        (e) transit time noise.

6. a) Why are limiters and pre-emphasis filters used in FM radio.   (10M)
    b) Write a notes on vestigial sideband modulation   (6M)

7. a) With neat sketch explain the generation of PPM from PWM.   (10M)
    b) Compare merits and demerits of TDM and FDM.   (6M)

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II B. Tech II Semester Regular Examinations, April/May – 2016
ANALOG COMMUNICATIONS
(Electronics and communication Engineering)
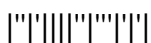
Time: 3 hours
Max. Marks: 70

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3. Answer any **THREE** Questions from **Part-B**

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PART –A

1. a) Compare Square law detector with envelope detector?   (4M)
    b) Compare different AM systems?   (3M)
    c) What are Advantages & Applications of FM?   (4M)
    d) List out various noise sources.   (4M)
    e) Write Merits and Demerits of PAM.   (3M)
    f) List the Classification of receivers.   (4M)

PART –B

2. a) Explain the generation technique of an AM wave using the square law modulator.   (8M)
    b) Explain the working of an envelope detector   (8M)

3. a)   Draw the circuit diagram for balanced ring modulator and explain its operation   (10M)
         indicating all the waveforms and spectrums.
    b)   In an DSB-SC system, modulating signal is a single tone sinusoid $6 \cos(2\pi\ 10^3t)$ (6M)
         which modulates a carrier signal $8 \cos(2\pi\ 10^6t)$. Write the equation of modulated
         wave. Plot the two sided spectrum of the modulated wave. Calculate the amount
         of power transmitted.

4. a) Derive an expression for the spectrum of FM wave with sinusoidal modulation.   (8M)
    b) With a neat block diagram explain the Armstrong method of FM generation.   (8M)

5. a)   Explain the Threshold effect in angel modulation system.   (8M)
    b) Explain the noise performance in DSB-SC system and obtain necessary   (8M)
        expression for figure of merit

6. a)   With the aid of the block diagram explain TRF receiver. Also explain the basic   (10M)
         superheterodyne principle.
    b) List out the advantages and disadvantages of TRF receiver.   (6M)

7. a) Describe the synchronization procedure for PAM, PWM and PPM signals.   (8M)
    b) Discuss about the spectra of PWM and PPM signals.   (8M)

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PART –A

1. a) Why frequency translation is required?   (3M)
   b) List Application of different AM systems?   (4M)
   c) Plot FM wave taking modulating wave m(t) as (i) Sine wave (ii) Square wave   (4M)
   d) Define figure of merit?   (3M)
   e) Define Image frequency and Image frequency rejection ratio.   (4M)
   f) Compare PAM,PPM and PWM.   (4M)

PART –B

2. a) Draw and explain switching modulator along with the related transfer   (8M)
      characteristics and equation
   b) The efficiency of an AM wave is defined by η=(Ps/Pt)x100. Find the efficiency   (8M)
      for µ=0.5.

3. a) What are DSBSC generation methods? Explain the generation of DSBSC using   (10M)
      Ring modulator.
   b) Explain the phase discrimination method for generating SSB.   (6M)

4. a) Explain the operation of the balanced slope detector using a circuit diagram   (10M)
      and draw its response characteristics. Discuss in particular the method of
      combining the outputs of the individual diodes. In what way is this circuit, an
      improvement on the slope detector and in turn what are the advantages?
   b) Compute the bandwidth requirement for the transmission of FM signal having   (6M)
      a frequency deviation 75 KHz and an audio bandwidth of 10KHz.

5. a) Define noise figure and explain its significance with derivation.   (6M)
   b) What is significance of Pre-emphasis and De-emphasis explain with neat sketch.   (10M)

6. a) With the aid of the block diagram explain TRF receiver. Also explain the   (10M)
      basic superheterodyne principle.
   b) List out the advantages and disadvantages of TRF receiver.   (6M)

7. a) With a block diagram approach explain the operation of FDM scheme.   (10M)
   b) Compare PAM, PWM and PPM systems.   (6M)

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II B. Tech II Semester Regular Examinations, April/May - 2016
ADVANCE DATA STRUCTURE
(Com. to CSE, IT)

Time: 3 hours　　　　　　　　　　　　　　　　　　　　　　　　Max. Marks: 70

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PART –A

1. a) What are the methods used to represent Dictionary?　　　　　　　　(4M)
　 b) Give Time complexities of AVL trees?　　　　　　　　　　　　　　(3M)
　 c) Discuss the properties of Binomial tree.　　　　　　　　　　　　　(4M)
　 d) For a sample graph, represent an adjacency matrix.　　　　　　　　(3M)
　 e) What is best case and worst case analysis of quick sort?　　　　　　(4M)
　 f) Give, applications for pattern matching.　　　　　　　　　　　　　(4M)

PART -B

2. a) What is a hash table? What is hash function? What is bucket and home bucket?　(8M)
　 b) With example, explain folding and rotation hashing methods.　　　　(8M)

3. a) How do you represent AVL tree and what will be the height of AVL tree.　(8M)
　 b) Write the AVL tree insertion algorithm.　　　　　　　　　　　　(8M)

4. a) Explain reheap up, reheap down operations and show the heap implementation　(8M)
　　steps using arrays.
　 b) Explain parental property of a heap. Give the difference between complete binary　(8M)
　　tree and almost complete binary tree.

5. a) Write and explain breadth first algorithm with an example.　　　　(8M)
　 b) How to find shortest path between vertices using all pairs shortest path floyd's　(8M)
　　algorithm.

6. a) Write heap sort algorithm and analyze the time complexity.　　　　(10M)
　 b) Explain heap sort using following elements.　　　78, 32, 56, 8, 23, 45　(6M)

7. a) Define and explain the concepts of digital search trees.　　　　　　(8M)
　 b) Explain error handling during file I/O.　　　　　　　　　　　　(8M)

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II B. Tech II Semester Regular Examinations, April/May - 2016
ADVANCE DATA STRUCTURE
(Com. to CSE, IT)

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PART –A

1. a) What are the applications of Dictionary?   (4M)
    b) Explain the properties of 2-3 trees.   (3M)
    c) What is a priority queue?   (4M)
    d) What is path, cycle, loop and Adjacency vertex of a graph.   (4M)
    e) What is the best sorting algorithm? Why?   (4M)
    f) Define tries.   (3M)

PART -B

2. a) When collision will occur? Explain quadratic probing with example.   (8M)
    b) With example explain how insertion and deletion operations performed on (8M)
        dictionaries.

3. a) Discuss how the deletion operation performed in 2-3 tree with example. (8M)
    b) Discuss how single and double rotations performed in AVL trees. Give some (8M)
        applications of AVL tree

4. a) Construct a binary heap with the following values: 23, 7, 92, 6, 12, 14, 40, 44, 20, (8M)
        21
    b) What are the applications of priority queue and binomial queue?   (8M)

5. a) Write and explain depth first algorithm with example.   (8M)
    b) How to find shortest path between two vertices using Dijkstra's algorithm? (8M)

6. a) Perform quick sort using the following elements. 78, 21, 14, 97, 87, 62, 74, 85, 76, (8M)
        45, 84, 22
    b) Give best case, Average case analysis of quick sort.   (8M)

7. a) Give a brief description on pattern matching problem and explain Boyer-moor (8M)
        algorithm with an example.
    b) Discuss fundamental file processing operations.   (8M)

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II B. Tech II Semester Regular Examinations, April/May - 2016
ADVANCED DATA STRUCTURES
(Com. to CSE, IT)

Time: 3 hours
Max. Marks: 70

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PART –A

1. a) Explain the characteristics of good hashing function. (4M)
   b) Define 2-3 tree. (3M)
   c) List all the operations performed in binomial heap. (3M)
   d) What is the need of minimum-cost spanning tree. (4M)
   e) Explain the difference between quick sort and merge sort. (4M)
   f) Give some applications of Digital search trees. (4M)

PART –B

2. a) Explain about a skip list with an example. Give applications of skip list. (8M)
   b) With example explain how insertion and deletion operations performed in skip list. (8M)

3. a) Explain with example, what are the different cases followed while inserting a node in 2-3-Tree. (8M)
   b) Create a 2-3 tree from the following list of data items 5,6,8,21,12,30,34,27,23,4,33,7,24,9,10,11,13,38 (8M)

4. a) What is binomial queue? Discuss binomial amortized analysis. (8M)
   b) What is a priority queue? Explain operations performed in priority queue. (8M)

5. a) Explain kruskal's algorithm with example. (8M)
   b) Define Graph? Discuss about weakly connected, strongly connected, Disjoint Graphs. (8M)

6. a) What is divide and conquer strategy? Explain merge sort using following elements 10, 5, 7, 6, 1, 4, 8, 3, 2, 9 (8M)
   b) Discuss the analysis for merge sort. (8M)

7. a) Explain KMP algorithm with example. (8M)
   b) Discuss all files/classes present in iostream header file. (8M)

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R13

II B. Tech II Semester Regular Examinations, April/May - 2016
ADVANCED DATA STRUCTURES
(Com. to CSE, IT)

Time: 3 hours   Max. Marks: 70

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      2. Answer **ALL** the question in **Part-A**
      3. Answer any **THREE** Questions from **Part-B**

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PART –A

1.	a)	Write short notes on Skip list.	(4M)
	b)	Define an AVL Tree.	(3M)
	c)	Discuss about binary heap.	(4M)
	d)	For an example graph, represent possible spanning trees.	(4M)
	e)	Give time complexity for merge sort	(3M)
	f)	What are the pointers associated with random access binary files.	(4M)

PART –B

2. a) Consider the given values 72, 27, 36, 24, 63, 81, 92, 101 and perform linear, quadratic probing operations in a given hash table of size 10. (8M)
    b) With example, explain modulo division and digit extraction hashing methods. (8M)

3. a) Build an AVL tree with the following values 15, 20, 24, 10, 13, 7, 30, 36, 35. (8M)
    b) Explain about deletion procedure in AVL tree. With example explain deletion operation in AVL tree. (8M)

4. a) Write short notes on lazy binomial queue. (6M)
    b) Perform insert and delete operations on binomial queue by taking an example. (10M)

5. a) Explain briefly about operations on graphs. (6M)
    b) Explain Prim's algorithm with an example. Give analysis of prim's algorithm (10M)

6. a) Explain Radix sort using following elements. 45, 37, 05, 09, 06, 11, 18, 27 (8M)
    b) Give algorithm for Radix sort. Discuss the analysis of radix sort (8M)

7. a) Explain how to manage fixed field and fixed length buffers, (8M)
    b) What are the advantages and disadvantages of tries with respect to binary search trees (8M)

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SET - 1

II B. Tech II Semester Supplementary Examinations, April/May - 2016
PULSE AND DIGITAL CIRCUITS
(Com. to EEE, ECE, ECC, BME, EIE)

Time: 3 hours   Max. Marks: 75

Answer any **FIVE** Questions
All Questions carry **Equal** Marks
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1. a) Specify the condition for which high-pass RC circuit act as a differentiator. And also draw the input and output waveforms.
   b) Why does a resistive attenuator need to be compensated? Explain different methods of compensation.

2. a) Draw and explain the operation of slicer circuit using Zener diodes with the help of transfer characteristics.
   b) Draw the basic circuit diagram of negative peak clamper circuit and explain its operation.

3. a) Explain the following terms pertaining to transistor switching times.
      i) Rise time, ii) Delay time, iii) Storage time.
   b) Draw a positive NAND gate with diodes and transistor (DTL) and explain its operation.

4. a) Explain the working of Schmitt trigger with circuit diagram and wave forms. Give its applications
   b) Draw and explain the operation of self bias bistable multivibrator.

5. a) Give the design procedure for emitter coupled monostable multivibrator.
   b) Design an astable multivibrator to produce an output with 100 msec ON period and 50 msec OFF period for $V_{CC} = 15V$, $h_{FE} = 50$, I_C (sat) = 100 µA.

6. a) Explain the working of a practical current sweep generator with the help of Circuit diagram and necessary waveforms. Derive the expression for the Sweep speed error.
   b) Explain the basic principle of a bootstrap sweep generator. Draw the circuit and explain its operation with necessary waveforms.

7. a) What type of synchronization is used when the interval between pulses is less than or equal to the natural period of the wave form generator. Explain it briefly.
   b) Explain the use of a monostable relaxation circuit as a frequency divider with the help of neat diagram and wave forms.

8. a) Draw the circuit of a monostable blocking oscillator with base timing and explain its operation with waveforms. Calculate its pulse width.
   b) Explain the function of bi-directional sampling gates using transistors. What are the techniques employed to cancel the pedestal?

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II B. Tech II Semester Supplementary Examinations, April/May - 2016
DATA BASE MANAGEMENT SYSTEMS
(Com. to CSE, IT)

Time: 3 hours　　　　　　　　　　　　　　　　　　　　　　　Max. Marks: 75

Answer any **FIVE** Questions
All Questions carry **Equal** Marks
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1.　a)　Identify the main components in a DBMS and briefly explain what they do?　(10M)
　　b)　What is meant by data independence?　(5M)

2.　a)　What are the steps in designing a database?　(5M)
　　b)　How is the issue of whether a concept should be modelled as an entity or an attribute resolved? Explain.　(10M)

3.　　　What are the six basic relational operators that query languages have? Explain with examples.　(15M)

4.　　　What is a *view?* How do views support logical data independence? How are views used for security? How are queries on views evaluated? Why does SQL restrict the class of views that can be updated?　(15M)

5.　a)　Consider the schema R=(A,B,C,D,E) and the functional dependencies: A➜BC, CD➜E, B➜D, E➜A. Give a lossless join decomposition into BCNF of the schema R.　(8M)
　　b)　Let R=(A, B, C, D, E) and let M be the following set of multivalued dependencies:
　　　　$A \rightarrow\rightarrow BC$, $B \rightarrow\rightarrow CD$, $E \rightarrow\rightarrow AD$. List the nontrivial dependencies in M^+.　(7M)

6.　a)　What are the different storage media? Give the implementation of stable storage.　(8M)
　　b)　Give an example of a strict schedule that is not serial able.　(7M)

7.　a)　What are *collisions?* Why do we need overflow pages to handle them?　(8M)
　　b)　Compare the heap and hash file organizations　(7M)

8.　a)　Describe how search, insert, and delete operations work in ISAM indexes.　(9M)
　　b)　What is the need for overflow pages, and their potential impact on performance?　(6M)

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