FACULTY OF ENGINEERING

B.E. 3/4 (Civil/CSE/IT) I-Semester (New) (Suppl.) Examination, June 2017

Subject : Managerial Economics and Accountancy

Time : 3 hours   Max. Marks : 75

Note: Answer all questions from Part-A. Answer any FIVE questions from Part-B.

PART – A (25 Marks)

1	Incremental cost principle.	2
2	Production function.	2
3	Book cost and out of pocket cost.	2
4	What are the sources of capital?	2
5	What is petty cashbook?	2
6	Demand schedule.	3
7	Define Duopoly.	3

8 Write journal entries for the following transactions.   3
   i) 1-4-2010 goods purchased for cash Rs.30,000
   ii) 2-4-2010 cash deposited in bank Rs.50,000
   iii) 3-4-2010 paid commission Rs.5,000

9 Fill in the blanks :   3
   a) Business transactions are _____ in journal.
   b) Transferring of journal entries to ledge account is known as _____
   c) _____ is prepared with the help of ledger balance.

10 Write the difference between Risk and uncertainty _____   3

PART – B (50 Marks)

11 Define Managerial Economics its usefulness to Engineers.

12 What is demand? Explain the factors influencing demand.

13 What is perfect competition? How price is determined under perfect competition?

14 Bhavana company manufacturers 'Product N' its particulars given below
sales Rs.3,00,000 fixed cost Rs.90,000 variable cost Rs.1,50,000.
Calculate   i) P/V Ratio   ii) Break-even point   iii) Margin of safety

15 Examine following two projects proposals and evaluate them based on   a) pay back
period b) ARR.

Year	1	2	3	4
Machine -1	10,00,000	5,00,000	5,00,000	2,00,000
Machine-2	10,00,000	6,00,000	2,00,000	2,00,000

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16 Prepare bank reconciliation statement as on 31-12-2014 from the following particulars.
   a) Bank balance as per cash book Rs.14,000
   b) Cheques deposited in bank but not credited before 31-12-2014 Rs.2,000
   c) Cheques issued to Rs.1,000 were not presented for payment before closing date
   d) Interest on fixed deposits Rs.1,000 credited in passbook
   e) Interest on overdraft Rs.2,000 debited in passbook only.

17 From the following particulars prepare Trial Balance as on 31-12-2010.

Particulars	Rs.
Capital	25,000
Opening stock	6,200
Cash	1,700
Sundry debtors	9,100
Purchases	61,300
Sales	93,600
Return outwards	1,000
Return inwards	500
Freight inwards	3,700
Freight outwards	7,200
Salaries	10,500
Rent	6,000
Sundry creditors	4,000
Commission received	100
Drawings	6,300
Furniture and fittings	10,800
Printing and stationery	1,200
Closing stock	12,000

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FACULTY OF ENGINEERING & INFORMATICS

B.E. 3/4 (Civil/CSE/IT) I-Semester (Old) Examination, June 2017

Subject : Managerial Economics and Accountancy

Time : 3 hours   **Max. Marks : 75**

Note: Answer all questions from Part-A. Answer any FIVE questions from Part-B.

PART – A (25 Marks)

1	Define Managerial Economics.	2
2	Explain price elasticity of demand.	2
3	Explain imperfect market.	2
4	Fixed and working capital.	2
5	What are the factors of production?	2
6	Out of pocket cost and book cost.	3
7	What is Book-keeping in Accountancy?	3
8	Explain bank reconciliation statement.	3
9	Firm and industry.	3
10	Give journal entries for the following :	3

    1-4-2010   sold goods for cash Rs.5,000
    2-4-2010   cash withdrawn from bank Rs.10,000
    3-4-2010   commission received Rs.2,000

PART – B (50 Marks)

11 How price is determined under perfect competition?

12 What is demand curve? What are reasons that the demand curve slopes downwards from left to right?

13 Write the accounting concepts and conventions.

14 From the following information extracted from the books of Nayagara and Co.
   Total sales Rs.1,50,000   variable cost Rs.75,000
   Fixed cost Rs.50,000

15 From the following details. Calculate   a) Pay back period   b) Net present value, presuming the discount rate at 5%.

   Cost of the project Rs.50,000 life of the asset 5 years
   Cash inflow at the end of year

1	2	3	4	5
Rs.10,000	10,000	20,000	20,000	40,000

16 Prepare a two column cash book
   2009
   Feb 1 Cash in hand Rs.2,000 cash at bank Rs.8,000
        2 Bough goods and paid by cheque Rs.2,000
        3 Paid for advertising charges Rs.100
        5 Purchase furniture and paid by cheque Rs.200
        6 Cash sales Rs.1,000
        7 Received from Mohan Rs.1,400 by cheque discount allowed being
           Rs.15
        9 Received from Ram Rs.900 cheque discount allowed Rs.10
       14 Paid into bank Rs.2,000
       17 Withdrawn from bank for office use Rs.500

17 Prepare trading, profit and loss account and balance sheet as on 31-3-2006 from
   the following Tribal balance of Gopal Krishna.

Trial Balance as on 31-3-2006

Debit	Rs.	Credit	Rs.
Purchases	25,200	Sales	61,604
Furniture	1,600	Capital	35,000
Wages	3,500	Creditors	3,903
Machinery	20,000	Purchase Returns	222
Opening Stock	17,525		
Sales Returns	1,200		
Debtors	10,400		
Carriage on Purchases	200		
Salaries	10,600		
Carriage on sales	503		
Rent and Taxes	2,001		
Cash at Bank	8,000		
	1,00,729		1,00,729

Adjustments :
1) Closing stock Rs.16,800
2) Outstanding salaries Rs.400
3) Prepaid rent and taxes Rs.201
4) Provide for bad debts reserve at 5%
5 Provide for depreciation on machinery at 10%
6) Calculate interest on capital at 5%

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FACULTY OF ENGINEERING

B.E. 3/4 (EEE/Inst.) I-Semester (New) (Suppl.) Examination, Nov./Dec. 2016

Subject : Linear Control Systems

Time : 3 hours   Max. Marks : 75

Note: Answer all questions from Part-A. Answer any FIVE questions from Part-B.

PART – A (25 Marks)

1   Distinguish between open loop and closed loop control system.   3
2   What is the transfer function of a system?   2
3   Define peak time, maximum overshoot and selling time.   3
4   What is the static velocity error constant?   2
5   Define resonant peak, resonant frequency and bandwidth.   3
6   What is the Nyquist stability criterion?   2
7   What is output controllability?   2
8   How many state variables are required for the mechanical system given in the figure
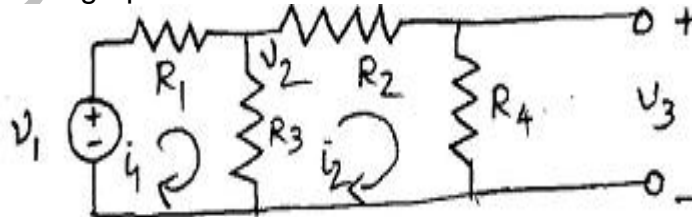   below :   2
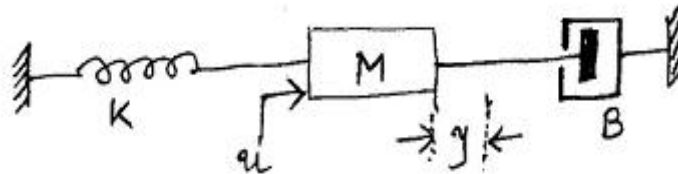
9   Compare a digital controller with an analogue controller.   3
10 Find the z transform of a continuous time function   3

$$f(t) = e^{at} , t \geq 0$$
$$= 0 , t < 0$$

PART – B (50 Marks)

11 Draw the signal flow graph for the circuit shown below and find the transfer function.   10

12 Draw the root locus plot of the system given by $G(S)H(S) = \dfrac{K(S+2)}{S^2 + 2S + 3}$. Find the

value of K for which the system will have a damping ratio of 0.7.   10

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13 Draw the Bode plot of a unity feedback system with $G(S) = \dfrac{10}{S(1+0.02S)(1+0.2S)}$ and find the gain margin, phase margin, gain cross over frequency and phase cross over frequency. 10
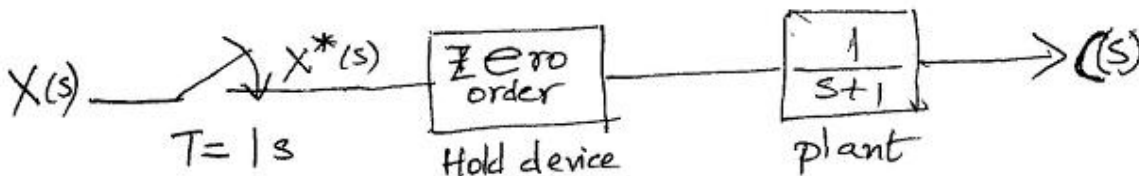
14 A system is given by 10

$$\dot{X} = \begin{bmatrix} 0 & 1 \\ -2 & -3 \end{bmatrix} X + \begin{bmatrix} 0 \\ 1 \end{bmatrix} u$$
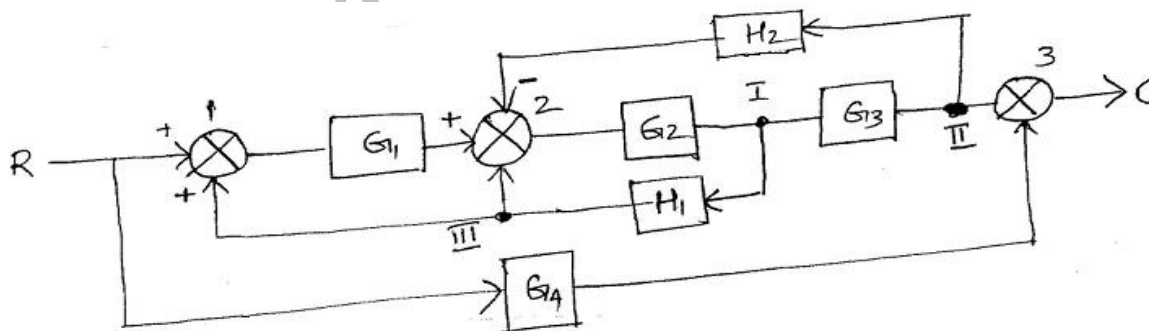
and output y = [1 0] X.
Obtain the transfer function of the system given above. 10

15 Obtain the pulse transfer function of the system shown below. 10

16 The characteristics equation of a system is given by $F(S) = S^6 + 4S^5 + 12S^4 + 16S^3 + 41S^2 + 36S + 72$. 10

17 Find the transfer function C(S) / R(S) for the system shown below. 10

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FACULTY OF ENGINEERING

B.E. 3/4 (EE/Inst.) I-Semester (Old) Examination, May / June 2017

Subject : Linear Control Systems

Time : 3 hours   Max. Marks : 75

Note: Answer all questions from Part-A. Answer any FIVE questions from Part-B.

PART – A (25 Marks)

1 Compare open loop and closed loop systems.   3
2 Explain the specifications for an under damped system in the time domain. 3
3 Define transfer function of a system.   2
4 What is a dominant pole?   2
5 Define gain margin and phase margin, and give its importance.   3
6 What is the effect of time delay on the frequency response of a given control system? 3
7 What are state variables for a mechanical system?   2
8 How are the components of a state vector chosen?   2
9 Why Z transforms are used for digital control systems?   2
10 What is a pulse transfer function?   3

PART – B (50 Marks)

11 Find the transfer function for a system for which the block diagram is given below.   10

12 Sketch the root locus for the system given below.

At what value of k does the system become unstable?   10

13 Draw the Bode plot of the following system

$$G(S) = \frac{10,000}{(S+5)(S+20)(S+50)}$$

Find the gain margin, phase margin, gain crossover frequency and phase crossover frequency. 10

14 Find the state transition matrix for 10

$$\dot{X} = \begin{bmatrix} 0 & 1 \\ -5 & -4 \end{bmatrix} X$$

15 Find G(Z) for a sampling time of 0.5 seconds, for a zero order hold in cascade with a continuous time system given by $G(S) = \dfrac{S+2}{S+1}$. 10

16 Find the transfer function for the signal flow graph given below. 10
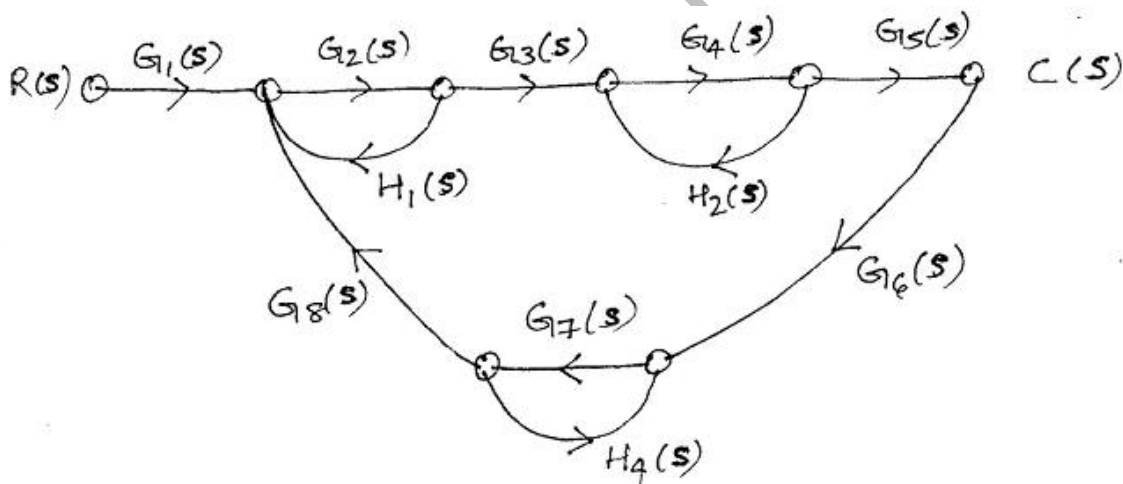
17 Discuss the stability of a system for which the characteristic equation is given by
$S^8 + 3S^7 + 10S^6 + 24S^5 + 48S^4 + 96S^3 + 128S^2 + 192S + 128 = 0$ 10

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FACULTY OF ENGINEERING

B.E. 3/4 (ECE) I - Semester (New)(Suppl.) Examination, May / June 2017

### Subject : Pulse and Digital Circuits

Time : 3 Hours   **Max. Marks: 75**

Note: Answer all questions from Part-A and answer any five questions from Part-B.

PART – A (25 Marks)

1 Sketch the step response of high pass RC circuit.

2 Compare the performance of series clipper and shunt clipper.

3 Draw the hysteresis in Schmitt trigger.

4 Compare UJT and SCR.

5 Define Figure of merit

6 Draw MOS Inverter

7 Write the expression for Fan-out with reference to CMOS.

8 What is the importance of Schottky TTL?

9 What is multivibrator? List the application of monostable and astable multivibrator.

10 Write the application of CMOS logic families.

PART – B (50 Marks)

11 (a) Explain high pass RC circuit as differentiator.

(b) Draw the circuit diagram of compensated attenuator. Derive necessary condition for perfect attenuation of compensated attenuator.

12 (a) Draw and explain positive clipper.
(b) Design a diode clamper for the given circuit to restore the positive peaks of input signal to a voltage level to + 5V. Assume diode cut-in-voltage is 0.5V.
$f = 1KHz$, $R_f=1K\Omega$, $R_r=200K\Omega$, $RC = 20\ T$
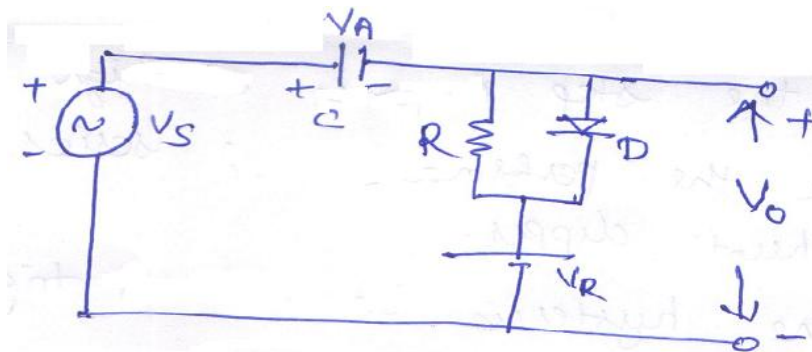
The given clamping circuit with reference V_R.

13 Draw the circuit of monostable multivibrator and derive an expression for pulse width and plot the waveform of base and collector of each Transistor.

14 Design TTL Three-state NAND gate and explain the operation with the help of functional Table.

15 (a) Explain CMOS Non Inverting buffer.
(b) Define propagation delay and Transmission time with reference to CMOS.

16 Draw and explain IC interfacing for CMOS and TTL.

17 Write short notes on any **two** of the following:
(a) Clamping circuit theorem
(b) Sweep circuit
(c) ECL

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FACULTY OF ENGINEERING

B.E. 3/4 (AE) I-Semester (Old) Examination, June 2017

Subject : Automotive Transmission

Time : 3 hours   Max. Marks : 75

Note: Answer all questions from Part-A. Answer any FIVE questions from Part-B.

PART – A (25 Marks)

1 State different types of gear boxes used in practice.
2 Why the gear ratios are arranged in geometric progression?
3 What are the requirements of a transmission system?
4 Write a brief note on automatic overdrive.
5 Differentiate between torque converter and fluid coupling.
6 How the torque ratio of a torque converter varies with speed ratio?
7 Explain briefly the principle of automatic transmission.
8 What is the difference between conventional and automatic transmission?
9 List out the merits and demerits of hydrostatic drive.
10 What is the principle of electric drive in transmission system?

PART – B (50 Marks)

11 a) Explain the necessity of gearbox for a vehicle using performance curve analysis.   6
   b) What are the various types of lubrication available in practice?   4

12 Sketch the Wilson planetary gearbox : Explain clearly how the third gear ratio is obtained for this gear ratio.   10

13 a) Differentiate multistage and poly phase torque converter.   4
   b) Sketch and explain WHITE's hydro torque drive.   6

14 a) Explain the principle of Borg-Warner automatic transmission.   6
   b) How do you control the gears automatically?   4

15 Explain the Janny hydro static transmission with a neat sketch.   10

16 With a circuit-diagram explain the operation of electric drive for city buses.   10

17 a) Principle of fluid coupling   5
   b) Principle of hydrostatic drive systems   5

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FACULTY OF ENGINEERING

B.E. 3/4 (AE) I – Semester (New) (Suppl.) Examination, June 2017

Subject: Automotive Transmission

Time: 3 Hours   Max.Marks: 75

Note: Answer all questions from Part A. Answer any five questions from Part B.

PART – A (2.5x10 = 25 Marks)

1 What is the necessity of providing clutch free pedal play?

2 What are the advantages of using a spur gear?

3 What is the principle of a constant mesh gear box?

4 Sketch 3-speed sliding mesh gear box.

5 What are the advantages of the fluid coupling?

6 What is the function of a torque converter?

7 What are the advantages of automatic transmission when compared to conventional transmission?

8 In epicyclic box to get forward speed and reverse speed normally which member is fixed?

9 Differentiate clearly between a hydrodynamic and hydrostatic drive system.

10 What are the disadvantages of electrical drives?

PART – B (5x10 = 50 Marks)

11 a) Explain the working principal of single plate clutch.   5
   b) Explain the working principal of synchromesh gear box.   5

12 Explain the working principle of Wilson gear box with neat sketch.   10

13 Describe the working of two stage and three stage torque converters with neat sketches.   10

14 a) Draw the Block Diagram of Automatic Transmission.   3
   b) Explain cotal epicyclic gear box.   7

15 Explain any one construction and working of typical hydrostatic drives.   10

16 Explain briefly the construction and working of centrifugal clutch with the help of neat diagram.   10

17 Explain the following:
   a) Principles of ward Leonard system.   5
   b) Modern electric drive for buses.   5

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