AR13 SET2

CODE: 13BS2007

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.TECH II SEM END EXAMINATIONS, JULY, 2015

COMPLEX VARIABLES AND STATISTICAL METHODS
(ELECTRICAL AND ELECTRONICS ENGINEERING)

Time: 3 Hours **Max Marks: 70**

PART-A

Answer all questions **[1 X 10 = 10 M]**

1. a) Define harmonic function.
   b) Find the zeros of f(z) = sin 1/z .
   c) Define removable singularity.
   d) Find the poles of $f(z) = \frac{1}{z^2(z+2)}$
   e) Define critical point of the conformal transformation.
   f) Find the fixed points of the transformation w = z / (z -2).
   g) State Baye's theorem.
   h) Write the mean and variance of the Poisson distribution.
   i) Write any two properties of normal distribution.
   j) Define standard error.

PART-B

Answer one question from each unit **[5 X 12=60M]**

UNIT-I

2) a) If f(z) is an analytic function of z, prove that $(\frac{\partial^2}{\partial x^2} + \frac{\partial^2}{\partial y^2})|f(z)|^2 = 4|f^1(z)|^2$. **[6M]**

b) Find the analytic function f(z), if $u + v = \frac{2\sin 2x}{e^{2y} - e^{-2y} - 2\cos 2x}$. **[6M]**

(OR)

3) State Cauchy's theorem and hence evaluate $\int_C \frac{e^z}{z-2} dz$, c |z| = 1. **[12M]**

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UNIT-II

4) a) State residue theorem . Hence, find residue of $\frac{ze^z}{(z-1)^3}$ at its poles **[6M]**

b) Prove that $\int_{-\infty}^{\infty} \frac{x^2 - x + 2}{x^4 + 10x^2 + 9} dx = \frac{5\pi}{12}$. **[6M]**

(OR)

5) a) Evaluate $\int_C \frac{e^z}{\cos \pi z} dz$, where C is the circle |z| = 1. **[6M]**

b) Evaluate $\int_0^{2\pi} \frac{\cos 3\theta}{5 - 4\cos\theta} d\theta$. **[6M]**

UNIT-III

6) a) Under the transformation w = 1/z ,find the image of the circle $x^2 + y^2 - 6x = 0$. **[6M]**

b) Find the bilinear transformation which maps the points (2,i,-2) to (1,i,-1). **[6M]**

(OR)

7) Discuss the transformation $w = z + \frac{1}{z}$ and show that it converts the straight line

$\arg z = \alpha \left(|\alpha| < \frac{\pi}{2} \right)$ into a branch of hyperbola of eccentricity $\sec\alpha$. **[12M]**

UNIT-IV

8) In a test on 2000 electric bulbs, it was found that the life of a particular make, was normally distributed with an average life of 2040 hours and standard deviation of 60 hours. Estimate the number of bulbs likely to burn for

(i) more than 2150 hours (ii) less than 1950 hours and (iii) more than 1920 hours and but less than 2160 hours. **[12M]**

(OR)

CODE: 13BS2007

9) a) In a certain college, 4% of the boys and 1% of girls are taller than 1.8m. Further more 60% of the students are girls. If a student is selected at random and is found to be taller than 1.8m., what is the probability that the student is a girl. **[6M]**

b) In 256 sets of tosses of a coin, in how many cases one can expect 8 heads and 4 tails.

[6M]

UNIT-V

10) a) Test the significance of difference between mean of sample from following data:

	Size of Sample	Mean	S.D
Sample A	100	61	4
Sample B	200	63	6

[6M]

b) If X is a normally distributed with mean 30 and S.D. 5, find $P(|x-30| > 5)$. **[6M]**

(OR)

11) From a random sample of 10 animals fed on diet A, the increases in weight in a certain period were 10,6,16,17,13,12,8,14,15,9 lbs. For another random sample of 12 animals fed on diet B, the increases in the same period were 7,13,22,15,12,14,18,8,21,23,10,17 lbs. Test whether diets A and B differ significantly as regards their effect on increases in weight. **[12M]**

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AR13 SET-1

Code: 13HS2004

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.TECH II SEM END EXAMINATIONS, JULY, 2015

MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS
(COMMON TO CIVIL AND MECHANICAL ENGINEERING)

Time: 3 Hours **Max Marks: 70**

PART-A

Answer all questions **[1 X 10 = 10 M]**

1. a) Define Macro Economics.
   b) Pay Back Period
   c) Margin of Safety
   d) Survey Method
   e) Inelasticity
   f) Economies of Scale
   g) Incremental Cost
   h) Market Skimming
   i) Joint Stock Company
   j) Real Account

PART-B

Answer one question from each unit **[5 X 12=60M]**

UNIT-I

2. a) Define Managerial Economics and explain the nature and functions of Managerial Economics. [6M]
   b) Explain the factors governing Elasticity of Demand. [6M]

(OR)

3. a) Define Elasticity of Demand and explain the kinds of price elasticity of Demand. [6M]
   b) Explain the Demand Elasticity Measures? [6M]

UNIT-II

4. a) Define Production Function. How can a producer find it useful? [5M]
   b) How is Break Even Analysis useful and important for a firm for making business decisions? [7M]

(OR)

5. a) Define Cost. Explain the different cost concepts used in the process of cost analysis. [7M]
   b) What is Cobb-Douglas Production function? What are its useful properties?. [5M]

Code: 13HS2004

UNIT-III

6. a) Explain the various features of a perfectly competitive market. How is price of commodity determined under it? [7M]

   b) How are price and output determined under monopoly? [5M]

(OR)

7. a) What is product differentiation? What role does it pay in the determination of price and output under Monopolistic competition? [7M]

   b) Distinguish between Sole proprietorship and Partnership firm. [5M]

UNIT-IV

8. The expected Net Cash Flows of a project are as follows

Year	Net Cash In Flows	PV Factor12%
	2,00,000	-
1	60,000	0.893
2	40,000	0.797
3	80,000	0.712
4	50,000	0.636
5	90,000	0.567

The Cost of Capital is 12 percent. Calculate Net Present Value [12M]

(OR)

9. Following are the details of a project

Initial Investment Rs 1,80,000

Year	Cash flows before depreciation& Tax in Rs	PV F @10%	PV F @12%
1st Year	75,000	0.909	0.893
2nd Year	70,000	0.826	0.797
3rd Year	60,000	0.751	0.712
4th Year	55,000	0.683	0.636
Salvage value	30,000		

The project is depreciable on straight-line basis. If the required rate of return is 10%, and tax rate is 50% whether the project is accepted or not under the IRR criteria. [12M]

Code: 13HS2004

UNIT-V

10. From the following Trail Balance of Gopi prepare Trading and Profit and Loss Account for the year ended 31st December,2013 and Balance Sheet as on that date. [12M]

Particulars	**Debit Balances**	**Credit Balances**
Capital		27,000
Drawings	4,260	
Furniture	5,700	
Stock	8,760	
Purchases and Sales	62,172	71,436
Returns1,260	1,746	
Salaries	2,640	
Rent	720	
Rates and Taxes	41,500	
Apprentice Premium		750
Bank overdraft		1,200
Bad debts	1,032	
Sundry Debtors	19,200	
Cash in hand	288	
Sundry Creditors		6,000
Provision for bad debts		600
Bills receivables	1,440	
Discount		1,080
Suspense Account	1,200	
TOTAL	**1,10,172**	**1,10,172**

Additional information:

1. Stock on December31,2013 was Rs 20,000.
2. Provision for doubtful debts at 5% on Sundry debtors.
3. Rent due was Rs.200.
4. Taxes paid in advance Rs. 500.
5. Depreciation on furniture at 10%
6. Apprentice premium of Rs. 250was to be carried forward
7. Calculate interest on capital at 5%.

(OR)

11. **From the following information to calculate the following ratios** [12M]

i. Current ratio
ii .Quick n ratio
iii .Absolute Quick ratio

Current Assets Rs. 8, 00,000.
Current Liabilities Rs. 4, 00,000.
Stock Rs. 2, 20,000.

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AR13 SET-1

Code: 13EC2008

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.TECH II SEM END EXAMINATIONS, JULY, 2015

ELECTRONI CIRCUITS-II

(ELECTRONICS AND COMMUNICATION ENGINEERING)

Time: 3 Hours **Max Marks: 70**

PART-A

Answer all questions **[1 X 10 = 10 M]**

1. a) List the types of coupling schemes used in multistage amplifiers?
   b) What are the main characteristics of a Darlington amplifier?
   c) What is the effect of negative feedback on the bandwidth of an amplifier?
   d) What are the different types of feedback amplifiers?
   e) What is Barkhausen criterion for the feedback oscillator?
   f) Write the expression for frequency of oscillations of Wein Bridge oscillator?
   g) State conversion efficiency of power amplifiers.
   h) What is cross-over distortion?
   i) What is the advantage of stagger tuned amplifier?
   j) What is voltage regulation?

PART-B

Answer one question from each unit **[5 X12=60M]**

UNIT-I

2. a) A multistage amplifier consists of three stages. The voltage gains of three stages are 30, 50 and 80. Calculate the overall voltage gain in dB. [6M]
   b) Discuss the high frequency response of two stage cascaded CE amplifier. [6M]

(OR)

3. a) Derive the expressions for overall f_H & f_L of cascaded stages. [6M]
   b) Discuss the "choice of transistor configuration" in cascaded amplifiers [6M]

UNIT – II

4. a) With the help of neat block diagram derive the transfer function, input resistance and output resistance with feedback for voltage shunt feedback amplifier. [6M]
   b) An amplifier has a mid band gain of 125 and a bandwidth of 250 KHz.
   (i) If 4% of negative feedback is introduced, find the new bandwidth and gain.
   (ii) If the bandwidth is to be restricted to 1 MHz, find the feedback ratio. [6M]

(OR)

5. a) Explain the characteristics of negative feedback amplifiers. [6M]

   b) A voltage-series negative feedback amplifier has a voltage gain without feedback of A=500, input resistance R_i=3KΩ, output resistance R_o=20KΩ and feedback ratio β=0.01. Calculate the voltage gain A_f, input resistance R_{if} and output resistance R_{of} of the amplifier with feedback. [6M]

UNIT – III

6. a) Draw the circuit diagram of Colpitts LC oscillator and derive an equation for frequency of oscillations [8M]

   b) List the advantages and disadvantages of Wien Bridge oscillator. [4M]

(OR)

7. a) In Hartley oscillator, L_1=15mH, C=50pF. Calculate L_2 for frequency of oscillations 168 KHz. The mutual inductance between L_1 and L_2 is 5μH. Find the required minimum gain of transistor used for oscillations. [4M]

   b) Draw the circuit diagram of Wien-bridge oscillator and explain its operation. Derive expression for conditions for oscillation and frequency of oscillations. [8M]

UNIT – IV

8. a) Prove that maximum efficiency of a Class-B push pull power amplifier is 78.5%. [8M]

   b) What is meant by crossover distortion and suggest the methods to overcome the problem. [4M]

(OR)

9. a) A transformer coupled class A power amplifier draws a current of 200mA from a collector supply of 10V, when no signal is applied to it. Determine

   (i) maximum output power,
   (ii) maximum collector efficiency and
   (iii) power rating of the transistor. [6M]

   b) Explain harmonic distortion in power amplifiers. [6M]

UNIT – V

10. a) Explain single tuned amplifier and discuss its frequency response. [6M]

    b) Compare single tuned, doubled tuned and stagger tuned amplifiers. [6M]

(OR)

11. a) Draw the diagram of transistor series voltage regulator and explain in detail. [6M]

    b) Draw the circuit of tuned primary amplifier and explain the principle of operation [6M]

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AR13 SET-1

Code: 13CS2005

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.TECH II SEM END EXAMINATIONS, JULY, 2015

SOFTWARE ENGINEERING
(COMMON TO CSE & IT)

Time: 3 Hours **Max Marks: 70**

PART-A

Answer all questions **[1 X 10 = 10M]**

1. (a) Define Process model.
   (b) Define software evolution.
   (c) What is meant by modelling?
   (d) What is software risk?
   (e) What is technical risk?
   (f) What is reactive risk strategy?
   (g) What is software testing?
   (h) What is white box testing?
   (i) Define unit testing.
   (j) What is FTR?

PART- B

Answer one question from each Unit **[5 X 12 = 60M]**

UNIT I

2. a) Brief about broad categories of Computer Software. [6M]
   b) What is a Software Myths? Explain about various types of Software Myths. [6M]

(OR)

3. a) Define a Process. Explain about generic Process framework Activities. [6M]
   b) Write about CMMI. [6M]

UNIT II

4. a) Write short notes on Functional & Non Functional requirements. [6M]
   b) Explain about Software Requirement Document (SRS). [6M]

(OR)

5. Discuss about the following a). Requirement Elicitation and Analysis. [6M]
   b). Behavioral model [6M]

UNIT III

6. What is meant by Design Engineering? Explain various Design Concepts [12M]

(OR)

7. What is Software Architecture? Explain about Architectural styles with diagrams. [12M]

UNIT IV

8. Write about [12M]
   a. Validation Testing
   b. System Testing
   c. Art of Debugging

(OR)

9. Explain about a). Control Structure Testing [6M]
   b) Integration Testing [6M]

UNIT V

10. What is Software Risk? Explain the following [12M]
    a). Risk Identification b). Risk Projection c). RMMM

(OR)

11. Write about the following
    a) Formal Technical Review (FTR) [6M]
    b) ISO 9000 Quality Standard [6M]