Code: 13HS2004

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech II Semester Supplementary Examinations, July-2017

MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS
(Common to Civil & Mechanical Engineering Braches)

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

PART-A

Answer all questions **[10X1=10M]**

1. a) What is Demand?
   b) Define Macro Economics
   c) What is isoquants?
   d) Define Cost Analysis
   e) Write any two advantages of monopoly.
   f) Define Market Structure
   g) What is working capital?
   h) Write any two sources of funds flow statement
   i) Define Ledger
   j) Write gross profit ratio

PART-B

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

UNIT-I

2. a) Explain the importance of managerial economics. [6M]
   b) What is demand forecasting? Explain about factors governing demand forecasting. [6M]

(OR)

3. a) Explain about different types of price elasticity of demand. [6M]
   b) Discuss the determinants of the demand. [6M]

UNIT-II

4. a) What is economies of scale? Explain it in detail. [6M]
   b) Explain about different types of costs. [6M]

(OR)

5. a) Explain about Cobb-Douglas production function. [6M]
   b) What is Break-Even Point (BEP)? Explain its importance in detail. [6M]

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UNIT-III

6. a) What is perfect competition? Explain its features in detail. [6M]
   b) Explain the following:
      i. Marginal cost pricing
      ii. Limit pricing
      iii. Market Skimming pricing [6M]

(OR)

7. a) Explain about sole proprietorship in detail. [6M]
   b) What are business cycles? Explain its features in detail. [6M]

UNIT - IV

8. The following are the cash inflows and outflows of a certain project of Rama Ltd.

Year	Out flows	Cash inflow
0	1,50,000	
1	30,000	30,000
2		30,000
3		50,000
4		60,000
5		40,000

The salvage value at the end of 5 years is Rs.40,000. Taking the 4 years cut off rate as 10%, Calculate Net Present Value (NPV). [12M]

(OR)

9. Enumerate the merits and Demerits of Traditional methods of Capital Budgeting? [12 M]

UNIT – V

10. From the following Income Statement of Excel Ltd., compute the profitability Ratios. [12M]

Particulars	**Rs.**	**Particulars**	**Rs.**
To Opening stock	2,00,000	By Sales	16,00,000
To Purchases	12,00,000	By Closing Stock	3,20,000
To Gross Profit c/d	5,20,000		
	19,20,000		**19,20,000**
To Administration expenses	1,20,000	By Gross profit b/d	5,20,000
To Selling Expenses	80,000	By Dividend	4,000
To Finance Expenses	40,000		

(OR)

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11. Prepare Trading and Profit and Loss a/c and a Balance Sheet as on 31.3.2013 from the following Trial Balance: [12 M]

Particulars	Debit Balance	Credit Balance
Capital		1,00,000
Drawings	18,000	
Buildings	15,000	
Furniture	7,500	
Motor Van	25,000	
Loan to Hari Prasad	15,000	
Interest	450	
Sales		1,00,000
Purchases	75,000	
Opening Stock	25,000	
Establishment expenses	15,000	
Freight inward	2,000	
Freight outward	1,050	
Bank overdraft		25,000
Commission received		7,500
Sundry debtors	28,000	
Bank balance	20,500	
Sundry creditors		15,000
Total	2,47,500	2,47,500

Adjustments:

- Closing stock was valued at Rs.25,000
- Depreciate building by 10% and furniture by 5%
- Provide a Reserve for Bad debts @ 5%
- Provide for discount on debtors and creditors @ 3%

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AR13

CODE: 13BS2007 **SET-I**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech II Semester Supplementary Examinations, July-2017

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) Find the derivative of an analytic function $f(z)$ whose real part is $u(x,y)=x^2-y^2+x$.
   b) Find the singular points of $f(z)=\log z$.
   c) Write the converse of Cauchy's theorem.
   d) Write the difference between singular point and the isolated singular point.
   e) Find the type of singular point of $f(z)=\dfrac{1-\cos z}{z^2}$.
   f) Find the image of $x-$ axis under the transformation $f(z)=\sin z$.
   g) Find the probability of getting a sum equals to 2 when three fair dice are rolled.
   h) Find $E(X)$ when X is a random variable and $X=\{1,2,3\}$ with each probability $p(x)=\dfrac{1}{3}$.
   i) Define P-value.
   j) Find with $t_{0.05}$ degrees of freedom ∞.

PART-B

Answer one question from each unit **[5x12=60M]**

UNIT-I

2. a) Find an analytic function $f(z)$ whose real part is $u(x,y)=e^x\cos y+x$. **6M**
   b) Evaluate $\oint_C \dfrac{e^{-z}}{z^2+\pi^2}dz$, where C:$|z|=3.2$. **6M**

(OR)

3. a) Find the points at which the function $f(z)=|z|^2$ is analytic. **6M**
   b) Evaluate $\oint_C \tan z\,dz$, where C:$|z|=1$ **6M**

UNIT-II

4. Evaluate $\int_{-\infty}^{\infty}\dfrac{1}{1+x^4}dx$ using Cauchy's residue theorem. **12 M**

(OR)

5. a). Evaluate $\int_0^{2\pi}\dfrac{d\theta}{2+\sin\theta}$ using Cauchy's residue theorem. **8 M**
   b). State and prove Cauchy's residue theorem. **4 M**

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CODE: 13BS2007 **SET-I**

UNIT-III

6. a) Find the image of the circle $|z-2|=1$ under the transformation $f(z)=\frac{1}{z}$. **6M**

   b) Find a bilinear transformation that maps points $z = 0, -i, -1$ into $w = i, 1, 0$ respectively. **6M**

(OR)

7. a) Find the image of the region $R=\{z=x+iy/1<x<2, 0<y<\pi\}$ under the transformation $w=e^z$. **6M**

   b) Explain about the transformation $w=\sin z$. **6M**

UNIT-IV

8. a) Two aeroplanes bomb a target in succession. The probability of each correctly scoring a hit is 0.4 and 0.3 respectively. The second will bomb only if the first misses the target. Find the probability that (i) target is hit (ii). Both fails to score hits. **6M**

   b) It has been claimed that in 80% of all solar-heat installations the utility bill is reduced by at least one-third. Accordingly, what are the probabilities that the utility bill will be reduced by at least one-third in **6M**
   (a) Five of six installations (b). At least five of six installations.

(OR)

9. a) If X is a normal random variable with mean 5 and variance 2 then find $P\{|X-1|\le 5\}$. **6M**

   b) Show that the mean of a Binomial distribution is np **6M**

UNIT-V

10. a) A trucking firm is suspicious of the claim that the average life time of certain tires is at least 28000 miles. To check the claim, the firm puts 40 of these tires on its trucks and gets a mean lifetime of 27463 miles with a standard deviation of 1348 miles. What can it conclude if the probability of a Type I error is to be at most 0.01? **6M**

    b) The lapping process which is used to grind certain silicon wafers to the proper thickness is acceptable only if σ , the population standard deviation of the thickness of dice cut from wafers, is at most 0.6 mil. Use 1% level of significance To test the null hypothesis σ=0.6 against the alternative hypothesis σ>0.6 if the thickness of 17dice cut from such wafers have a standard deviation of 0.7 mil. **6M**

(OR)

11. a). To test the claim that the resistance of electric wire can be reduced by more than 0.05 ohm by alloying, 32 values obtained for standard wire yielded $\overline{x_1}$=0.136 ohm, and s_1=0.004 ohm, 32 values obtained for alloyed wire yielded $\overline{x_2}$=0.136 ohm and s_2=0.005 ohm. At the 5% level of significance, does this support the claim? **6M**

    b) A random sample of size $n=81$ is taken from a population with $\sigma=0.9$. Given that the sample mean is $\bar{x}=20.8$, construct a 95% confidence interval for the population mean μ. **6M**

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CODE: 13EC2008 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech II Semester Supplementary Examinations, July-2017
ELECTRONIC CIRCUITS – II
(Electronics and Communication Engineering)

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

PART-A

ANSWER ALL QUESTIONS **[1 x 10 = 10 M]**

1. a) Explain direct coupling.
   b) What is difference amplifier.
   c) Explain bark-hausen criterion.
   d) Explain voltage shunt amplifier.
   e) What are conditions for oscillations?
   f) Write differences between class A and class B amplifiers.
   g) Draw the circuit diagrams of class S amplifier.
   h) Draw FET based phase shift oscillator.
   i) What is regulator?
   j) What are different types of regulators?

PART-B

Answer one question from each unit **[5x12=60M]**

UNIT-I

2. a) Explain the Darlington configuration and hence draw voltage follower and Darlington follower with bias current I. **6**
   b) **For the Darlington voltage follower** **6**

$R_{out} = R_E \,II\left[\frac{re1+\left[\frac{Rsig}{\beta 1+1}\right]}{(\beta 2+1)} + r_{e2}\right]$; $R_{in} = (\beta 1 + 1)[re1 += (\beta 2 + 1)(r_{e2} + R_E)]$

$\frac{V_0}{V_{sig}} = \frac{R_E}{RE+re2+[re1+Rsig/(\beta 1+1)]/(\beta 2+1)}$; $R_E + r_{e2} + [r_{e1} + R_{sig}/(\beta_1+1)]/(\beta_2+1)$

Evaluate R_{in}, R_{out}, and V_0/V_{sig} for the case $I_{E2} = 5mA$, $\beta_1 = \beta_2 = 100$, $R_E = 1K\Omega$, and $R_{sig} = 100K\Omega$.

(OR)

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

UNIT-II

4. a) Explain voltage series and current shunt negative feedback amplifiers with neat diagrams. **6**
   b) Explain the effect of negative feedback on input and output resistances. **6**

(OR)

5. a) Explain four properties of negative feedback. **6**
   b) An amplifier has a mid band gain of 125 and a bandwidth of 250 KHz. **6**
   (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.

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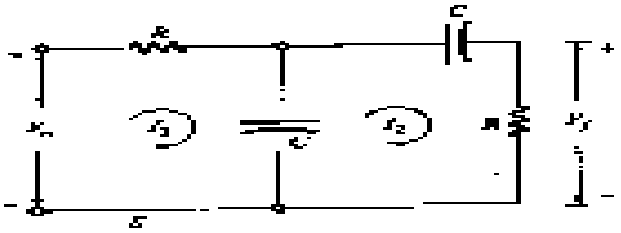
CODE: 13EC2008 **SET-2**

UNIT-III

6. a) For an RC phase-shift oscillator using the feedback network shown in Fig. Find the frequency of oscillation and the value of gain for sustained oscillation. 6



b) Explain the operation of wein bridge oscillator. 6

(OR)

7. a) Explain any one configuration of LC oscillator 6

b) Using a BJT biased at I_c = 1mA, design a colpitts oscillator to operate at $\omega_0 = 10^6$ rad/s. Use C_1 = 0.01 μF, and assume that the coil available has a Q of 100 (this can be represented by a resistance in parallel with C_1 given by $Q/\omega_0 C_1$). Also assume that there is a load resistance at the collector of 2 KΩ and that for the BJT, r_0 = 100 KΩ. Find C_2 and L. 6

UNIT-IV

8. a Explain second harmonic oscillations for a class A amplifier 6

b Explain transformer coupled audio amplifiers 6

(OR)

9. a Explain push pull-amplifiers 6

b Explain MOSFET power amplifiers 6

UNIT-V

10. a) A voltage signal source with a resistance R_s = 10 kΩ is connected to the input of a common-emitter BJT amplifier. Between base and emitter is connected a tuned circuit with L= 1μH and C= 200pF. The transistor is biased at 1 mA and has β=200, C_k = 10 pF, and C_μ = 1 pF. The transistor load is a resistance of 5 KΩ. Find ω_0, Q, the 3-dB bandwidth, and the centre-frequency gain of this single-tuned amplifier. 6

b) Explain staggered tuned amplifiers 6

(OR)

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

b) Explain bandwidth calculations of double tuned amplifiers 6

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AR13 SET-2

Code: 13CS2005

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech II Semester Supplementary Examinations, July-2017

SOFTWARE ENGINEERING
(Common to CSE & IT)

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

PART-A

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

1. a) List out different layers present in the layered Technology.
   b) Define Ethnography.
   c) Define non-Functional Requirement.
   d) Define CMMI?
   e) Define Functional independence.
   f) What is cohesion?
   g) What is Black-Box testing?
   h) Compare measure and metric.
   i) Mention various software risks.
   j) What is the purpose of defect amplification model?

PART-B

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

UNIT-I

2. a) Define software engineering. Explain the characteristics of software. [6M]
   b) What is process framework? Explain its concept? [6M]

(OR)

3. a) Describe briefly about various phases of the unified process. [6M]
   b) Explain the Waterfall model with neat Diagram [6M]

UNIT-II

4. a) Define Software Requirement. Explain various Non - Functional requirements. [6M]
   b) What is Requirements Elicitation? Explain techniques for requirements elicitation. [6M]

(OR)

5. a) "Data Modeling can be viewed as a subset of OOA".comment on this statement and justify your comments. [6M]
   b) write short notes on Behavioral Model [6M]

Code: 13CS2005

UNIT-III

6.	a)	Explain various design concepts	[6M]
	b)	Explain about data design at the component level	[6M]
		(OR)	
7.	a)	What are the design issues to be considered in user interface design	[8M]
	b)	Explain about the golden rules for designing the user interface	[4M]

UNIT-IV

8.	a)	Discuss briefly about testing strategies for conventional software.	[6M]
	b)	What is Debugging? Explain the Debugging Process with neat Diagram	[6M]
		(OR)	
9.	a)	Explain the metrics for Design model.	[8M]
	b)	Explain in detail about Putnam model.	[4M]

UNIT-V

10.	a)	Write short notes on RMMM.	[6M]
	b)	What is SQA? Explain various metrics of SQA.	[6M]
		(OR)	
11.	a)	Differentiate Bugs, Errors and defects.	[6M]
	b)	Explain the process of risk identification.	[6M]

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