

R16

Code No: 134AG

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.Tech II Year II Semester Examinations, May - 2019

BUSINESS ECONOMICS AND FINANCIAL ANALYSIS

(Common to CE, EEE, ME, ECE, CSE, EIE, IT, MCT, ETM, MMT, AE MIE, PTM, CEE, MSNT)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit.

Each question carries 10 marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

1. Give brief answers to the following:
 - a) Non- conventional sources of Finance [2]
 - b) Business cycle and its phases [3]
 - c) Characteristics of a good demand forecasting [2]
 - d) Supply function [3]
 - e) Types of Pricing [2]
 - f) Returns to scale [3]
 - g) Accounting Equation [2]
 - h) Trial Balance [3]
 - i) Current Ratio [2]
 - j) Working Capital and its components. [3]

PART-B

(50 Marks)

- 2.a) Explain different sources of capital needed for a Joint Stock Company.
b) Explain different kinds of Business Entities. [5+5]
- OR**
- 3.a) Discuss the nature and scope of Business Economics.
b) Define the term 'Inflation and explain its impact on the economics. [5+5]
4. What is 'Elasticity of Demand'? Explain the broad classification of Elasticity of Demand. [10]
- OR**
5. Explain different methods of demand forecasting. [10]
6. Explain Law of Diminishing Returns. How are they helpful in managerial decisions? [10]
- OR**
- 7.a) Explain the features of a perfect competitive market.
b) Explain the concept of pricing based on Product Life Cycle. [5+5]

8.a) What is "Accounting"? Explain Double entry system of Book- Keeping.

b) Journalise the following transactions:

[5+5]

Jan 1,2018	Commenced with Cash	Rs. 10,00,000
Jan 3,2018	Purchased Goods worth	Rs.2,00,000
Jan 8,2018	Sold goods to Mr.Raghu	Rs.1,00,000
Jan 30,2018	Salaries Paid	Rs. 20,000
Jan 30,2018	Rent Paid	Rs. 10,000

OR

9. Explain any four accounting Concepts.

[10]

10. Explain the procedure for preparing "statement showing changes in working capital" with Imaginary figures.

[10]

OR

11. Following is the Profit and Loss Account of the year ended 31st December, 2017

Dr			Cr
To Opening stock	1,00,000	By Sells	5,60,000
To Purchases	3,50,000	By closing Stock	1,00,000
To Wages	9,000		
To Gross Profit c/d	2,01,000		
	6,60,000		6,60,000
To Administrative Expenses	20,000	By Gross Profit b/d	2,01,000
To Selling and distribution expenses	89,000	By Interest on investments	10,000
To Non-operating Expenses	30,000	By Profit on sale of	8,000
To Net Profit	80,000	Investment	
	2,19,000		2,19,000

You are required to calculate

a) Gross Profit Ratio

b) Net Profit Ratio

c) Operating Ratio

d) Operating Profit Ratio.

[10]

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R13

Code No: 114DF

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**B.Tech II Year II Semester Examinations, May - 2019****MECHANICS OF FLUIDS AND HYDRAULIC MACHINES****(Common to ME, MIE)****Time: 3 Hours****Max. Marks: 75****Note:** This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit.

Each question carries 10 marks and may have a, b, c as sub questions.

PART – A**(25 Marks)**

- 1.a) Define specific volume and specific density of a fluid. [2]
- b) Differentiate between absolute and gauge pressure. [3]
- c) List the general characteristics of laminar flow. [2]
- d) Give two examples of unsteady and non-uniform flow. [3]
- e) What do you understand by the term major losses and minor losses? [2]
- f) What is hydraulic gradient line? [3]
- g) Define geometric similarities. [2]
- h) What is water hammer? [3]
- i) What are the main parts of reciprocating pumps? [2]
- j) Define mechanical efficiency. [3]

PART – B**(50 Marks)**

- 2.a) A piston of 2.5 kg having diameter and height 4 cm and 7 cm respectively is decelerating at rate of 1 m/s^2 in a hollow lubricated cylinder. The clearance between piston and hollow cylinder is 1.5 mm. Calculate the viscosity of the film when the velocity of piston is 8m/s.
- b) What is meant by vapour pressure? Explain its importance in liquid flow systems. [5+5]

OR

- 3.a) What is difference between U-tube differential manometers and inverted U-tube differential manometers?
- b) Air is introduced through a nozzle into a tank of water to form a stream of bubbles. If the bubbles are intended to have a diameter of 2 mm, calculate by how much the pressure of air at the nozzle must exceed that of surrounding water. Assume $\sigma = 72.7 \times 10^{-3} \text{ N/m}$. [5+5]
- 4.a) Define equation of continuity. Obtain the expression for continuity equation for a three-dimensional flow.
- b) Define stream line, streak line and path line. Derive mathematical expression for each of these lines. [5+5]

OR

- 5.a) What is Euler's equation of motion? How will you obtain Bernoulli's equation from it?
- b) Explain momentum of equation and give its application on force on pipe bend. [5+5]

- 6.a) Two reservoirs whose water surface elevations differ by 100 m are connected by a 25 cm diameter pipe 3000 m long. Another pipe of the same diameter is laid parallel with the first pipe and connected to the middle one-third of its length. Calculate the percent increase in discharge. Assume $f=0.01$ for all pipes and neglect minor losses.
- b) Explain clearly the concepts of displacement and momentum thickness of a boundary layer. [5+5]

OR

- 7.a) An orifice in one side of a large tank is rectangular in shape, 3 meters broad and 1 m deep. The water level on one side of the orifice is 4 meters above its top edge. The water level on the other side of the orifice is 0.5 meter below its top edge. Calculate the discharge through the orifice per second if $C_d = 0.63$.
- b) What is venturimeter? Derive an expression for the discharge through a venturimeter. [5+5]
- 8.a) Find an expression for the efficiency of a series of moving curved vanes when a jet of water strikes vanes at one of its tips. Prove that maximum efficiency is when $u = V$ and the value of maximum efficiency is 50%.
- b) Explain water hammer with control measure. [5+5]

OR

- 9.a) What is the main difference between a Francis and propeller turbine? How are hydraulic losses minimized in propeller turbine?
- b) How are work output and hydraulic efficiency calculated from velocity diagram? [5+5]
- 10.a) Discuss the classification of centrifugal pumps as per specific speed, working head and pump construction.
- b) Explain the different types of pump characteristics. [5+5]

OR

- 11.a) Explain the working of reciprocating pump.
- b) Find the slip of the reciprocating pump in percentage when a single-acting pump cylinder diameter is 0.3 m, stroke length 0.25m. The pump run at 45 rpm and actual discharge is $0.0128 \text{ m}^3/\text{sec}$. [5+5]

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R13

Code No: 114AE

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**B.Tech II Year II Semester Examinations, May - 2019****ELECTRONIC CIRCUITS****(Electrical and Electronics Engineering)****Time: 3 Hours****Max. Marks: 75****Note:** This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit.

Each question carries 10 marks and may have a, b, c as sub questions.

PART- A**(25 Marks)**

- 1.a) What is mean by distortion in amplifiers? [2]
- b) List the general characteristics of Negative feedback amplifier. [3]
- c) What frequency is one octave above 5 kHz and one decade below 10 kHz? [2]
- d) What is square wave testing? [3]
- e) Define stable and quasi-stable states. [2]
- f) Illustrate the transfer characteristics of negative clipper circuit. [3]
- g) Draw the response of a RC High-Pass Circuit for Step input if time constant is low. [2]
- h) Summarize the advantages and dis-advantages of Push-Pull Amplifier. [3]
- i) Draw the piece-wise linear equivalent circuit of a Diode. [2]
- j) Draw the transistor as a switch circuit diagram. [3]

PART-B**(50 Marks)**

2. Draw the diagram of CC Amplifier and then using the exact model derive the expressions for current gain, voltage gain, input impedance and output impedance of CC Amplifier. [10]

OR

3. Draw the circuits of Current series and voltage shunt feedback amplifiers and then determine the corresponding input impedance and output impedance. [10]

- 4.a) The input power to a device is 10,000 W at a voltage of 1000 V. The output power is 500 W and the output impedance is 20 Ω .
 - i) Find the power gain in decibels.
 - ii) Find the voltage gain in decibels
- b) Explain low frequency analysis of BJT amplifier by giving the corresponding equations and waveform. [4+6]

OR

5. Determine the effect of coupling and bypass capacitors on the low frequency response of BJT Amplifier with proper equations. [10]

6. What is a monostable multivibrator? Explain with the help of a neat circuit diagram the principle of operation of a monostable multivibrator. Draw the waveforms at collector and base of both transistors. [10]

OR

- 7.a) Give the circuits of Positive and Negative types of shunt clippers and explain their operation with the help of input and output waveforms. [6+4]
b) State and Prove the Clamping circuit theorem.

- 8.a) Discuss the principle operation of series-fed Class-A Amplifier with the help of circuit diagram and then prove that its maximum conversion efficiency is 25%.

- b) Briefly explain the concept of Thermal Stability. [6+4]

OR

- 9.a) Obtain the response of a High-Pass RC circuit for Square input and then derive the expression for % Tilt.

- b) When the low pass RC circuit acts as integrator? Derive its condition. [6+4]

- 10.a) Discuss in detail the Switching characteristics of transistor and define all switching times.

- b) Describe how the transistor switch behaves in saturation. [7+3]

OR

- 11.a) Explain how diode acts as switch? Define diode forward recovery time and Reverse recovery time.

- b) Briefly comment on break down voltage consideration of Transistor. [7+3]

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R13

Code No: 114CW

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**B.Tech II Year II Semester Examinations, May - 2019****ENVIRONMENTAL STUDIES****(Common to CE, ECE, CSE, EIE, IT, PTM)****Time: 3 Hours****Max. Marks: 75****Note:** This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A**(25 Marks)**

- | | | |
|------|---|-----|
| 1.a) | What is Ecology? | [2] |
| b) | What is Bio magnification? | [3] |
| c) | What are the alternative energy sources? | [2] |
| d) | What are the benefits of dams? | [3] |
| e) | Define the term Biodiversity. | [2] |
| f) | Differentiate ex-situ and in-situ conservation of biodiversity. | [3] |
| g) | What is pollution and give the sources of water pollution? | [2] |
| h) | Explain the Ozone layer depletion. | [3] |
| i) | What are the salient features of environmental protection act? | [2] |
| j) | What is Crazy consumerism? | [3] |

PART-B**(50 Marks)**

- | | | |
|-----------|--|-------|
| 2.a) | Write about the flow of energy in ecosystem. | |
| b) | Explain the Bioaccumulation. | [5+5] |
| OR | | |
| 3.a) | What are structural units of ecosystem? | |
| b) | What is carrying capacity of water body? Explain in detail. | [5+5] |
| 4.a) | What are the consequences of over utilization of ground water? | |
| b) | Explain importance of the forest resources. | [5+5] |
| OR | | |
| 5.a) | Give a strategic view to meet increasing energy need. | |
| b) | Explain the impacts on environment by exploitation of mineral resources. | [5+5] |
| 6.a) | Explain the value of Biodiversity. | |
| b) | How the India is a mega biodiversity nation? Explain. | [5+5] |
| OR | | |
| 7.a) | Write about national Biodiversity act. | |
| b) | What is hotspot? Explain in detail. | [5+5] |

- 8.a) What are the primary and secondary sources of air pollution?
b) How the degradation of soil is caused due to modern agriculture.

[5+5]

OR

- 9.a) How the bioremediation method works to control soil pollution?
b) What are the salient features of Kyoto protocol?

[5+5]

- 10.a) What is the importance of EIA study.
b) Write about population exploitation and its effects.

[5+5]

OR

- 11.a) Write about the green building concept.
b) How the life cycle assessment helps to protect environment?

[5+5]

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R09

Code No: 54001

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**B.Tech II Year II Semester Examinations, May - 2019****PROBABILITY AND STATISTICS****(Common to CE, CHEM, IT, PTM)****Time: 3 hours****Max. Marks: 75****Answer any five questions****All questions carry equal marks**

1. Two dice, one green and the other red, are thrown. Let A be the event that the sum of the points on the faces shown is odd, B be the event of at least once ace (number 1).
- a) Describe (i) Sample space (ii) Events A, B, B^c , $A \cap B$, $A \cap B^c$ and find their probabilities assuming that all the 36 sample points have equal probabilities.
- b) Find the probabilities of the events
i) $(A^c \cup B^c)$ ii) $(A^c \cap B^c)$ iii) $(A \cap B^c)$ iv) $(A^c \cap B)$ v) $(A \cap B)^c$. [8+7]
- 2.a) If a Poisson distribution is such that $3 P(X=1) = 2 P(X=3)$. Find:
i) $P(X \geq 1)$ ii) $P(X \leq 3)$ iii) $P(2 < X \leq 5)$.
- b) In a normal distribution 32% of the items are under 45 and 8% are over 80. Find the mean and variance of the distribution: [8+7]
- 3.a) A company manufacturing Electrical bulbs claims that the average life of its bulb is 1650 hours. The average life and standard deviation of a random sample of 100 such bulbs were 1550 hours and 120 hours respectively. Should we accept the claim of the company?
- b) The mean yield of wheat from a district A was 210kgs with S.D. of 10 kgs per acre from a sample of 100 plots. In another district B, the mean yield was 220kgs with S.D. of 12 kgs from a sample of 150 plots. Test whether there is any significant difference between the mean yield of crops in the two districts. Test at 5% level of significance. [7+8]
- 4.a) In a sample of 1000 people in Maharashtra 560 are rice eaters and the rest are wheat eaters. Can we assume that both rice and wheat are equally popular in this state at 1% of level of significance?
- b) Before an increase in excise duty on tea, 750 persons, out of a sample of 1000 persons were found to be tea drinkers. After an increase in excise duty 850 people were tea drinkers in a sample of 1200 people. Using standard error of population whether there is a significant decrease in the consumption of tea after the increase in excise duty. [7+8]
- 5.a) The IQ's of 20 students from one area of a city showed a mean of 107 with a standard deviation of 10. While the IQ's of 16 students from another area of the city showed a mean of 112 with a standard deviation of 8. Is there a significant differences between the IQ's if the two groups at 0.01 level of significance.
- b) Find the value of χ^2 for the following data and test the goodness of fit.
- | | | | | | | |
|---------------------|----|----|----|----|----|----|
| Observed frequency: | 14 | 15 | 18 | 20 | 15 | 10 |
| Expected frequency: | 17 | 10 | 15 | 25 | 10 | 15 |
- [7+8]

6. Predict y at $x = 5$ by finding the regression line of y on x

X	2	4	6	8	10	12
Y	1.8	1.5	1.4	1.1	1.1	0.9

Find also the regression line of x on y .

[15]

7. The rate of arrival of customers at a telephone booth follows Poisson distribution with an average of 10 minutes between two successive arrivals. The duration of a phone call is assumed to follow exponential distribution with mean time of 3 minutes.

- Find the probability that a new arrival has to wait to make the call.
- What is the average length of the nonempty queue.
- It is proposed to establish one more booth when the customers would expect waiting time for at least 3 minutes for their turn to make a call. By how much time should the flow of customers increase in order to justify a second booth.
- Estimate the fraction of a day that the phone will be in use.
- What is the probability that it will take him more than 10 minutes altogether to wait for the phone and complete his call?

[15]

- 8.a) Define:

- Periodic state
- irreducible state
- ergodic state
- regular matrix of a tpm.

- b) State the nature of states of the Markov chain with tpm

$$P = \begin{bmatrix} 0 & 1 & 0 \\ 1/2 & 0 & 1/2 \\ 0 & 1 & 0 \end{bmatrix}$$

[7+8]

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R09

Code No: 54060

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.Tech II Year II Semester Examinations, May - 2019

PRODUCTION TECHNOLOGY

(Common to ME AME)

Time: 3 hours

Max. Marks: 75

**Answer any five questions
All questions carry equal marks**

- 1.a) What do you understand by pattern allowance? Discuss various pattern allowances and their importance.
- b) What is the function of sprue base? Can we have a gating system without a sprue base? [8+7]
- 2.a) What is meant by solidification of casting? Explain with neat diagram briefly.
- b) Explain briefly the process of investment of casting?
- c) What are the casting defects? Explain briefly [5+5+5]
- 3.a) What are various types of welding process, welded joints and their characteristics?
- b) What are the advantages and disadvantages of DC and AC arc welding? [8+7]
- 4.a) Explain the principle of explosive welding with neat sketch, State its advantages and limitations and applications.
- b) How is Brazing different from soldering? Compare them with regard to methods adopted and their applications. [7+8]
- 5.a) Briefly describe the mechanism of strain hardening with suitable sketches.
- b) Explain with neat diagram of two high reversing, three high rolling, four high rolling mill. [8+7]
- 6.a) With sketches indicate how the punch force in blanking and punching operations can be reduced. Also explain it.
- b) What are the main variables of a deep drawing operation?
- c) Differentiate between the hot and cold spinning process. [5+5+5]
- 7.a) Explain the working operation of forward and backward extrusion processes.
- b) List down various methods of forging used in industry. [8+7]
8. Describe the following processing methods.
 - a) Compression molding
 - b) Injection molding
 - c) Blow molding. [5+5+5]

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