

**III B. Tech I Semester Supplementary Examinations, May - 2016**  
**STRUCTURAL ANALYSIS – II**  
 (Civil Engineering)

Time: 3 hours

Max. Marks: 70

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

- 1 a) Explain about Eddy's Theorem. [4M]
- b) State the assumptions in Portal method. [3M]
- c) What are the important characteristics of a cable? [3M]
- d) What is distribution theorem? [4M]
- e) What is the moment generated when any support sinks by an amount of  $\delta$  in any fixed beam of span  $L$  and flexural rigidity  $EI$ ? [4M]
- f) Differentiate between Degree of static and kinematic indeterminacies. [4M]

**PART -B**

- 2 Calculate the reactions and Maximum Bending Moment for the given three hinged parabolic arch as shown in fig.1 [16M]

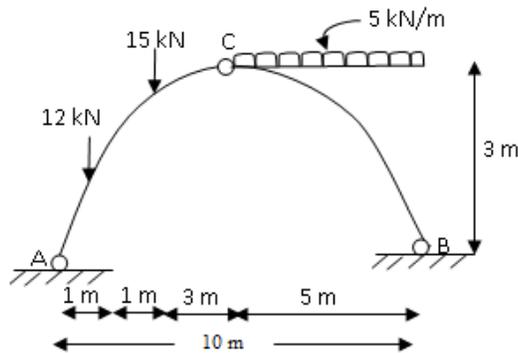


Fig.1

- 3 Analyse the frame shown in fig.2 by using Portal method. [16M]

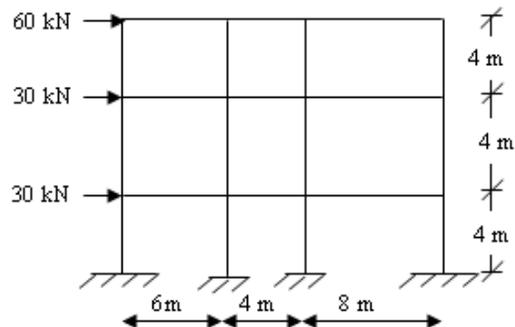


Fig.2



- 4 A suspension bridge of 120 m span has two girders supported by two cables having a central dip of 12 m. The road way has a width of 6 m. The dead load on the bridge is  $5\text{ kN/m}^2$  while the live load is  $10\text{ kN/m}^2$  which acts on the left half of the span. Determine the shear force and bending moment in the girder at 30 m from the left end. Find also the maximum tension in the cable for the position of live load. [16M]
- 5 Draw BMD for the Continuous beam shown in fig.3 by using Moment Distribution method. [16M]

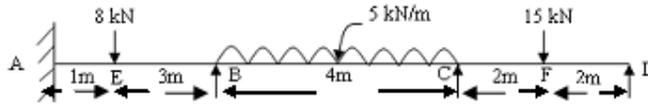


Fig.3

- 6 Analyse the frame shown in fig.4 by using Kani's method. [16M]

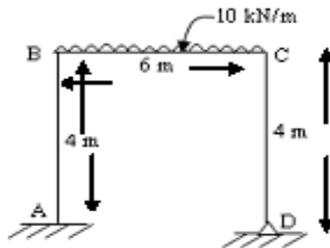


Fig.4

- 7 Draw BMD for the beam shown in fig.5 by using Flexibility method. [16M]

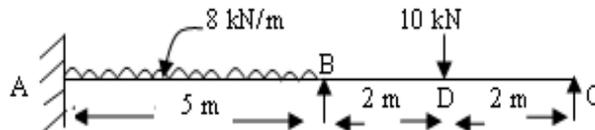


Fig.5

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**III B. Tech I Semester Supplementary Examinations, May - 2016**  
**MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS**  
 (Common to EEE, AME and MINE)

Time: 3 hours

Max. Marks: 70

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

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**PART -A**

- 1 a) Define managerial economics. Illustrate how it helps in solving managerial problems and explain the nature. [3M]  
 b) Define production function and explain it. [4M]  
 c) What is market? Explain the structure of market. [3M]  
 d) Briefly explain about partnership deed. Discuss its features, merits and demerits. [4M]  
 e) Explain about public enterprises and their types. [4M]  
 f) Explain the methods of capital budgeting. [4M]

**PART -B**

- 2 a) Define accounting and write the importance, limitations & process of accounting. [4M]  
 b) From the following transactions prepare journal in the books of Avinash & co 2008: [8M]  
     May 1 commenced business with Rs 1, 00,000/-  
     May 5 purchase goods from rahul & co with Rs 10,000/-  
     May 7 sold goods worth Rs 20,000/-  
     May10 salaries paid Rs 15,00/-  
     May 11 purchased stationary worth Rs 1000/-  
     May 15 Bought furniture worth Rs 20000/-  
     May 18 cash deposited into bank Rs 9000/-  
     May 20 Paid wages Rs 5000/-  
     May 24 cash withdrawn from bank Rs 3000/-  
     May 28 paid rent by cheque Rs 1800/-  
 c) Explain the methods of pricing. [4M]
- 3 a) Define the law of demand. What are their exceptions? [3M]  
 b) Write short notes on price elasticity of demand. [8M]  
 c) Define demand forecasting. Explain the methods of demand forecasting. [5M]
- 4 a) Explain the internal economies of scale. [8M]  
 b) Write a short note on least cost combination of inputs. [8M]

- 5 a) Explain the types of competition. [8M]  
b) What is perfect competition and explain its features. [8M]
- 6 a) What are business cycles? Explain its phases and features. [8M]  
b) Explain about double entry system. [8M]
- 7 a) What is capital budgeting? Explain the techniques of Capital Budgeting. [8M]  
b) What is meant by business organization? Write notes on types of business organizations. [8M]

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**III B. Tech I Semester Supplementary Examinations, May - 2016**  
**METAL CUTTING & MACHINE TOOLS**  
(Mechanical Engineering)

Time: 3 hours

Max. Marks: 70

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

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**PART -A**

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|---|--|------|
| 1 | a) Why can relief or clearance angles never be zero or negative? | [3M] |
|   | b) Give four applications of grinding process.                   | [4M] |
|   | c) What is a lap? Explain.                                       | [4M] |
|   | d) What is diamond machining? Explain.                           | [3M] |
|   | e) What are the various types of lathe?                          | [4M] |
|   | f) What do you mean by the term 'Taper'?                         | [4M] |

**PART -B**

- |   |   |       |
|---|---|-------|
| 2 | What are the velocities which come in to existence when a metal is cut orthogonally? Show these velocities graphically on a velocity diagram and determine the mathematical relationship in terms of shear and rake angles. | [16M] |
| 3 | a) What are the advantages of having a hollow spindle in the headstock of lathe?  | [8M]  |
|   | b) Explain briefly the parts of lathe.  | [8M]  |
| 4 | Discuss in detail the following with neat sketches:   | [16M] |
|   | a) Radial drilling machine  |       |
|   | b) Sensitive drilling machine.  |       |
| 5 | a) What is the function of milling machine?   | [4M]  |
|   | b) Explain with a neat sketch about a horizontal milling machine.   | [12M] |
| 6 | a) How is grinding classified?  | [4M]  |
|   | b) Explain with a neat sketch a plane cylindrical grinder.  | [12M] |
| 7 | a) What is a "clamp"?   | [4M]  |
|   | b) List the basic requirements of clamping devices and explain about quick acting clamps.   | [12M] |

**III B. Tech I Semester Supplementary Examinations, May - 2016****LINEAR IC APPLICATIONS**

(Common to ECE, EIE and ECompE)

Time: 3 hours

Max. Marks: 70

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 Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answering the question in **Part-A** is compulsory3. Answer any **THREE** Questions from **Part-B**

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**PART -A**

- 1 a) Define slew rate. What causes it? [4M]  
 b) Compare the frequency response of compensated and uncompensated op-amp. [4M]  
 c) Give some limitations of op-amp as a comparator. [4M]  
 d) Why do we use higher order filters? Give the relationship between order of a filter and roll off rate. [4M]  
 e) Define capture range and lock in range of a PLL. [3M]  
 f) What is an all-pass filter? Mention some of its applications. [3M]

**PART -B**

- 2 a) Perform AC and DC analysis of an emitter coupled pair. [8M]  
 b) Draw the circuit of any one type of differential amplifier and explain the operation. [8M]
- 3 a) Draw and explain the three open loop op-amp configurations with neat circuit diagram. [8M]  
 b) Explain the frequency compensation techniques of an Op-Amp. [8M]
- 4 a) What are the two closed loop configurations of an Op-Amp, obtain the gains in both the cases. [8M]  
 b) Draw the frequency response curve of a differentiator. How is it modified when a small resistor is connected in series with the capacitor? [8M]
- 5 a) Design a first order wide band reject filter with a higher cutoff frequency of 100Hz and a lower cutoff frequency of 1kHz. Calculate the Q of the filter. [8M]  
 b) Explain how a four quadrant multiplier be obtained from single quadrant multiplier. [8M]
- 6 a) Explain the block diagram of PLL emphasizing the capture range and lock range. [8M]  
 b) Design monostable multivibrator using 555 timer to produce a pulse width of 100 m sec. [8M]
- 7 a) Describe the operation of dual slope A/D converter with necessary diagrams. Give some of its advantages & disadvantages. [8M]  
 b) How many resistors are required for an 8-bit weighted resistors D/A converter? What are those resistor values, assuming the smallest resistance is R? [8M]

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## III B. Tech I Semester Supplementary Examinations, May - 2016

**DATA COMMUNICATION**

(Common to CSE and IT)

Time: 3 hours

Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)2. Answering the question in **Part-A** is compulsory3. Answer any **THREE** Questions from **Part-B**

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**PART -A**

- 1 a) Mention the applications of analog modulation and digital modulation. [4M]
- b) Briefly explain the losses that occur in optical fiber cables. [4M]
- c) Define PAM. Explain its limitations. [3M]
- d) Write about terrestrial propagation of electromagnetic waves. [3M]
- e) Describe the basic telephone call procedures. [4M]
- f) What is the remainder obtained by dividing  $x^7 + x^5 + 1$  by the generator polynomial  $x^3 + 1$ ? [4M]

**PART -B**

- 2 a) Discuss about TCP/IP protocol architecture. [4M]
- b) Explain about transmission impairments. How it will affect the information carrying capacity of channel? [8M]
- c) Write a short note on digital modulation. [4M]
- 3 a) List out the advantages of broadband cable over base-band cable in transmission media. [3M]
- b) Write about the characteristics of Electromagnetic Waves. [8M]
- c) Clearly explain about light sources and light detectors. [5M]
- 4 a) Describe about various digital –to-digital signal encoding techniques. [8M]
- b) What are the three major multiplexing techniques? Explain. [8M]
- 5 a) Define LOS propagation. What are the impairments specific to wireless LOS transmission? [8M]
- b) For LOS transmission, if one antenna is 100m high, then (i) find the maximum distance between two antennas, (ii) to achieve the same distance how high must be the transmitting antenna? [8M]
- 6 a) Explain in detail about subscriber loop systems. [8M]
- b) Mention the advantages of Second-Generation Cellular Telephone Systems over First- Generation Analog Cellular Telephone systems. [8M]
- 7 a) Explain CRC with an example. How does single bit error differ from a burst error? [8M]
- b) Explain about Data link layer protocols. [8M]



Code No: **R31022**

**R10**

**Set No. 1**

**III B.Tech I Semester Supplementary Examinations, May - 2016**

**ELECTRICAL MEASUREMENT**

**(Electrical and Electronics Engineering)**

**Time: 3 hours**

**Max. Marks: 75**

**Answer any FIVE Questions**

**All Questions carry equal marks**

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- 1 a) Write about various errors and compensation in measuring instruments. [7]  
b) Describe the constructional details and working of a moving iron repulsion type meter. [8]
- 2 a) A 100/5A, 50 Hz current transformer has a bar primary and a rated secondary burden of 12.5VA. The secondary winding has 196 turns and a leakage inductance of 0.96mH. With a purely resistive burden at rated full load, the magnetizing mmf is 16AT and the loss excitation required 12A. Find ratio and phase angle errors. [7]  
b) Describe the working principle of an electro dynamic type power factor meter with the help of a suitable diagram. [8]
- 3 a) How active and reactive powers in balanced and unbalanced systems are measured? [7]  
b) Explain how the following adjustments are made in induction type single-phase energy meter: (i) lag adjustment (ii) overload compensation (iii) creep (iv) voltage compensation [8]
- 4 a) Explain standardizing of A.C. potentiometers and use of transfer instruments in case of AC potentiometer. [7]  
b) Explain with the help of suitable diagrams, how a D.C. Potentiometer can be used for: [8]  
(i) Calibration of Ammeter (ii) Determination of an unknown Resistance.
- 5 a) Draw the circuit diagram of a Wheatstone bridge and derive the conditions for balance. [7]  
b) The following results were obtained by loss of charge method of testing cable: [8]  
discharged immediately after charging the deflection = 200 divisions; discharged 30 seconds after charging the deflection = 125 divisions; discharged 30 seconds after charging, when in parallel with a resistance of 10M $\Omega$ , the deflection = 100 divisions. Calculate the insulation resistance of the cable.
- 6 a) Explain the working of Wien's bridge for measurement of capacitance with a circuit diagram. [7]  
b) The four arms of Hay's bridge are arranged as follows: AB is a coil of unknown impedance; [8]  
BC is a non-reactive resistor of 100 $\Omega$ ; CD is a non-reactive resistor of 833 $\Omega$  in series with a standard capacitor of 0.38 $\mu$ F; DA is non-reactive resistor of 16800 $\Omega$ . If the supply frequency is 50 Hz, determine the inductance and the resistance at the balanced conditions.
- 7 a) Explain the working of flux meter with a neat diagram. [7]  
b) Explain the working principle of a ballistic galvanometer with a neat sketch. [8]
- 8 Write short notes on the following: [15]  
i) Digital Tachometer ii) Digital multimeter.

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Code No: R31042

# R10

Set No. 1

III B.Tech I Semester Supplementary Examinations, May - 2016

**DIGITAL IC APPLICATION**

(Common to ECE, EIE, BME, ECompE)

**Time: 3 hours**

**Max. Marks: 75**

**Answer any FIVE Questions**

**All Questions carry equal marks**

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- 1 a) Explain how to estimate sinking current for low output and sourcing current for high output of CMOS gate. [8]
- b) Explain the terms transition time and propagation delay with reference to CMOS logic. [7]
- 2 a) Draw the circuit diagram of basic CMOS gate and explain the operation. [8]
- b) Draw the circuit diagram of ECL and explain its operation. [7]
- 3 a) Design the Binary to Gray code converter and explain its procedure in detail. [7]
- b) Design 16 x 1 multiplexer by using 2 x1 multiplier and explain its operation. [8]
- 4 a) Draw and explain floating point encoder in detail. [8]
- b) Draw the carry look ahead adder and explain its operation. [7]
- 5 Design i) a 4-bit comparator using 74 XX85 ICs and ii) a self correcting 4 bit 4 state ring counter with a single circulating 1. [15]
- 6 Explain the operation of a 4 bit synchronous binary counter with the required diagram and waveforms. [15]
- 7 Implement the following functions using PLA and PAL  $F1=ABC$ ,  $F2=A'B'C'$ ,  $F3=A'+B'+C'$  and explain its operation. [15]
- 8 a) With the help of timing waveforms, explain read and write operations of SRAM. [8]
- b) Explain the internal structure of 64K X 1 DRAM. With the help of timing waveforms discuss DRAM access. [7]

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