

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)

(Affiliated to JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD)
Gundlapochampally (H), Maisammaguda (V), Medchal (M), Medchal-Malkajgiri (Dist), Hyderabad

II B.TECH I SEMESTER SUPPLEMENTARY EXAMINATIONS, JUNE-2018

Subject: Building Materials Construction & Planning

Branch: CE

Time: 3 hours

Max. Marks: 60

PART – A

Answer ALL questions of the following

5x2Mark=10 Marks

1. What are the advantages of stones over bricks?
2. Write the ingredients of cement with their % composition.
3. Explain how you will achieve fire resistance for walls and columns
4. Distinguish between plastering and pointing.
5. Explain green globe. What are green materials?

PART-B

Answer any FIVE Questions of the following

5x10 Marks= 50Marks

1. a) What is meant by Seasoning of Wood? Describe the commonly used methods for Seasoning of wood
b) Write short notes on Quarrying of stone
2. a) Explain any 2 types of Chemical Admixtures.
b) List out applications of admixtures.
3. a) Explain the common acoustical defects.
b) Write a short note on Louvered doors.
4. What do you understand by Concrete masonry? State the advantages of solid block concrete masonry. State various types of surface finishes in such masonry.
5. Define a green building. List out green materials used in construction of green buildings. What are the different principles adopted in design of green buildings.
6. Explain in detail about the component parts of exogenous tree with the help of cross section diagram?
7. What are the various types of cement and explain their uses?
8. What is the necessity of ventilation? What are the factors affecting ventilation?

Code No.: 50102

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Branch: CE

Time: 3 hours

Max. Marks: 60

PART – A

Answer ALL questions of the following

5x2Mark=10 Marks

1. Explain the terms – a) Survey Lines b) check lines c) tie lines
2. What are the different types of leveling staffs?
3. When do you prefer repetition and reiteration method?
4. What is additive constant?
5. Derive a relationship between the radius and the degree of curve?

PART-B

Answer any FIVE Questions of the following

5x10 Marks= 50Marks

1. Write about the different chain corrections used for adjusting the incorrect length.
The length of a survey line was measured with a 20m chain and was found to be equal to 1200 meters. As a check, the length was again measured with a 25 m chain and was found to be 1212 m. On comparing the 20 m chain with the test gauge, it was found to be 1 decimeter too long. Find the actual length of the 25 m chain used.
2. a) Explain about the effects of curvature of earth and refraction on the accuracy of leveling.
b) Write about grid method of plotting contours.
3. What are the different types of theodolites and explain the uses of theodolite with neat description.
4. What is tangential method of tacheometry and derive an expression for the horizontal distance D and the vertical intercept V, when both angles are in (a) elevation (b) depression.
5. a) Write short notes on Global positioning system.
b) Write short notes on Geographical information system.
6. The following bearings were observed in running a closed traverse:

Line	Fore Bearing	Back Bearing
AB	75° 5'	254° 20'
BC	115° 20'	296° 35'
CD	165° 35'	345° 35'
DE	224° 50'	44° 5'
EA	304° 50'	125° 5'

At what stations do you suspect the local attraction? Determine the correct magnetic bearings. If declination was 5° 10' E, what are the true bearing?

7. a) Explain various methods of Contour Surveying.
b) What is differential leveling? Explain in detail with figure.
8. a) Derive an expression for trapezoidal formula for calculating volume
b) A railway embankment is 10m wide with side slopes 1½ to 1. Assuming the ground to be level in a direction transfers to the centre line, calculate the volume contained in a length of 120 m, the centre heights at 20m intervals being in meters 2.2, 3.7, 3.8, 4.0, 3.8, 2.8, 2.5.

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Branch: CE

Time: 3 hours

Max. Marks: 60

PART – A

Answer ALL questions of the following

5x2Mark=10 Marks

1. What is ductility of a material? How it is measured? Explain.
2. Explain how is the strain energy related to the load deformation diagram of a bar?
3. List the four assumptions made in the theory of Simple bending.
4. State the moment area theorems and what are the limitations of the moment area method?
5. State and explain the maximum principal stress theory of failure of materials. For which type of material is this suitable and why?

PART-B

Answer any FIVE Questions of the following

5x10 Marks= 50Marks

1. The normal stresses in two mutually perpendicular directions are 600N/mm^2 and 300N/mm^2 both tensile. The complimentary shear stresses in these directions are of intensity 450N/mm^2 . Find the normal and tangential stresses on the two planes which are equally inclined to the planes carrying the normal stresses mentioned above.
2. a) A metallic block $250\text{mm} \times 80\text{mm} \times 30\text{mm}$ is subjected to a tensile force of 20kN , 30kN and 15kN along x , y and z directions respectively. Determine the change in volume of the block. Take $E = 2 \times 10^5 \text{ N/mm}^2$ and Poisson's ratio = 0.30 .
b) The normal stress in two mutually perpendicular directions are 450 N/mm^2 and 300 N/mm^2 both tensile. The complimentary shear stress in these directions is of intensities 250 N/mm^2 . Find the normal and tangential stresses on the two planes which are equally inclined to the planes carrying the given normal stresses. $\theta = 30^\circ$, by using Mohr's circle and check with Analytical formulas.
3. a) If the extension produced in a rod of length L and cross-sectional area A , due to impact load, P , is very small in comparison with the height, h , through which the load falls, prove that stress induced in the body is given by $\sigma = \sqrt{\frac{2EP_h}{AL}}$.
b) Relation between the rate of loading, shear force and bending moment at a section of a beam.
4. a) Derive the expression for volumetric strain of a body in terms of its linear strains in orthogonal directions.
b) A bar of uniform cross-section ' A ' and length ' L ' hangs vertically, subjected to its own weight. Density and Young's modulus of the material are ρ and E . Prove that the strain energy stored within the bar is given by $U = \frac{A\rho^2 L^3}{6E}$.

5. a) A hollow square section with outer and inner dimensions of 50 mm and 40 mm respectively, is used as a cantilever of span 1 m. How much concentrated load can be applied at the free end, if the allowable maximum bending stress is 35 MPa?
 b) A symmetrical I - section with rectangular ends, has the following dimensions: Flanges = 150 mm x 20 mm, Web = 300 mm x 10 mm. Find the maximum shearing stress developed in the beam for a shear force of 75 kN.

6. a) A rectangular beam 150 mm wide and 300 mm deep is freely supported over a span of 4 m and carries a load of 3 kN/m. It also carries three equal point loads W kN each, equally spaced over the beam. If the permissible bending stress is 6 N/mm^2 , find the maximum allowable value of W.
 b) Determine the shear stress distribution in a beam of square section when the load is applied along one of its diagonals.

7. a) Derive the deflection equation for a simply supported beam of length L carrying a point load W at the centre.
 b) Define and explain the terms conjugate beam and conjugate beam method. What is the use of conjugate beam method over other methods?

8. a) A closely coiled helical spring is to carry a load of 600N. Its mean coil diameter is to be 10 times that of the wire diameter. Calculate these diameters If the maximum shear stress in the material of the spring is 100 N/mm^2 .
 b) Derive the Torsion equation.
 At a section of a mild steel shaft the maximum torque is 8447.5 Nm and maximum bending moment is 5066.5Nm. The diameter of the shaft is 100mm and the stress at the elastic limit in simple tension for the material of the shaft is 220 N/mm^2 . Determine whether the failure of the material will occur or not according to maximum shear stress theory. If not find the factor of safety.

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Branch: CE

Time: 3 hours

Max. Marks: 60

PART – A

Answer ALL questions of the following

5x2Mark=10 Marks

1. Discuss the scope of Managerial economics?
2. Determine BEP if Fixed cost is Rs.25.00 Lakhs, Sales Price Per Unit is Rs.100/- and Variable Cost Per Unit is Rs.75/-.
3. Explain in detail types of competition?
4. Write a note on features of sole proprietor?
5. Define accounting.

PART-B

Answer any FIVE Questions of the following

5x10 Marks= 50Marks

1. a. Managerial Economics is multi – dimensional discipline, explain. [5M]
b. Explain the quantitative methods of Demand Forecasting. [5M]
2. a) Define Production function and explain input/output relationship with two variables. [5M]
b) Srikanth Enterprises deals in the supply of hardware parts of computer. The following cost data is available for 2 successive periods:

	Year 1(rs)	Year 2(rs)
Sales	50000	120000
Fixed cost	10000	20000
Variable cost	30000	60000

- Determine: a) BEP b) Margin of safety [5M]
3. a) How price and output determined for monopolistic competition in short run is there any difference between industry and individual firm in this type of competitive, if yes appreciate the differences?[5M]
b) What strategies do you recommend for the markets obsessed with stiff competition conditions.[5M]
 4. a) Define NPV and how it is calculated. [5M]
b) Discuss briefly the changing business environment during post-Liberalization era. [5M]
 5. a) Objectives and functions of accounting. [3M]
b) Portray various items under Trading & profit and loss account to determine gross profit and net profit. [4M]
c) Calculate earnings per share if the number of shares is 10,000 and the net profit after taxes for a given accounting period is Rs 4,50,000/- [3M]
 6. a) Discuss the salient feature and significance of managerial economics. [5M]
b) Explain the significance of BEA. [5M]
 7. a) What is monopolistic competition? Explain its features briefly. [5M]
b) Explain the methods and sources of raising finance? [5M]
 8. Answer any TWO Questions of the following 2x5 Marks= 10Marks
 - a) Explain the significance of accounting. [5M]
 - b) What are the discounted cash flows and explain the time value of money. [5M]
 - c) Explain how perfect competition under monopoly. [5M]

1. The first part of the paper is devoted to a general discussion of the problem of the existence of solutions of the system of equations (1) for arbitrary values of the parameters α and β . It is shown that the system has solutions for all values of the parameters α and β if the function $f(x)$ is continuous and has a bounded derivative. The second part of the paper is devoted to a detailed analysis of the case when the function $f(x)$ is a step function. It is shown that in this case the system has solutions for all values of the parameters α and β if the function $f(x)$ is continuous and has a bounded derivative. The third part of the paper is devoted to a detailed analysis of the case when the function $f(x)$ is a piecewise linear function. It is shown that in this case the system has solutions for all values of the parameters α and β if the function $f(x)$ is continuous and has a bounded derivative. The fourth part of the paper is devoted to a detailed analysis of the case when the function $f(x)$ is a piecewise constant function. It is shown that in this case the system has solutions for all values of the parameters α and β if the function $f(x)$ is continuous and has a bounded derivative. The fifth part of the paper is devoted to a detailed analysis of the case when the function $f(x)$ is a piecewise linear function. It is shown that in this case the system has solutions for all values of the parameters α and β if the function $f(x)$ is continuous and has a bounded derivative. The sixth part of the paper is devoted to a detailed analysis of the case when the function $f(x)$ is a piecewise constant function. It is shown that in this case the system has solutions for all values of the parameters α and β if the function $f(x)$ is continuous and has a bounded derivative. The seventh part of the paper is devoted to a detailed analysis of the case when the function $f(x)$ is a piecewise linear function. It is shown that in this case the system has solutions for all values of the parameters α and β if the function $f(x)$ is continuous and has a bounded derivative. The eighth part of the paper is devoted to a detailed analysis of the case when the function $f(x)$ is a piecewise constant function. It is shown that in this case the system has solutions for all values of the parameters α and β if the function $f(x)$ is continuous and has a bounded derivative. The ninth part of the paper is devoted to a detailed analysis of the case when the function $f(x)$ is a piecewise linear function. It is shown that in this case the system has solutions for all values of the parameters α and β if the function $f(x)$ is continuous and has a bounded derivative. The tenth part of the paper is devoted to a detailed analysis of the case when the function $f(x)$ is a piecewise constant function. It is shown that in this case the system has solutions for all values of the parameters α and β if the function $f(x)$ is continuous and has a bounded derivative.

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II B.TECH I SEMESTER SUPPLEMENTARY EXAMINATIONS, JUNE-2018Subject: Fluid Mechanics

Branch: CE

Time: 3 hours

Max. Marks: 60

PART – A

Answer ALL questions of the following

5x2Mark=10 Marks

1. Water is stored in a reservoir with a height of “h” meters. What is the total energy at a point on water surface? Use Bernoulli’s energy equation.
2. Define uniform and non-uniform flow with a few examples.
3. Write the applications of Bernoulli’s equation.
4. Write Von Karman momentum equation.
5. Draw TEL, HGL for a pipe conveying water from high level tank to low level tank.

PART-B

Answer any FIVE Questions of the following

5x10 Marks= 50Marks

1. a) Discuss the significance of fluid mechanics and its role in a variety of engineering applications. (4)
b) A plate of metal 1m x 1m x 2 mm is to be lifted up with velocity of 0.1 m/s through an infinitely extending gap 20 mm wide containing an oil of sp. gr. 0.9 and viscosity of 2.15 N-S/m². Find the force required assuming the plate to remain midway in the gap. Weight of the plate is 29.5 N. (6)
2. A two-dimensional flow is described by the velocity components, $u = 5x^3$, $v = -15x^2y$. Evaluate the stream function, velocity and acceleration at point P (1,2).
3. a) Derive the discharge equation through horizontal Orifice meter
b) Explain the principle of Orifice meter with a neat sketch. Derive the expression for the rate of flow of fluid through it.
4. a) Distinguish between laminar and turbulent flow clearly bringing out the characteristics.
b) Two parallel plates kept 130mm apart have laminar flow of oil between them with a maximum velocity of 2m/s. Calculate.
i) Discharge per metre width ii) Shear stress at the plates

5. a) Find the discharge over a triangular notch of angle 60° when the head over the V-notch is 0.3m. Assume $C_d = 0.6$.
- b) Determine the height of a rectangular weir of length 6m to be built across a rectangular channel. The maximum depth of water on the upstream side of the weir is 1.8 m and discharge is 2000 lit/sec. Take $C_d = 0.6$ and neglect end contractions.
6. a) Define viscosity and derive the equation of it . Also draw rheological diagram.
- b) Determine the total pressure on a circular plate of diameter 1.5m which is placed vertically in water in such a way that the centre of the plate is 3m below the free surface of water. Find the position of centre of pressure also.
7. a) Explain about
- i. Stream line and Path line
 - ii. Stream tube
- b) Show that equipotential lines and stream lines are orthogonal to each other
8. a) Derive Continuity equation in 3 Dimensions
- b) Derive the discharge equation through horizontal Venturi meter.

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II B.TECH I SEMESTER SUPPLEMENTARY EXAMINATIONS, MAY-2018Subject: Elementary Calculus and Transforms

Branch: CE, ME, EEE & ECE

Time: 3 hours

Max. Marks: 60

PART – A

Answer ALL questions of the following

5x2Mark=10 Marks

1. Define Fourier series of function $f(x)$ defined on $-L \leq x \leq L$
2. State the Convolution theorem for Z transforms.
3. Evaluate $\int_0^2 \int_0^x xy \, dy \, dx$.
4. Expand e^x by Maclaurin's series
5. Write down the expression of : $\text{div} (\text{grad} (f))$, where $f(x,y,z)$ is a scalar function.

PART-B

Answer any FIVE Questions of the following

5x10 Marks= 50Marks

$$1. \text{ Find the Fourier for the function } f(x) = \begin{cases} 0, & -2 < t < -1 \\ 1+t, & -1 < t < 0 \\ 1-t, & 0 < t < 1 \\ 0, & 1 < t < 2 \end{cases}$$

$$2. \text{ a) If } Z[n^2] = \frac{z^2 + z}{(z-1)^3}, \text{ Find } Z[n^3] \text{ and } Z[n^4]$$

b) Form the partial differential equation by eliminating arbitrary functions from

$$u = f(x^2 + 2yz, y^2 + 2zx)$$

3. Using triple integration find the volume of the sphere $x^2 + y^2 + z^2 = a^2$.
4. Show that $f(x) = x^3 + y^3 - 63(x+y) + 12xy$ is maximum at $(-7, -7)$ and minimum at $(3, 3)$
5. Verify Gauss Divergence theorem for $\vec{F} = 4xz \hat{i} - y^2 \hat{j} + yz \hat{k}$, taken over the cube bounded by $x=0, x=1, y=0, y=1, z=0$ and $z=1$.
6. Find the Fourier series to represent $f(x) = x^2 - 2$, when $-2 \leq x \leq 2$.
7. a) Find the inverse Z – transform of $\frac{2z^2 + 3z}{(z+2)(z-4)}$
- b) If $F(z) = \frac{5z^2 + 3z + 12}{(z-1)^4}$ find the values of $f(2)$ and $f(3)$.
8. Graph the curve $r^2 = 4 \sin(\theta)$ in polar coordinates

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II B.TECH I SEMESTER SUPPLEMENTARY EXAMINATIONS, MAY-2018

Subject: Human Values and Professional Ethics

Branch: **Common to CE & ME**

Time: 3 hours

Max. Marks: 60

PART – A

Answer ALL questions of the following

5x2Mark=10 Marks

1. Define moral autonomy.
2. Explain the importance of professional role.
3. Why valuing time is important in professional life? Explain with example.
4. What is the importance of goal setting?
5. How to maintain relationship with family?

PART-B

Answer any FIVE Questions of the following

5x10 Marks= 50Marks

1. a) What are human values? Can you differentiate human values with ethical values and moral values?
b) What is self-confidence? Discuss how it has a significant role to play in one's personal and professional life.
2. a) Values and skill complement each other. Elaborate.
b) What do you understand by competence in professional ethics? Give two examples of its implications in industry.
3. a) What is role of human values in profession?
b) Write a short note on Goals in education.
4. a) Explain Environmental ethics and write the uses of Ethical theories.
b) What are the roles of Professional Responsibilities and Rights?
5. Write short notes on
a) Commitment and Co-operation
b) Essence of commitment
6. Write short notes on
a) Valuing Time
b) Customs and religion
7. a) What is the outcome when we try to identify relationship based on the exchange of physical facilities? Define self confidence? Is it important in students life?
b) Comment on Profession – in the light of comprehensive human goal.
8. a) Ethics bridges the gap between human interaction and Human Relationship. Explain.
b) What are the global issues faced by multinational corporations.

