

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)(Affiliated to JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD)
Gundlapochampally (H), Maisammaguda (V), Medchal (M), Medchal-Malkajgiri (Dist), Hyderabad**III B.TECH I SEMESTER REGULAR END EXAMINATIONS, NOVEMBER-2018**Subject: Engineering Economics and Accountancy

Branch: Common to ME & MINING

Time: 3 hours

Max. Marks: 60

PART – A

Answer ALL questions of the following

5x2Mark=10 Marks

1. What is Demand Function?
2. What do you mean by Angle of Incidence?
3. Trace equilibrium price and quantity curves under perfect competition with the help of demand-supply schedule and graph.
4. Illustrate Types of capital?
5. What are the Liquidity Ratios's

PART-B

Answer any 5 questions of the following

5x 10 Marks= 50Marks

1. a) What are the characteristics of managerial economics? [5M]
b) Factors influencing demand [5M]
2. a) Describe how point elasticity is more focused than arc elasticity. [5M]
b) Compare income elasticity and cross elasticity with the help of suitable examples and graphs. [5M]
3. a) Differentiate Isoquants and Isocost curves? [3M]
b) Depict graph for short run cost output relations covering AVC, AFC, ATC & MC curves and define fixed and variable costs [4M]
c) Determine BEP volume and sales volume that is required to get a target profit of Rs. 20.00 Lakhs, if Fixed Cost is Rs.10.00 Lakhs, Per Unit is Rs.50/- and Variable Cost Per Unit is Rs.40/-. [3M]
4. a) Compare internal and external economies and diseconomies of scale of production. [5M]
b) Explain Cobb-Douglas Production Function along with its assumption and what returns to industry it expects? [5M]
5. a) Compare Very Short Period, Short Period and Long Period Markets [3M]
b) Compare Features of Monopoly and Monopolistic market structures. [3M]
c) Differentiate Going Rate Pricing, Market Skimming, Market Penetration and Cross Subsidization types of pricing methods. [4M]
6. a. What is monopolistic competition? Explain its features briefly. [5M]
b. What is demand oriented pricing. Explain each of them. [5M]
7. a) Explain, what are the factors determining working capital? [5M]
b) What are the discounted cash flows and explain the time value of money. [5M]
8. a) Define accounting Cycle. [5M]
b) What are the advantages of double entry book - keeping system? [5M]

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)

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

**III B.TECH I SEMESTER REGULAR AND SUPPLEMENTARY EXAMINATIONS,
DECEMBER-2018**Subject: METALCUTTING&MACHINETOOLS

Branch: ME

Time: 3 hours

Max. Marks: 60

PART – A

Answer ALL questions of the following

5x2Mark=10 Marks

1. What is machinability?
2. What are the different types of operations done on a lathe?
3. What is the difference between shaper and planer?
4. What are the essential characteristics of a bonding material?
5. Distinguish between pull type and push type broaching.

PART-B

Answer any FIVE Questions of the following

5x 10 Marks= 50Marks

1. a) Briefly describe the properties of HSS as tool materials. Name various types of HSS?
b) what is mach inability index? explain the criteria to determine the mach inability.
2. a)Write short notes on following with neat sketches (i) Lathe carriage (ii) Lathe centres
b)What are the difference between a face plate and a drive plate? Explain when you use them
3. a. Explain the twist drill nomenclature and define various elements of twist drill with neat sketch.
b. In a shaper, length of stroke is 300 mm, number of double strokes per minute is 40 and ratio of return time to cutting time is 1:2. Find the cutting speed.
4. a) List various milling cutters and indicate their uses and applications.
b)The marking system for a conventional grinding wheel is given as
50 C 60 M 4 R 05
Describe each of the above letter/number.
5. a) Write short notes on principles of clamping.
b)List the types of clamping and work holding devices? Explain any two with sketches.
6. a)What type of operations can be performed by planer? Explain
b)A mild steel bar of 50 mm diameter was orthogonally machined on lathe. Its feed rate 0.5 mm/rev, chip thickness 1.2 mm, rotational speed 100 rpm and rake angle 14° . Calculate chip thickness ratio and shear angle.
7. a) Draw the neat sketch of lathe machine and explain various part of it.
b) Briefly explain Single spindle and multi spindle automatic lathes
8. a)How the stroke length is adjusted in shaper machine? Explain with a neat sketch?
b)Explain gang drilling machine with neat sketch

Code No.: 50321

MR15-2016-17 Regular & 2015-16- Supply

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)

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

III B.TECH I SEMESTER REGULAR AND SUPPLEMENTARY EXAMINATIONS,

DECEMBER -2018

Subject: Automobile engineering

Branch: **ME**

Time: 3 hours

Max. Marks: 60

PART – A

Answer ALL questions of the following

5x2Mark=10 Marks

1. List out types of chassis frames
2. What is the role of antifreeze solution in water cooling system?
3. Name the raw materials of biomass
4. What is the function of flywheel.
5. Write the disadvantages of independent suspension system

PART-B

Answer any FIVE Questions of the following

5x 10 Marks= 50Marks

1. Explain the working principle of simple carburetor with a neat sketch
2. (a) Explain briefly the various types of chassis construction with the help of suitable diagrams.
(b) With the help of schematic layout, explain the working principle of multipoint fuel injection in petrol engines.
3. a) What are the main components of air cooling system for an automotive engine? Describe in detail ?
b) Give advantages and disadvantages of air cooling system
4. (a) Write short notes on evaporative cooling
(b) Write short notes on pressure sealed cooling
5. (a) Explain the usage of gaseous fuel in automobiles
(b) Write a short note Voltage regulator
6. Explain the operation of hydrogen fueled vehicle with neat sketch
7. (a) Describe the working of synchromesh gearbox
(b) What are the features of a good quality clutch? Explain the working of Cone clutch with a neat sketch
8. With the help of a neat sketch, explain the construction and operation of Hotch-kiss drive

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)

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

**III B.TECH I SEMESTER REGULAR AND SUPPLEMENTARY EXAMINATIONS,
DECEMBER-2018**Subject: Design of Machine Members-I

Branch: ME

Time: 3 hours

Max. Marks: 60

PART – A

Answer ALL questions of the following

5x2Mark=10 Marks

- 1) List the mechanical properties of materials
- 2) Differentiate the theoretical stress concentration factor and fatigue stress concentration factor.
- 3) What do you mean by efficiency of riveted joint?
- 4) Write the applications of spigot and socket joint?
- 5) Write the applications of helical torsion springs?

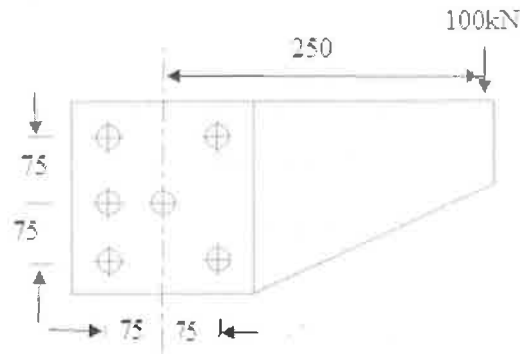
PART-B

Answer any FIVE Questions of the following

5x 10 Marks= 50Marks

- 1 A) Explain the design considerations for the selection of Engineering Materials.
- B) A bolt is subjected to an axial pull of 10 kN and a transverse shear force of 5 kN. The yield strength of the bolt material is 300 MPa. Considering a factor of safety of 2.5 determine the diameter of the bolt, using (i) Maximum normal Stress theory, (ii) Maximum stress theory, (iii) Maximum principal strain theory. Take poisson's ratio as 0.25.
- 2 A) Explain the causes of stress concentration.
- B) A rod of circular cross section is subjected to an alternating tensile force, varying from 20 kN to 70 kN. Determine the diameter of the rod, according to (i) goodman method, and (ii) Soderberg method; using the following material properties:
Ultimate tensile strength 1000 MPa,
Yield strength 550 Mpa. Take factor of safety as 2. Neglect stress concentration effect and other correction factors.

- 3 A) A Bracket is riveted to a column by 6 rivets of equal size as shown in figure below. It carries a load of 100kN at a distance of 250 mm from the column. If the maximum shear stress in the rivet is limited to 63MPa, find the diameter of the rivet.



- B) When a fillet weld is called (i) transverse fillet weld, and (ii) parallel fillet weld.
- 4 A) Determine the inside and outside diameters of a hollow shaft, which will replace a solid shaft of diameter 50 mm. both the shafts are made of the same material. The hollow shaft should be equally strong in torsion. Yet the weight should be half of the solid shaft.
- B) Explain the design procedure for flexible coupling.
- 5) A helical compression spring made of oil tempered carbon steel is subjected to a load which varies from 400 N to 1000 N. The spring index is 6 and the design factor of safety is 1.25 if the yield stress in shear is 770 MPa and endurance stress in shear is 350MPa find i) the size of the spring wire ii) diameter of the spring iii) number of turns of the spring iv) free length of the spring. The compression of the spring at the maximum load is 30 mm. The modulus of the rigidity for a spring material may be taken as 80 kN/mm^2 .
- 6 A) Explain briefly the various theories of failures.
- B) With neat sketch explain how the Soderberg and Goodman lines differ from each other.
- 7 A) The cylinder head of a steam engine is subjected to a steam pressure of 0.7 N/mm^2 . It is held in position by means of 12 bolts. A soft copper gasket is used to make the joint leak-proof. The effective diameter of cylinder is 300 mm. Find the size of the bolt so that the stress in the bolts is not to exceed 100 MPa.
- B) Design a knuckle joint to transmit 150 kN. The design stresses may be taken as 75 MPa in tension, 60 MPa in shear and 150 MPa in compression.
- 8) Write short notes on any **two** of the following.
- Different types of keys.
 - Design procedure of helical compression springs under fatigue loading.
- c) Eye bolt and its various fields of applications

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)(Affiliated to JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, HYDERABAD)
Gundlapochampally (H), Maisammaguda (V), Medchal (M), Medchal-Malkajgiri (Dist), Hyderabad**III B.TECH I SEMESTER REGULAR AND SUPPLEMENTARY EXAMINATIONS, NOVEMBER-2018**Subject: Heat Transfer

Branch: ME

Time: 3 hours

Max. Marks: 60

PART – A

Answer ALL questions of the following

5x2Mark=10 Marks

1. Differentiate conduction and convection.
2. Write the significance lumped heat analysis.
3. Define Prandtl number and what is its significance?
4. Classify the boiling and condensation.
5. Define black body.

PART-B

Answer any FIVE Questions of the following

5x 10 Marks= 50Marks

1. (a) Calculate the critical radius of insulation for asbestos ($k = 0.172 \text{ W/m.K}$) surrounding a pipe and exposed to room air at 300 K with $h = 2.8 \text{ W/m}^2\text{K}$. Calculate the heat loss from a 475 K , 60 mm diameter pipe when covered with the critical radius of insulation (asbestos) and without insulation

(5M) UNIT-1

- b) Write the relation between heat transfer and electrical current analogy with the help of diagrams.
2. a) Derive the expression for heat transfer for the case of a straight rectangular fin of uniform cross section when the tip of the fin is insulated.
- b) A steel rod ($K = 32 \text{ W/mK}$), 12 mm in diameter and 60 mm long, with an insulated end is to be used as a spine. It is exposed to surroundings with a temperature of 60°C and a heat transfer coefficient of $55 \text{ W/m}^2\text{K}$. The temperature at the base of fin is 95°C . Determine
 - i. Efficiency of fin
 - ii. Heat dissipation of the fin.
3. Air at 27°C and 1 bar flows over a plate at a speed of 2 m/s .
 - (i) Calculate the boundary layer thickness at 400 mm from the leading edge of the plate. Find the mass flow rate per unit width of the plate.
For air $\mu = 19.8 \times 10^{-6} \text{ kg/ms}$ at 27°C .
 - (ii) If the plate is maintained at 60°C , Calculate the heat transferred per hour.
The properties of air at mean temperature of $(27+60)/2 = 43.5^\circ\text{C}$ are given below:
 $\nu = 17.36 \times 10^{-6} \text{ m}^2/\text{s}$; $k = 0.02749 \text{ W/m}^\circ\text{C}$
 $C_p = 1006 \text{ J/kg K}$; $R = 287 \text{ Nm/kg mK}$; $Pr = 0.7$
4. A vertical plate 0.5 m^2 in area at temperature 92°C is exposed to steam at atmospheric pressure. If the steam is dry and saturated estimate the heat transfer rate and condensate mass per hour. The vertical length of the plate is 0.5 m . Properties of water at film temperature of 96°C can be obtained from tables.

5. a) Explain the terms absorptivity, reflectivity and transmissivity.
- b) Fused quartz transmits 90% of the incident thermal radiation between 0.2 and 4 μ . Suppose a certain heat source is viewed through the quartz window, what heat flux in Watts will be transmitted through the material from black body radiation sources at
 - i. 800°C
 - ii. 550°C
 - iii. 250°C
 - iv. 70°C.
6. (a) Explain thermal conductivity. Discuss its variation with temperature for solids, liquids and gases.
- (b) A brick wall 25 cm thick is forced with concrete of 5 cm thick. The thermal conductivity of brick is 0.69 W/m-K. While that of concrete is 0.93 W/m-K if the temperature of the exposed brick face is 30°C and that of concrete is 5°C. Find the heat lost per hour through wall of 10 m. x 5 m. Also determine the interface temperature.
7. a) Explain the mechanism of heat conduction with variable thermal conductivity and also mention some of the situations where poor conductivity of air helps to restrict the heat transmission by conduction.
- b) A long cylindrical bar ($k = 18.4$ W/mK; $\alpha = 0.022$ m²/hr) of radius 82 mm comes out of oven at 836°C throughout and is cooled by quenching it in a large bath of 42°C coolant. If $h = 184$ W/m²K, calculate the time taken by the shaft center to reach 124°C, the surface temperature of the shaft when its centre temperature is 124°C and the temperature gradient at the outside surface at the same instant of time.
8. a) A flat plate, 1m wide and 1.5 m long is to be maintained at 90°C in air with a free stream temperature of 10°C. Determine the velocity with which air must flow over flat plate along 1.5m side so that the rate of energy dissipation from the plate is 3.75 kW. Take the following properties of air at 50°C: $\rho = 1.09$ kg/m³, $k = 0.028$ W/m°C, $c_p = 1.007$ kJ/kg°C, $\mu = 2.03 \times 10^{-5}$ kg/m-s $Pr = 0.7$
- b) Subcooled or local boiling . Explain .