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MALLA REDDY COLLEGE OF ENGINEERING & TECH~~~~**GY**
(Autonomous Institution – UGC, Govt. of India)
III B.Tech I Semester Regular Examinations, December 2022
Thermal Engineering
(ME)

Roll No										

Time: 3 hours   **Max. Marks: 70**
Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.
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SECTION-I

1   **A**   Explain about heat loss factor and time loss factor   **[7M]**
     B   Compare the actual and fuel air cycles of a gasoline engine   **[7M]**
OR
2   **A**   Discuss the difference between four stroke and two stroke engines   **[7M]**
     B   Explain the working of simple carburetor with neat sketch   **[7M]**

SECTION-II

3   **A**   What are the factors that an engine operator can control to reduce the tendency of detonation in SI engine   **[7M]**
     B   Explain the stages of combustion in SI engine with suitable diagram.   **[7M]**
OR
4   **A**   Explain the phenomenon of diesel Knock. Compare it with the Phenomenon of detonation in SI engine   **[7M]**
     B   Bring out clearly the process of combustion in CI engines and also explain various stages of combustion   **[7M]**

SECTION-III

5   **A**   Discuss the various methods for measurement of brake power?   **[7M]**
     B   The following details were obtained in a test in a four cylinder four stroke engine, diameter = 100 mm; stroke = 120 mm; speed of the engine = 1600 rpm; fuel consumption = 0.2 kg/min; calorific value of fuel is 44000 kJ/kg; brake load= 40 kg; brake drum circumference is 300 cm. If the mechanical efficiency is 80%, calculate (i) brake thermal efficiency, (ii) indicated thermal efficiency, (iii) indicated mean effective pressure, and (iv) brake specific fuel consumption   **[7M]**
OR
6   **A**   Determine the process of evaluating indicated power of an IC engine with Morse Test   **[7M]**
     B   The following details were obtained in a test on single Cylinder four stroke oil engine, cylinder bore = 150 mm; engine stroke = 250 mm; area of indicator diagram = 450 mm2; length of indicator diagram = 50 mm; indicator spring rating = 1.2 mm; speed of the engine = 420 rpm; Brake torque = 217 Nm, fuel consumption = 2.95 kg/hr; calorific value of fuel = 44000 kJ/kg; cooling water rate of flow = 0.068 kg/s; cooling water temperature rise = 4.5 K, Specific heat capacity of cooling water = 4.1868 kJ/kgK. Calculate (i) the mechanical efficiency, (ii) the brake thermal   **[7M]**

efficiency, (iii) the specific fuel consumption, and (iv) Draw up an energy balance in kW.

SECTION-IV

7 **A** Derive the expression for work per kg of air compressed in a single cylinder reciprocating air compressor considering clearance and neglecting clearance. **[7M]**

B A single-stage double-acting air compressor is required to 14 m^3 of air per minute measured at 1.013 bars and 20^{0}C. The delivery pressure is 6 bar and the speed 300 rpm. Take the clearance volume as 5% of the swept volume with the compression and expansion index of n=1.3. Calculate: (i) Swept volume of the cylinder (ii) The delivery temperature (iii) Indicated power **[7M]**

OR

8 **A** Explain the working of vane blower with a neat sketch and derive the expression for its efficiency **[7M]**

B A roots blower compresses 1 m^3 of air per second from a pressure of 1.01325 bar to 1.8 bar. Find the power required to run the compressor and its efficiency **[7M]**

SECTION-V

9 **A** Discuss the comparison between centrifugal and axial flow compressors **[7M]**

B A centrifugal compressor runs at 1440 rpm, compresses air from 101 kPa, 20º C to a pressure of 6 bar isentropically. The inner and outer diameter of the impeller is 140 mm and 280 mm respectively. The width of the blades at inlet is 25 mm. The blade angles are 16º and 40º at entry and exit. Determine the mass flow rate of air, degree of reaction, power developed and width of the blade at outlet. **[7M]**

OR

10 **A** With help of a neat sketch explain the construction and working of an axial flow compressor. **[7M]**

B An axial flow compressor with 50% degree of reaction has blades with inlet and out let angles of 45^0 and 10^0 respectively. The pressure ratio is 6 and isentropic efficiency is 85%, when the air inlet temperature is 40^{0}C. The blade velocity is 200 m/s. The blade velocity and axial velocity are constant throughout the compressor. Calculate the number of stages required, when work factor is (a) unity, and (b) 0.89 for all stages **[7M]**

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MALLA REDDY COLLEGE OF ENGINEERING & TECH⎵⎵GY
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III B.Tech I Semester Regular Examinations, December 2022
Computer Integrated Manufacturing Technologies
(ME)

Roll No										

Time: 3 hours   **Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

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SECTION-I

1	A	Explain the geometry of chip formation with proper sketches.	[7M]
	B	Briefly discuss about Geometry of single point cutting tool? Also, explain the following i) rake angle ii) Clearance angle iii) cutting angle iv) lip angle, with neat sketch.	[7M]

OR

2	A	Describe the specification of lathe	[7M]
	B	Comparison between turret and capstan lathe	[7M]

SECTION-II

3	A	With the help of neat sketch explain the radial drilling machine	[7M]
	B	Explain various operations performed in drilling machine	[7M]

OR

4	A	With a sketch explain the working of vertical shaper machine.	[7M]
	B	What is the difference between a shaper and slotter.	[7M]

SECTION-III

5	A	With the help of a line diagram, explain the constructional features of a universal milling machine.	[7M]
	B	What is the principle of working of milling machines? How do you classify the milling machine?	[7M]

OR

6	A	What is indexing? Explain some common methods of indexing in milling machines	[7M]
	B	With the help of neat sketch explain the geometry of milling cutter.	[7M]

SECTION-IV

7	A	Sketch and explain the various methods of surface grinding processes.	[7M]
	B	What are the advantages and disadvantages of centre less grinding?	[7M]

OR

8	A	Explain different types of abrasives used in grinding wheel.	[7M]
	B	Explain the difference between lapping and grinding.	[7M]

SECTION-V

9	A	With a neat sketch, explain the functioning of a NC machine. State two important differences between NC and CNC?	[7M]
	B	Discuss the basic feedback control system used in CNC machine tools	[7M]

OR

10	A	Briefly explain functions of CNC and DNC systems	[7M]
	B	What are the various types of statement in APT language?	[7M]

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MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous Institution – UGC, Govt. of India)
III B.Tech I Semester Regular Examinations, December 2022
Design of Hydraulic and Pneumatic Systems
(ME)

Roll No										

Time: 3 hours   **Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

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SECTION-I

1	A	What is a Fluid power system? Define any 5properties of fluids.	[7M]
	B	Mention advantages and Applications of Fluid power system.	[7M]

OR

2	A	Explain the working and constructional details of a centrifugal pump	[7M]
	B	Write the difference between Gear pump and reciprocating pump.	[7M]

SECTION-II

3	A	Explain the sequencing of two double acting cylinders with a neat sketch.	[7M]
	B	Discuss the construction and working of a solenoid-actuated valve.	[7M]

OR

4	A	Explain with neat sketch, the principle and operation of telescopic cylinder.	[7M]
	B	Explain the construction of pressure relief valve with neat sketch.	[7M]

SECTION-III

5	A	Describe a hydraulic circuit for synchronizing two cylinders with flow control valves.	[7M]
	B	Explain the working principles of a fail -safe circuits with over load protection.	[7M]

OR

6	A	Explain the air over oil intensifier with suitable example.	[7M]
	B	Write and explain the working principle of pressure intensifier with neat diagram.	[7M]

SECTION-IV

7	A	Describe the operation of FRL unit.	[7M]
	B	Develop an electro hydraulic circuit for the following sequence A+B +B -A - where A and B stands for cylinders +indicate extension and – indicate retraction of cylinders.	[7M]

OR

8	A	Discuss the working principle of any one type of compressor with neat sketch.	[7M]
	B	Explain about Quick exhaust valve and air control valve.	[7M]

SECTION-V

9 **A** Design and draw circuit using hydraulic components for drilling operation **[7M]**
   B Design and draw circuit using hydraulic components for surface grinding operation. **[7M]**

OR

10 **A** Discuss few important common problems and their remedies in pneumatic circuits. **[7M]**
   B Explain the installation procedure for various hydraulic systems and its preventive maintenance. **[7M]**

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MALLA REDDY COLLEGE OF ENGINEERING & TECH⬚⬚GY
(Autonomous Institution – UGC, Govt. of India)
III B.Tech I Semester Regular Examinations, December 2022
Design of Machine Elements
(ME)

Roll No										

Time: 3 hours   **Max. Marks: 70**
Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE
Question from each SECTION and each Question carries 14 marks.
Note: Design Data books are permitted
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SECTION-I

1	**A**	Enumerate the various manufacturing methods of machine parts which a designer should know.	**[7M]**
	B	A bar 3 m long is made of two bars, one of copper having E = 105 GN/m^2 and the other of steel having E = 210 GN/m^2. Each bar is 25 mm broad and 12.5 mm thick. This compound bar is stretched by a load of 50 kN. Find the increase in length of the compound bar and the stress produced in the steel and copper. The length of copper as well as of steel bar is 3 m each.	**[7M]**

OR

2	**A**	State the assumptions made in theories of failure.	**[7M]**
	B	A shaft is transmitting 100 kW at 180 r.p.m. If the allowable stress in the material is 60 MPa, find the suitable diameter for the shaft. The shaft is not to twist more than 1° in a length of 3 metres. Take C = 80 GPa	**[7M]**

SECTION-II

3	**A**	What is meant by `stress concentration'? How do you take it into consideration in case of a component subjected to dynamic loading?	**[7M]**
	B	A stepped shaft has maximum diameter 45 mm and minimum diameter 30 mm. The fillet radius is 6 mm. If the shaft is subjected to an axial load of 10 kN, find the maximum stress induced, taking stress concentration into account.	**[7M]**

OR

4	**A**	Write Soderberg's equation and state its application to different type of loadings	**[5M]**
	B	A machine component is subjected to a flexural stress which fluctuates between + 300 MN/m^2 and – 150 MN/m^2. Determine the value of minimum ultimate strength according to 1. Gerber relation; 2. Modified Goodman relation; and 3. Soderberg relation. Take yield strength = 0.55 Ultimate strength; Endurance strength = 0.5 Ultimate strength; and factor of safety = 2.	**[9M]**

SECTION-III

5	**A**	What do you understand by the term riveted joint? Explain the necessity of such a joint.	**[5M]**
	B	Design a double riveted butt joint with two cover plates for the longitudinal seam of a boiler shell 1.5 m in diameter subjected to a steam pressure of 0.95 N/mm^2. Assume joint efficiency as 75%, allowable tensile stress in the plate 90 MPa ; compressive stress 140 MPa ; and shear stress in the rivet 56 MPa	**[9M]**

OR

6   A rectangular steel plate is welded as a cantilever to a vertical column and supports a single concentrated load P, as shown in Fig. Determine the weld size if shear stress in the same is not to exceed 140 MPa. **[14M]**
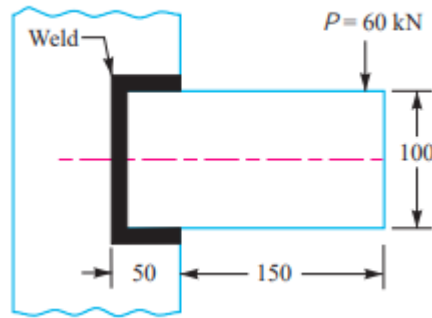
All dimensions in mm.

SECTION-IV

7   **A**   How are the keys classified? Draw neat sketches of different types of keys and state their applications **[7M]**

    B   A hollow steel shaft transmits 600 kW at 500 r.p.m. The maximum shear stress is 62.4 MPa. Find the outside and inside diameter of the shaft, if the outer diameter is twice of inside diameter, assuming that the maximum torque is 20% greater than the mean torque. **[7M]**

OR

8   Design and make a neat dimensioned sketch of a muff coupling which is used to connect two steel shafts transmitting 40 kW at 350 r.p.m. The material for the shafts and key is plain carbon steel for which allowable shear and crushing stresses may be taken as 40 MPa and 80 MPa respectively. The material for the muff is cast iron for which the allowable shear stress may be assumed as 15 MPa. **[14M]**

SECTION-V

9   **A**   List the basic assumptions used in the theory of hydrodynamic lubrication **[7M]**

    B   List the important physical characteristics of a good bearing material. **[7M]**

OR

10   Design a journal bearing for a centrifugal pump from the following data: Load on the journal 20000 N; Speed of the journal 900 r.p.m; Type of oil is SAE 10, for which the absolute viscosity at 55°C = 0.017 kg / m-s; Ambient temperature of oil = 15.5°C; Maximum bearing pressure for the pump = 1.5 N / mm^2 . Calculate also mass of the lubricating oil required for artificial cooling, if rise of temperature of oil be limited to 10°C. Heat dissipation coefficient = 1232 W/m^2/°C. **[14M]**

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MALLA REDDY COLLEGE OF ENGINEERING & TECH~~~~GY
(Autonomous Institution – UGC, Govt. of India)
III B.Tech I Semester Regular Examinations, December 2022
Internet of Things & Its Applications
(ME, CSE, IT, CSE-CS, CSE-AIML & CSE-DS)

Roll No										

Time: 3 hours   **Max. Marks: 70**
Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE
Question from each SECTION and each Question carries 14 marks.
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SECTION-I

1	A	Explain the generic M2M System Solution with a neat diagram.	**[7M]**
	B	Explain the functional layers and capabilities of an IoT solution with a neat diagram.	**[7M]**

OR

2	Discuss IoT World Forum (IoTWF) standardized architecture and IoT data management stack of Simplified IoT Architecture.	**[14M]**

SECTION-II

3	Explain SCADA over IP networks and SCADA protocol translation with a neat diagram.	**[14M]**

OR

4	What is Zigbee? Explain 802.15.4 physical layer, MAC layer, and security.	**[14M]**

SECTION-III

5	Describe the relative strength and limitation of Building IOT with Raspberry Pi and Arduino Board details	**[14M]**

OR

6	Explain about Design Methodology and Embedded computing logic	**[14M]**

SECTION-IV

7	A	Explain the types of data analytics.	**[7M]**
	B	Explain structured versus unstructured data and data in rest versus data in motion.	**[7M]**

OR

8	A	Explain the challenges of IoT security	**[7M]**
	B	Explain the different cloud computing service models.	**[7M]**

SECTION-V

9	Discuss about IoT applications in buildings, security, Industries.	**[14M]**

OR

10	Discuss about Industry 4.0 concepts.	**[14M]**

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MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

III B.Tech I Semester Regular Examinations, December 2022
Managerial Economics & Financial Analysis
(ME)

Roll No										

Time: 3 hours　　　　　　　　　　　　　　　　　　　　　　　**Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

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SECTION-I

1	A	Define Managerial Economics and explain its Scope of managerial Economics.	[7M]
	B	How do you express "Demand function"?	[7M]

OR

2	A	Describe the various factors involved in Demand forecasting of a product	[7M]
	B	Explain with suitable diagrams, different kinds of Elasticity of demand	[7M]

SECTION-II

3	A	Define the Break-Even analysis and outline its limitations.	[7M]
	B	Write a short notes on Isocost and Isoquants	[7M]

OR

4	A	From the following information, Calculate the break-even point in units and sale values; Output 3000 units, Selling price per unit Rs.30, Variable cost per unit Rs.20,Total fixed cost Rs.20, 000	[7M]
	B	Explain the importance of Cobb-Douglas production function	[7M]

SECTION-III

5	A	Enumerate the various methods of pricing.	[7M]
	B	What are the differences between monopoly and perfect competition?	[7M]
6	A	Examine critically the merits and limitations of a Partnership organisation	[7M]
	B	Discuss the changing business environment post Liberalization Scenario.	[7M]

SECTION-IV

7	A	What do you understand by Double Entry System of book-keeping?	[7M]
	B	Define the concepts of 'Accounting'	[7M]

OR

8	A	From the following Trial Balance and adjustments, prepare final accounts of Jain enterprises as on 31-03-2018.	[10M]

Particulars	Amount (Rs.)	Particulars	Amount (Rs.)
Opening stock	1000	Capital	20000
Purchases	4000	Reserve for bad debts	200
Sales Returns	500	Sales	6000
Carriage inwards	600	Creditors	600
Wages	700		
Salaries	1000		
Interest	300		
Trade expenses	400		
Debtors	8000		
Bad debts	300		
Business premises	6000		
Bills receivable	4000		
	26800		**26800**

Adjustments :
a) Closing stock Rs. 4000
b) Prepaid salaries Rs. 300
c) Bad Debts Rs. 500
d) Reserve for Bad debts 5%
e) Depreciation of Premises 5% .

B   Write a short note on Trial Balance   **[4M]**

SECTION-V

9   **A**   What is the purpose of taking capital budgeting decisions?   **[4M]**

B   The initial cash outlay of a project is Rs.50,000 and it generates cash   **[10M]**
inflows of Rs.20,000, Rs.15,000, Rs.25,000 and Rs.10,000 in four years.
Using present value index method, appraise profitability of the proposed
investment assuming 10% rate of discount.

OR

10   **A**   Consider the case of the company with the following two investment   **[7M]**
alternatives each costing Rs.9 lakhs. The details of the cash inflows;

	Rs.in Lakhs	Rs.in Lakhs
Year	Project-1	Project-2
1	3	6
2	5	4
3	6	3

The cost of capital is 10% per year. Which project will you choose under
NPV method?

B   Identify the Ratios that are used to find the soundness and strength of long-   **[7M]**
term financial position of a firm.

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MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous Institution – UGC, Govt. of India)
III B.Tech I Semester Regular/Supplementary Examinations, January 2024
Managerial Economics & Financial Analysis
(ME)

Roll No										

Time: 3 hours   **Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

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SECTION-I

1	**A**	Describe the nature, scope and practical significance of Managerial Economics.	**[7M]**
	B	Describe fully the concept of price elasticity of demand.	**[7M]**

OR

2	**A**	State and explain the Law of Diminishing Marginal Returns.	**[7M]**
	B	How is Income Elasticity of demand measured?	**[7M]**

SECTION-II

3	**A**	What is Cost-Benefit Analysis? Explain the steps involved in it.	**[7M]**
	B	What is break even analysis? Show graphical presentation of break even analysis?	**[7M]**

OR

4	**A**	Explain Cobb -Douglas production function	**[7M]**
	B	Differentiate between Fixed cost and Variable costs. Give examples for each?	**[7M]**

SECTION-III

5	**A**	Explain the classification of the market on the basis of the degree of competition.	**[7M]**
	B	Explain the new economic environment in changing modern business era?	**[7M]**

OR

6	**A**	What is meant by 'Monopolistic Competition'? Give its features with examples.	**[7M]**
	B	Illustrate price and output determination in case of monopolistic.	**[7M]**

SECTION-IV

7	**A**	Discuss in detail about Trading forecast	**[7M]**
	B	Explain the components of a balance sheet with examples?	**[7M]**

OR

8	**A**	Explain the methods and sources for raising the finance?	**[7M]**
	B	What is a trial balance and explain its types in detail?	**[7M]**

SECTION-V

9	**A**	What is 'Capital Budgeting'? Describe the steps involved in the project Evaluation	**[7M]**
	B	Evaluate the Accounting rate of return method if capital budgeting?	**[7M]**

OR

10	**A**	What is financial analysis and explain the types of financial analysis?	**[7M]**
	B	Define liquidity ratio and explain its types with suitable examples?	**[7M]**

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Thermal Engineering
(ME)

Roll No										

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SECTION-I

1 A Define volumetric efficiency of the engine, and discuss the effect of various factors that affect the volumetric efficiency.   **[7M]**

   B Briefly explain the following: a) time loss factor b) heat loss factor and c) exhaust blow-down factor.   **[7M]**

OR

2 A Explain working of 4 a stroke petrol engine with neat sketches.   **[7M]**

   B Explain about any one fuel injection system with a neat sketch   **[7M]**

SECTION-II

3 A Explain the effect of various engine variables on SI engine knock.   **[10M]**

   B Write a short notes on anti-knock additives used for petrol   **[4M]**

OR

4 A Briefly explain the stages of combustion in SI engines elaborating the flame front propagation.   **[7M]**

   B What is the normal combustion and abnormal combustion in CI engine?   **[7M]**

SECTION-III

5 A What is the purpose of engine testing? Name the various measurements which are to be taken in a test of I.C. Engine   **[7M]**

   B A 2 cylinder 4 stroke engine runs at 240 rpm, developing a torque of 5 kN-m. The bore and stroke of cylinder are 30 cm and 60 cm respectively. Engine runs with gaseous fuel having calorific value of 16.8 MJ/m^3. The gas and air mixture is supplied in proportion of 1:7 by volume. The volumetric efficiency is 0.85. Determine: i) Brake power ii) The piston speed in m/s iii) The brake mean effective pressure iv) The brake thermal efficiency.   **[7M]**

OR

6 A During test on a diesel engine the power developed by the engine is used for driving a DC generator with output of 210 ampere at 200 volt. The efficiency of generator is 82%. The fuel of 42600 kJ/kg calorific value is supplied to the engine at 11.2 kg/hr. The air fuel ratio was 18:1. The exhaust gases were passed through an exhaust gas calorimeter for which the observations were as follows: Water circulated through at 580 liters/hr, temperature rise of water through calorimeter is equal to 36°C. Temperature of exhaust gases at exit from calorimeter is 98°C. Ambient temperature is 20°C. Heat lost to jacket cooling water is 32% of total heat supplied. If the specific heat of exhaust gases be 1.05 kJ/kgK. Draw up the heat balance sheet on minute   **[10M]**

basis.

    B   Write short notes on Exhaust gas analysis   **[4M]**

SECTION-IV

7   A   Describe the working of a single stage reciprocating air compressor.   **[7M]**

    B   What is the difference between reciprocating and rotary compressors?   **[7M]**

OR

8   A   Explain the working of Vane sealed compressor with neat sketch.   **[7M]**

    B   A single acting two stage reciprocating air compressor compresses 4.5 kg of air per minute from 1.013 bar and 15^0C through a pressure ratio of 9. The intercooling is perfect and the law of compression and expansion $PV^{1.3}$ = constant. Assuming the clearance volumes of both stages 5% of their swept volume and the speed of compressor 300 rpm, calculate the indicated power and the cylinder swept volume   **[7M]**

SECTION-V

9   Discuss of working centrifugal compressors with neat sketch?   **[14M]**

OR

10   A   Describe the working of an axial flow compressor with a neat sketch   **[7M]**

    B   Differentiate Centrifugal compressor with Axial – flow compressor   **[7M]**

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MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
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III B.Tech I Semester Regular/Supplementary Examinations, January 2024
Computer Integrated Manufacturing Technologies
(ME)

Roll No										

Time: 3 hours   **Max. Marks: 70**

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***

SECTION-I

1	**A**	Explain the basic elements of machining	**[7M]**
	B	What are the main characteristics a cutting tool material must possess?	**[7M]**

OR

2	**A**	What is meant by taper? How is it calculated?	**[7M]**
	B	Discuss about the important lathe operations.	**[7M]**

SECTION-II

3	**A**	Explain with sketch the constructional features of a boring machine	**[7M]**
	B	What are 'counter sinking' and 'counter boring' operations?	**[7M]**

OR

4	**A**	Mention the specifications of a Boring Machine	**[7M]**
	B	Sketch a drill and indicate various elements on it.	**[7M]**

SECTION-III

5	**A**	Illustrate & write the principle of milling operation	**[7M]**
	B	How do you classify milling machines?	**[7M]**

OR

6	**A**	With a neat sketch differentiate up milling and down milling	**[7M]**
	B	What are the various types of milling cutters that are used in milling? Explain the use of end mills	**[7M]**

SECTION-IV

7	**A**	What is Honing?	**[7M]**
	B	What is principle of broaching operation?	**[7M]**

OR

8	**A**	How do you specify a Grinding wheel? Discuss the importance, selection of each specification	**[7M]**
	B	Explain truing and dressing in grinding wheels	**[7M]**

SECTION-V

9	**A**	Explain the role of human resource in CIMS	**[7M]**
	B	Elaborate the data required to programme circular interpolation in CNC machines	**[7M]**

OR

10	**A**	Explain the role of ATC and APC in CNC machines.	**[7M]**
	B	Define numerical control of machine tools. Classify the NC systems based on motion control	**[7M]**

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R20

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous Institution – UGC, Govt. of India)
III B.Tech I Semester Regular/Supplementary Examinations, January 2024
Design of Hydraulic and Pneumatic Systems
(ME)

Roll No										

Time: 3 hours   **Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

***

SECTION-I

1	A	Discuss the components required for basic hydraulic system? & Mention their functions.	**[7M]**
	B	How pumps are classified?	**[7M]**

OR

2	A	State and explain the types of fluid power control system with its applications?	**[7M]**
	B	List out the merits & Demerits of fluid power system	**[7M]**

SECTION-II

3	A	Analyse cushioning needed in hydraulic cylinder ? Explain with a neatsketch ,the principle and operation of a fixed cushion cylinder	**[7M]**
	B	Summarize the specification and characteristics of linear and Rotary Actuators	**[7M]**

OR

4	A	Explain construction and function of external gear motor.	**[7M]**
	B	Describe the working principle of servo and proportional valves	**[7M]**

SECTION-III

5	A	What are the types of hydraulic accumulators?	**[7M]**
	B	Illustrate the construction and working of pressure intensifier	**[7M]**

OR

6	A	Draw and explain the Air-over-oil circuit used in the hydraulic circuit.	**[6M]**
	B	Design and explain of regenerative circuits	**[8M]**

SECTION-IV

7	A	Explain the construction and working of a rotary (vane) air compressor with a neat diagram	**[7M]**
	B	Explain the construction and working electro pneumatic systems	**[7M]**

OR

8	A	Explain with a neat diagram working principle of quick exhaust valve	**[7M]**
	B	Discuss the construction and operation of the FRL (filters, regulator and lubricants).	**[7M]**

SECTION-V

9	A	Design and draw a circuit using the hydraulic components for the Drilling operation.	**[7M]**
	B	Explain in detail about how the failure and troubleshooting is carried out in pneumatic system.	**[7M]**

OR

10	A	Design and develop a robot system to pick and place object.	**[7M]**
	B	Design a circuit using the hydraulic components for the pressing operation.	**[7M]**

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R20

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous Institution – UGC, Govt. of India)
III B.Tech I Semester Regular/Supplementary Examinations, January 2024
Design of Machine Elements
(ME)

Roll No										

Time: 3 hours   **Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

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Note: Design data book are permitted
SECTION-I

1 A shaft made of steel of yield strength 700 MPa is subjected to static loads consisting of bending moment 10 kN-m and a torsional moment 30 kN-m. Determine the diameter of the shaft using a) Maximum principal stress theory b) Maximum shear stress theory. Take E=210 Gpa and poisons ratio 0.30. **[14M]**

OR

2 **A** Write a brief note on different phases of design. **[7M]**

B What are the factors to be considered for the selection of materials for the design of machine elements? Discuss. **[7M]**

SECTION-II

3 **A** What is meant by stress concentration and explain the theoretical stress concentration factor. **[7M]**

B A 25 mm diameter shaft is made of forged steel 30C8 (Sut = 600 N/mm2). There is a step in the shaft, and the theoretical stress concentration factor at the step is 2.1. The notch sensitivity factor is 0.84. Determine the Endurance limit of the shaft, if it is subjected to a reversed bending moment. **[7M]**

OR

4 A bar of circular cross-section is subjected to alternating tensile forces varying from a minimum of 200 kN to a maximum of 500 kN. It is to be manufactured of a material with an ultimate tensile strength of 900 MPa and an endurance limit of 700 MPa. Determine the diameter of bar using safety factors of 3.5 related to ultimate tensile strength and 4 related to endurance limit and a stress concentration factor of 1.65 for fatigue load. Use Goodman straight line as basis for design. **[14M]**

SECTION-III

5 Find the efficiency of the following riveted joints: **[14M]**
1. Single riveted lap joint of 6 mm plates with 20 mm diameter rivets having a pitch of 50 mm.
2. Double riveted lap joint of 6 mm plates with 20 mm diameter rivets having a pitch of 65 mm.
Assume: Permissible tensile stress in plate = 120 MPa, Permissible shearing stress in rivets = 90 MPa, Permissible crushing stress in rivets = 180 MPa.

OR

6   A steel plate, 100 mm wide and 10 mm thick, is joined with another steel **[14M]** plate by means of single transverse and double parallel fillet welds, as shown in Fig. The strength of the welded joint should be equal to the strength of the plates to be joined. The permissible tensile and shear stresses for the weld material and the plates are 70 and 50 N/mm2 respectively. Find the length of each parallel fillet weld. Assume the tensile force acting on the plates as static.
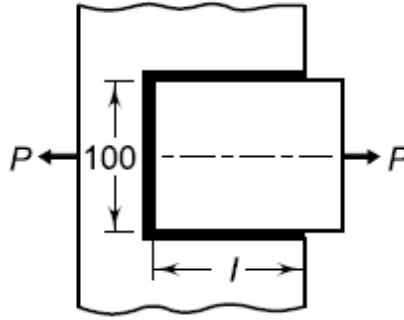
SECTION-IV

7   **A**   Find the diameter of a solid steel shaft to transmit 20 kW at 200 r.p.m. **[7M]** The ultimate shear stress for the steel may be taken as 360 MPa and a factor of safety as 8. If a hollow shaft is to be used in place of the solid shaft, find the inside and outside diameter when the ratio of inside to outside diameters is 0.5.

      B   Define equivalent twisting moment and equivalent bending moment. State **[7M]** when these two terms are used in design of shafts.

OR

8   Design and make a neat dimensioned sketch of a muff coupling which is **[14M]** used to connect two steel shafts transmitting 40 kW at 350 r.p.m. The material for the shafts and key is plain carbon steel for which allowable shear and crushing stresses may be taken as 40 MPa and 80 MPa respectively. The material for the muff is cast iron for which the allowable shear stress may be assumed as 15 MPa.

SECTION-V

9   Design a journal bearing for a centrifugal pump from the following data: **[14M]** Load on the journal 20000 N; Speed of the journal 900 r.p.m; Type of oil is SAE 10, for which the absolute viscosity at 55°C = 0.017 kg / m-s; Ambient temperature of oil = 15.5°C; Maximum bearing pressure for the pump = 1.5 N / mm2. Also calculate mass of the lubricating oil required for artificial cooling, if rise of temperature of oil be limited to 10°C. Heat dissipation coefficient = 1232 W/m2/°C.

OR

10   A ball bearing for drilling machine spindle is rotating at 3000 rpm. It is **[14M]** subjected to a radial load of 2500 N and an axial thrust of 1500 N. It is work 50 hours per week for one year. Design a suitable bearing if the diameter of the spindle is 40 mm.

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MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous Institution – UGC, Govt. of India)
III B.Tech I Semester Regular/Supplementary Examinations, January 2024
Internet of Things & Its Applications
(ME, CSE, IT, CSE-CS, CSE-AIML, CSE-DS, B.Tech-AIDS & B.Tech-AIML)

Roll No										

Time: 3 hours   **Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

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SECTION-I

1	**A**	What are "Things" in Internet of Things technology? Explain three – layer architecture of IoT technology in detail with the help of a diagram	**[7M]**
	B	Explain the classification of smart objects in IoT technology.	**[7M]**

OR

2	Explain in detail simplified IoT architecture.	**[14M]**

SECTION-II

3	**A**	What is LoRaWAN? Explain the three classes of LoRaWAN devices	**[7M]**
	B	What do you mean by topology? Explain different types of topologies used in 802.15.4 standard.	**[7M]**

OR

4	**A**	Explain IEEE 802.11 ah with respect to IoT.	**[7M]**
	B	Explain in detail MQTT protocol.	**[7M]**

SECTION-III

5	**A**	Mention the application areas where a System on Chip (SoC) is used in IoT.	**[7M]**
	B	With the help of a diagram explain building blocks of IoT technology.	**[7M]**

OR

6	**A**	What are the different criteria of IoT supported platforms which are considered to select a particular platform for an IoT application.	**[7M]**
	B	How will you use an Arduino board and Arduino IDE software to build an IoT application? Explain your approach step by step.	**[7M]**

SECTION-IV

7	**A**	Explain the data acquisition and data validation in IoT.	**[7M]**
	B	Explain the different ways of storing IoT data	**[7M]**

OR

8	**A**	Discuss the advantages of using Cloud Computing Platform for IoT systems.	**[7M]**
	B	Discuss the different cloud deployment models used in IoT technology.	**[7M]**

SECTION-V

9	**A**	What is Industry 4.0 Concepts? Explain in detail.	**[7M]**
	B	How will you implement IoT technology in some industry? Discuss with one example of your choice.	**[7M]**

OR

10	**A**	Propose a design approach to your city a secured one using IoT technology.	**[7M]**
	B	Mention the benefits received by industries by implementing Industry 4.0 Concepts	**[7M]**

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R20

MALLA REDDY COLLEGE OF ENGINEERING & TECH~~NOLO~~GY
(Autonomous Institution – UGC, Govt. of India)
III B.Tech I Semester Supplementary Examinations, May/June 2023
Thermal Engineering
(ME)

Roll No										

Time: 3 hours   **Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

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SECTION-I

1   **A**   Why the actual cycle efficiency is much lower than the air standard cycle efficiency? List the major losses in the actual engine.   **[7M]**

     B   Define volumetric efficiency and discuss the effect of various factors affecting the volumetric efficiency   **[7M]**

OR

2   **A**   With neat sketch explain the working of four stroke CI engine.   **[7M]**

     B   Explain the working of magneto ignition system with neat sketch.   **[7M]**

SECTION-II

3   **A**   Explain the effect of various engine variables on SI engine knock   **[7M]**

     B   Explain with figures the various types of combustion chambers used in SI engines   **[7M]**

OR

4   Explain with figures the various types of combustion chambers used in CI engines   **[14M]**

SECTION-III

5   **A**   List the different methods used for finding friction power of an engine Explain in detail.   **[7M]**

     B   A test on a single-cylinder, four-stroke oil engine having a bore of 15 cm and stroke 30 cm gave the following results; speed 300 rpm; brake torque 200 Nm; indicated mean effective pressure 7 bar; fuel consumption 2.4 kg/h; cooling water flow 5 kg/min; cooling water temperature rise 35^0C; air-fuel ratio 22; exhaust gas temperature 410^0C; barometer pressure 1 bar; room temperature 20^0C. The fuel has a calorific value of 42 MJ/kg and contains 15% by weight of hydrogen. Take latent heat of vaporization as 2250 kJ/kg. Determine: (i) The indicated thermal efficiency. (ii) The volumetric efficiency based on atmospheric conditions. Draw up a heat balance in terms of kJ/min. Take Cp for dry exhaust gas = 1 kJ/kgK and super-heated steam Cp = 2.1 kJ/kgK; R = 0.287 kJ/kgK   **[7M]**

OR

6   **A**   Explain the stages of combustion in C.I Engine.   **[7M]**

     B   A six cylinder, 4 stroke SI engine having a piston displacement of $700 cm^3$ per cylinder developed 78kW at 3200r.p.m. and consumed 27 kg of petrol per hour. The calorific value of petrol is 44 MJ/kg. Estimate: i) The volumetric efficiency of the engine if the air-fuel ratio is 12 and intake air is   **[7M]**

at 0.9 bar, 32^0C ii) The brake thermal efficiency iii) The brake torque For air, R=0.287kJ/kg K.

SECTION-IV

7 **A** Derive an expression for indicated work of a reciprocating air compressor by neglecting clearance. **[7M]**

   B A single stage, single acting reciprocating air compressor has a bore of 20 cm and stroke of 30 cm. the compressor runs at 600 rpm. The clearance volume is 4% of the swept volume and index of expansion and compression is 1.3. The suction conditions are at 0.97 bar and 27^0 C and delivery pressure is 5.6 bar. The atmospheric conditions are at 1.01 bar and 17^0 C. determine (a) the free air delivered in m³/min, (b) the volumetric efficiency referred to the free air conditions, (c) the indicated power. **[7M]**

OR

8 **A** Explain the working of Root's blower with a neat sketch. **[7M]**

   B A single stage single acting reciprocating air compressor takes in 17 m³ /min at suction conditions of 100 KPa and 25^0C. The delivery pressure is 700 KPa. The clearance volume is 6% of swept volume. The compression and expansion follows the law $PV^{1.3}$ = C. The speed of the compressor is 600 rpm. Stroke to bore ratio is 1. Find the power required to drive the compressor and cylinder dimensions. **[7M]**

SECTION-V

9 **A** Draw the velocity triangles for the centrifugal compressor and derive the equation for the estimation of power required to compress the air. **[7M]**

   B A centrifugal compressor delivers 50 kg of air per minute at a pressure of 2 bar and 97^0 C. The intake pressure and temperature of air is 1 bar and 15^0C. If no heat is lost to the surrounding, find: i) index of compression ii) Power required, if the compression is isothermal, Take R=287 J/kg K. **[7M]**

OR

10 *Explain the working of Axial Flow compressor with the help of neat sketch.* **[14M]**

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R20

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous Institution – UGC, Govt. of India)
III B.Tech I Semester Supplementary Examinations, May/June 2023
Computer Integrated Manufacturing Technologies
(ME)

Roll No										

Time: 3 hours   **Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

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SECTION-I

1   **A**   Explain the geometry of a single point cutting tool with help of neat sketch.   **[7M]**
    B   What are the various types of chips? Under what conditions is each formed?   **[7M]**
OR
2   **A**   Explain the working of a multi spindle lathes and its applications.   **[7M]**
    B   Describe main important methods of work holding devices.   **[7M]**

SECTION-II

3   **A**   Explain various operations performed in drilling machine   **[7M]**
    B   Sketch and explain the working of hydraulic drive of a horizontal shaper.   **[7M]**
OR
4   **A**   Explain operation of vertical boring machine   **[7M]**
    B   Show and describe the various machining applications of slotting machines.   **[7M]**

SECTION-III

5   **A**   Differentiate between up milling and down milling and explain their applications.   **[7M]**
    B   Sketch and explain any two types drilling machines.   **[7M]**
OR
6   **A**   Explain the procedure for various indexing with an example   **[7M]**
    B   Explain cylindrical grinding machine with neat sketch.   **[7M]**

SECTION-IV

7   **A**   Sketch and explain internal centre less grinding processes.   **[7M]**
    B   Discuss various types of bonding materials used for making grinding wheels.   **[7M]**
OR
8   **A**   What are the various factors to be considered in selection of grinding wheel? Discuss each in details.   **[7M]**
    B   List the product applications of lapping process.   **[7M]**

SECTION-V

9   **A**   What are the major components of NC machine? Explain in detail.   **[7M]**
    B   What are the advantages of computer assisted part programming over manual part programming   **[7M]**
OR
10   **A**   Discuss the basic feedback control system used in CNC machine tools   **[7M]**
    B   Explain the difference between CNC and DNC along with neat sketches   **[7M]**

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R20

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous Institution – UGC, Govt. of India)
III B.Tech I Semester Supplementary Examinations, May/June 2023
Design of Hydraulic and Pneumatic Systems
(ME)

Roll No										

Time: 3 hours   **Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

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SECTION-I

1   *A*   Write the difference between hydraulic and pneumatic systems   **[7M]**
     B   Describe about required qualities of good hydraulic oil.   **[7M]**

OR

2   *A*   With a neat sketch explain the working and constructional details of hydraulic accumulator.   **[7M]**
     B   Explain in detailed about synchronizing hydraulic cylinders with neat diagram.   **[7M]**

SECTION-II

3   *A*   With respect the hydraulic motors. Define the terms Volumetric, Mechanical and Overall efficiency.   **[7M]**
     B   With a neat sketch, explain the construction and cushioning mechanism in cylinder.   **[7M]**

OR

4   *A*   With a neat diagram explain the working of pilot operated sequence valve.   **[7M]**
     B   Discuss the working of gear motor with a neat sketch.   **[7M]**

SECTION-III

5   *A*   Draw and explain the hydraulic cylinder sequence circuits.   **[7M]**
     B   With a neat sketch explain the weight loaded accumulator.   **[7M]**

OR

6   *A*   Design and explain the working of regenerative circuits.   **[7M]**
     B   Explain the following circuits with neat sketch.   **[7M]**
          i)Meter-In ii) Meter Out circuits.

SECTION-IV

7   *A*   Explain the working and constructional details of Double-Pump with a neat sketch.   **[7M]**
     B   Write a short note on
          i)Synchronization   **[4M]**
          ii)Fail-Safe.   **[3M]**

OR

8   *A*   Explain the function of an air filter with a neat diagram.   **[7M]**
     B   Draw and explain the function of pneumatic check valve.   **[7M]**

SECTION-V

9   Explain the working of surface grinding operation using hydraulic components with help of neat sketch.   **[14M]**

OR
10 *A* Identify any seven prevalent issues in pneumatic circuits, and then describe how to fix them. **[7M]**

B Describe about the preventive maintenance task for a hydraulic system. **[7M]**

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R20

MALLA REDDY COLLEGE OF ENGINEERING & TECH[~~~]GY
(Autonomous Institution – UGC, Govt. of India)
III B.Tech I Semester Supplementary Examinations, May/June 2023
Design of Machine Elements
(ME)

Roll No										

Time: 3 hours   **Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

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SECTION-I

1 **A** What are the factors to be considered for the selection of materials for the design of machine elements? Discuss **[7M]**

B A mild steel rod of 12 mm diameter was tested for tensile strength with the gauge length of 60 mm. Following observations were recorded: Final length = 80 mm; Final diameter = 7 mm; Yield load = 3.4 kN and Ultimate load = 6.1 kN. Calculate : 1. yield stress, 2. ultimate tensile stress, 3. percentage reduction in area, and 4. percentage elongation **[7M]**

OR

2 **A** Derive a relation for the shear stress developed in a shaft, when it is subjected to torsion **[7M]**

B A cylindrical shaft made of steel of yield strength 700 MPa is subjected to static loads consisting of bending moment 10 kN-m and a torsional moment 30 kN-m. Determine the diameter of the shaft using two different theories of failure, and assuming a factor of safety of 2. Take E = 210 GPa and poisson's ratio = 0.25 **[7M]**

SECTION-II

3 **A** Illustrate how the stress concentration in a component can be reduced. **[5M]**

B Determine the diameter of a circular rod made of ductile material with a fatigue strength (complete stress reversal) σ_e = 280 MPa and a tensile yield strength of 350 MPa. The member is subjected to a varying axial load from 700 kN to – 300 kN. Assume Kt = 1.8 and F.S. = 2. **[9M]**

OR

4 **A** Explain the Soderberg and Goodman theory. **[7M]**

B A 50 mm diameter shaft is made from carbon steel having ultimate tensile strength of 630 MPa. It is subjected to a torque which fluctuates between 2000 N-m to – 800 N-m. Using Soderberg method, calculate the factor of safety. Assume suitable values for any other data needed **[7M]**
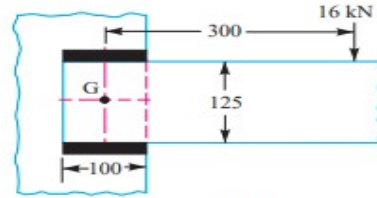
SECTION-III

5 **A** Enumerate the different types of riveted joints. **[5M]**

B A single riveted lap joint is made in 15 mm thick plates with 20 mm diameter rivets. Determine the strength of the joint, if the pitch of rivets is 60 mm. Take σ_t = 120 MPa; τ = 90 MPa and σ_c = 160 MPa. **[9M]**

6 A 125 × 95 × 10 mm angle is welded to a frame by two 10 mm fillet welds, **[14M]** as shown in Fig. A load of 16 kN is applied normal to the gravity axis at a distance of 300 mm from the centre of gravity of welds. Find maximum shear stress in the welds, assuming each weld to be 100 mm long and parallel to the axis of the angle.

All dimensions in mm.

SECTION-IV

7 **A** Discuss the various types of shafts and the standard sizes of transmissions shafts. **[5M]**

B A shaft 30 mm diameter is transmitting power at a maximum shear stress of 80 MPa. If a pulley is connected to the shaft by means of a key, find the dimensions of the key so that the stress in the key is not to exceed 50 MPa and length of the key is 4 times the width. **[9M]**

OR

8 Design and draw a protective type of cast iron flange coupling for a steel shaft transmitting 15 kW at 200 r.p.m. and having an allowable shear stress of 40 MPa. The working stress in the bolts should not exceed 30 MPa. Assume that the same material is used for shaft and key and that the crushing stress is twice the value of its shear stress. The maximum torque is 25% greater than the full load torque. The shear stress for cast iron is 14 MPa. **[14M]**

SECTION-V

9 **A** Write short note on the lubricants used in sliding contact bearings. **[5M]**

B A 100 mm long and 60 mm diameter journal bearing supports a load of 2500 N at 600 r.p.m. If the room temperature is 20°C, what should be the viscosity of oil to limit the bearing surface temperature to 60°C? The diametral clearance is 0.06 mm and the energy dissipation coefficient based on projected area of bearing is 210 W/m^2/°C **[9M]**

OR

10 **A** Explain the effect of variation of viscosity, speed and bearing pressure on the performance of a bearing. **[5M]**

B A bearing 50 mm in diameter and 75 mm in length supports an overhanging shaft, running at 900 rpm. The room temperature is 30 ^{0} C and the bearing temperature is 75 ^{0} C. The viscosity of the oil used is 0.012 kg/ m-s at the operating temperature of 120 ^{0} C. The diametral clearance is 0.05 mm and the bearing is to operate in still air without any artificial cooling. Determine i) the permissible load on bearing and ii) Power loss. **[9M]**

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R20

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous Institution – UGC, Govt. of India)
III B.Tech I Semester Supplementary Examinations, May/June 2023
Internet of Things & Its Applications
(ME, CSE, IT, CSE-CS, CSE-AIML & CSE-DS)

Roll No										

Time: 3 hours   **Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

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SECTION-I

1	A	Summarize the Megatrends, Capabilities and implications of IoT.	[7M]
	B	Write a short notes on Functional blocks of an IoT ecosystem	[7M]

OR

2	A	Explain the differences between M2M and IOT.	[7M]
	B	How does M2M communication work? Explain	[7M]

SECTION-II

3	A	Explain LoRaWAN standard and alliance MAC layer and security	[7M]
	B	Describe MQTT framework and message format in detail	[7M]

OR

4	A	Explain COAP protocol and its message format.	[7M]
	B	List and explain the key advantages of internet protocol	[7M]

SECTION-III

5	Explain about the concepts involved in Raspberry Pi	[14M]

OR

6	Write short notes on Microcontrollers, System on Chips, IoT system building blocks.	[14M]

SECTION-IV

7	A	Explain in detail the core functions of edge analytics with necessary diagrams	[7M]
	B	Explain the different types of cloud computing services.	[7M]

OR

8	Explain about the computing using a cloud platform for IoT/M2M applications	[14M]

SECTION-V

9	Formulate the significant use of Raspberry Pi in Smart cities and Industrial appliances.	[14M]

OR

10	Discuss IoT applications in home, infrastructures,	[14M]

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R20

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous Institution – UGC, Govt. of India)
III B.Tech I Semester Supplementary Examinations, May/June 2023
Managerial Economics & Financial Analysis
(ME)

Roll No										

Time: 3 hours   **Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

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SECTION-I

1	**A**	Explain the influencing factors of the elasticity of demand	**[7M]**
	B	Define Demand Forecasting and explain various forecasting methods.	**[7M]**

OR

2	**A**	What are the possible approaches to forecasting demand for new products?	**[7M]**
	B	Explain the concept of Cross Elasticity of Demand	**[7M]**

SECTION-II

3	**A**	Discuss the role and importance of cost analysis in managerial decisions	**[7M]**
	B	Sales are Rs. 1, 10,000 Yielding a profit of Rs. 4,000. in period-I; Sales are Rs. 1, 50,000 with a profit of Rs. 12,000 in period-II. Determine BEP and Fixed Cost.	**[7M]**

OR

4	**A**	The information about Raj and Co. are given below. i) Profit-Volume Ratio (P/V Ratio) is 20% ii) Fixed costs Rs. 36000 iii) Selling price per Unit Rs. 150 Calculate: i) BEP (in Rs.) ii) BEP (in Units) iii) Variable Cost per Unit iv) Selling Price per Unit	**[7M]**
	B	Write the differences between private limited and public limited company	**[7M]**

SECTION-III

5	**A**	State the conditions under which Penetration and Skimming Pricing strategies can be followed	**[7M]**
	B	What do you understand by 'Monopolistic Competition'? Explain the price-output determination in case of monopolistic competition.	**[7M]**

OR

6	**A**	Discuss the changing business environment post Liberalization.	**[7M]**
	B	Write the difference between joint stock company and sole proprietorship.	**[7M]**

SECTION-IV

7	**A**	Explain various Accounting concepts and Conventions which are widely accepted	**[7M]**
	B	Write short notes on Balance Sheet.	**[7M]**

| 8 | A | What are the different types of ledger accounts? Give at least two examples for each | [7M] |
| | B | What are the different Concepts and Conventions of Financial Accounting? | [7M] |

SECTION-V

| 9 | A | What are activity ratios? | [7M] |
| | B | Explain step by step procedure of ARR method. | [7M] |

OR

| 10 | A | The following are the details pertaining to a company which is considering to acquire a fixed asset:
Project A: Cost of the proposal: Rs.42, 000, Life 5 years, Average after Tax Cash inflow Rs.14000. (constant)
Project B: Cost of the proposal Rs.45000, Life 5 years
Annual cash inflows 1st year Rs. 28,000, 2nd year Rs.12, 000, 3rd year Rs.10, 000 4th Rs.10, 000 and 5th year Rs. 10,000. Determine IRR. Which project do you recommend? | [10M] |
| | B | Explain briefly Net present value technique of a capital budgeting. | [4M] |

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