H.T No: ☐☐☐☐☐☐☐☐☐☐ **R18** Course Code: A30013

CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)
B.Tech VI Semester Supplementary Examinations December-2022
Course Name: BUSINESS MANAGEMENT & FINANCIAL ANALYSIS
(Common for EEE, MECH & ECE)

Date: 05.12.2022 FN   Time: 3 hours   Max.Marks: 70

(Note: Assume suitable data if necessary)
PART-A
Answer all TEN questions (Compulsory)
Each question carries TWO marks.   10x2=20M

1.	Define Principles of management.	2 M
2.	Recall Functions of management.	2 M
3.	Explain Financial management.	2 M
4.	Explain Marketing management.	2 M
5.	Define National Income.	2 M
6.	Illustrate Business cycle.	2 M
7.	Summarize Break even analysis.	2 M
8.	Classify different Markets.	2 M
9.	Outline Objectives of business enterprises.	2 M
10.	Classify different Ratios.	2 M

PART-B
Answer the following. Each question carries TEN Marks.   5x10=50M

11.A).	Explain about FW Taylor scientific theory of management.	10M
	OR	
11. B).	Examine Henry fayol contributions to management.	10M
12. A).	Explain about the Human resource management and its nature, scope.	10M
	OR	
12. B).	Explain the resent trends in Marketing Management.	10M
13. A).	Outline the Law of demand and factors influencing and its limitations.	10M
	OR	
13. B).	Classify the different types of Demand forecasting methods	10M
14. A).	Explain about Break even analysis and its assumptions, limitations and applications.	10M
	OR	
14. B).	Compare various types of market structures with degree of competition.	10M

(P.T.O..)

15. A). Explain the Double entry book-keeping and prepare the Format of Balance sheet.   10M

OR

15. B). Evaluate the financial position of the firm by Preparing Trading, profit and loss and   10M
Balance sheet for the year ending 31-3-2011.

Particulars	Amount (Rs)
Drawings	4,000
Discounts allowed	1,500
Discounts Received	5,00
Office expenses	2,000
Manufacturing expenses	1,200
Bills payable	17,000
Bills receivable	10,000
Cash in hand	4,800
Cash at bank	30,800
Office rent	3,600
Capital	2,00,000
Machinery	60,000
Stock (1.4.2014)	32,000
Wages	1,00,000
Carriage inwards	1,000
Salaries	10,000
Factory rent	4,800
Repairs	8,00
Fuel and power	5,000
Furniture	11,000
Buildings	80,000
Sundry debtors	40,000
Sales	4,07,200
Purchases	2,44,000
Creditors	25,000
Return inwards	7,200
Return outwards	4,000

Closing stock Rs 40,000.

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CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)
B.Tech VI Semester Supplementary Examinations December-2022
Course Name: ENGINEERING METROLOGY & MEASUREMENTS
(Mechanical Engineering)

Date: 07.12.2022 FN   Time: 3 hours   Max.Marks: 70

(Note: Assume suitable data if necessary)

PART-A

Answer all TEN questions (Compulsory)

Each question carries TWO marks.   10x2=20M

1.	What is the need of inspection?	2 M
2.	What do you mean by interferometers?	2 M
3.	Discuss interchangeability and selective assembly in metrology.	2 M
4.	What are slip gauges and why do we use them?	2 M
5.	What is meant by circularity?	2 M
6.	Explain the basic factors that affect surface finish in machining.	2 M
7.	Classify the most common types of gears used today?	2 M
8.	Outline applications of CMM machine.	2 M
9.	What are the applications of strain gauges?	2 M
10.	What is readability in measurement?	2 M

PART-B

Answer the following. Each question carries TEN Marks.   5x10=50M

11.A).	What is a calibration of instruments? What are the characteristics of calibration?	10M
	OR	
11. B).	Illustrate the principle of Interferometry with neat sketch.	10M
12. A).	Define and explain about interchangeability and selective assembly.	10M
	OR	
12. B).	What is a radius measurement? Discuss about radius measurement procedure with the help of neat sketch.	10M
13. A).	Explain the principle of autocollimator for flatness measurement with neat sketch.	10M
	OR	
13. B).	What are the methods of measuring surface roughness? Briefly explain about any one method with neat sketch.	10M
14. A).	Explain the constant cord method of measuring the tooth thickness in gears.	10M
	OR	
14. B).	How many types of CMM are there? Discuss about features of CMM.	10M
15. A).	What instruments are used to measure Flow? Discuss any one method with a suitable diagram.	10M
	OR	
15. B).	Discuss the working principle of Venturimeter with neat sketch. What are the advantages of Venturimeter?	10M

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CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)
B.Tech VI Semester Supplementary Examinations December-2022

Course Name: HEAT TRANSFER

(Mechanical Engineering)

Date: 09.12.2022 FN   Time: 3 hours   Max.Marks: 70

(Note: Assume suitable data if necessary)

PART-A
Answer all TEN questions (Compulsory)
Each question carries TWO marks.   10x2=20M

1.	Write the assumptions of Fourier law of conduction.	2 M
2.	Write any four applications of heat transfer in engineering.	2 M
3.	Define effectiveness and efficiency of a fin.	2 M
4.	Define the term overall heat transfer coefficient?	2 M
5.	What is meant by a hydrodynamic boundary layer and thermal boundary layer?	2 M
6.	Define Reynolds number. Why is it important?	2 M
7.	Define the terms a) Absorptivity b) Reflectivity and c) Transmissivity.	2 M
8.	State Wein's displacement law.	2 M
9.	What is pool boiling and its types?	2 M
10.	When do use NTU and LMTD methods?	2 M

PART-B
Answer the following. Each question carries TEN Marks.   5x10=50M

11.A). Explain the mechanism of conduction, convection, and radiation. Write formulae to calculate the thermal resistance of conduction, convection, and radiation.   10M

OR

11. B). Derive the heat conduction equation for Cartesian co-ordinate system.   10M

12. A). Explain about critical radius of insulation. Derive the equation for critical radius of insulation for hallow cylinder.   10M

OR

12. B). A steel ball of 5 cm diameter initially at a uniform temperature of 450^0C is suddenly placed in an environment at 100^0C. Heat transfer coefficient h, between the steel ball and the fluid is 10 W/m^{2}K. For steel Cp=0.46 kJ/kgK, density = 7800 kg/m^3, k= 35 W/mK. Calculate the time required to reach a temperature of 150^0C. Also find the rate of cooling after 1 hr.   10M

13. A). Show by dimensional analysis for free convection, Nu= f (Pr, Gr).   10M

OR

13. B). A flat plate having dimensions 50 cm X 20 cm and at a uniform temperature of 100^0C is kept in air stream at temperature 20^0C. The velocity of air is 3 m/sec. Find out the rate of heat loss from the plate when the flow is (i) parallel to 50 cm (ii) parallel to 20 cm side.   10M

(P.T.O..)

14. A). i) Differentiate between specular and diffuse reflections. 5M

ii) Define Stefan-Boltzmann's law and Plank's displacement law. 5M

OR

14. B). Two parallel square plates each $4m^2$ area are large compared to a gap of 5 mm separating them. One plate has a temperature of 800 K and surface emissivity of 0.6, while the other has temperature of 300 K and surface emissivity of 0.9; Find the net exchange by radiation between the plates. If a thin polished metal sheet of surface emissivity 0.1 on both sides is now located centrally between the two plates, what will be its steady state temperature? 10M

15. A). Dry saturated steam at atmospheric pressure condenses on a vertical tube of diameter 5 cm and length 1.5 m, surface of the tube is maintained at 80^0C. Determine the heat transfer rate. 10M

OR

15. B). i) Derive an expression for LMTD in case of a counter - flow heat exchanger. 5M

ii) A cross flow heat exchanger with both fluids unmixed is used to heat water (Cp = 4.18 kJ/kgK) from 50^0C to 90^0C, flowing at the rate of 1.0 kg/s. Determine the overall heat transfer coefficient if the hot engine oil (Cp= 1.9 kJ/kgK) flowing at the rate of 3 kg/s enters at 100^0C. The heat transfer area is $20m^2$. 5M

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CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)
B.Tech VI Semester Supplementary Examinations December-2022
Course Name: AUTOMATION MANUFACTURING
(Mechanical Engineering)

Date: 12.12.2022 FN   Time: 3 hours   Max.Marks: 70

(Note: Assume suitable data if necessary)
PART-A
Answer all TEN questions (Compulsory)
Each question carries TWO marks.   10x2=20M

1.	What are benefits are derived from the CAD/CAM data base?	2 M
2.	Why automation in manufacturing is needed?	2 M
3.	Discuss the levels of automation.	2 M
4.	What are important pneumatic components used in automated system?	2 M
5.	Distinguish flexible assembly lines and manual assembly lines.	2 M
6.	What is 'upper-bound approach' used in the analysis of transfer lines?	2 M
7.	Explain the applications of Automated Guided Vehicles.	2 M
8.	Define Work-In-Process.	2 M
9.	List the advantages of using adaptive control systems in milling operation.	2 M
10.	Define accuracy and sensitivity of an automated inspection system.	2 M

PART-B
Answer the following. Each question carries TEN Marks.   5x10=50M

11.A). i) Discuss about fixed automation.   5M
        ii) Discuss the components of PLCs.   5M

OR

11. B). Discuss output devices used in conjunction with a computer-aided design system.   10M

12. A). i) Draw the general structure of a hydraulic circuit and explain the important components   7M
         involved in it.
         ii) Describe the function and working of the single station automated machine tool.   3M

OR

12. B). Discuss the functions and working of the transfer lines with and without buffer storage.   10M

13. A). An eight-station rotary indexing machine operates with an ideal cycle time of 45 s. The   10M
         frequency of line stop occurrences is 0.08 stops/cycle on the average. When a stop occurs,
         it takes an average of 3 min to make repairs. Determine the following:
         (i) Average production time (ii) Average production rate (iii) Line efficiency
         (iv) Proportion of downtime.

OR

13. B). i) Illustrate the working of walking beam transfer system with the help of neat sketches.   7M
         ii) Discuss the advantages and limitations of using buffer storage capacity zones in   3M
         automated flow lines.

(P.T.O..)

14. A). With a neat sketch, Explain the unit load carrier AGV.   10M

OR

14. B). i) Briefly describe the Storage structure of an AS/RS.   5M
         ii) Discuss the different applications of AS/RS technology.   5M

15. A). i) What are the basic functions of machine vision system?   5M
         ii) Discuss the advantages of using CMM.   5M

OR

15. B). i) Draw the block diagram of a typical computerized Adaptive Control with Constraints   5M
         system for milling process.
         ii) List and distinguish different types of adaptive control systems.   5M

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CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)
B.Tech VI Semester Supplementary Examinations December-2022
Course Name: AUTOMOBILE ENGINEERING
(Mechanical Engineering)

Date: 14.12.2022 FN	Time: 3 hours	Max.Marks: 70

(Note: Assume suitable data if necessary)
PART-A
Answer all TEN questions (Compulsory)
Each question carries TWO marks.   **10x2=20M**

1.	Classify different types of automobiles.	2 M
2.	List out different materials which are used in the manufacturing of piston and connecting rod.	2 M
3.	Define turbo charging and enumerate the advantages of this process.	2 M
4.	List out the requirements of diesel injection systems.	2 M
5.	Define differential gear driving mechanism.	2 M
6.	Write the principle of operation of a clutch.	2 M
7.	Enumerate the different components of transmission system.	2 M
8.	Define camber and king pin inclination.	2 M
9.	What are the possible applications by considering CNG as an alternate fuel?	2 M
10.	Write the demerits by considering hydrogen as an fuel for IC engines.	2 M

PART-B
Answer the following. Each question carries TEN Marks.   **5x10=50M**

11.A). Classification of engine lubrication systems and explain in detail any one of the process with a neat diagram.   10M

OR

11. B). With the help of a neat sketch, explain the construction and operation of a constant mesh gearbox.   10M

12. A). Explain the salient features of multi point fuel injection system and gasoline direct injection system.   10M

OR

12. B). Explain the testing of fuel pumps in internal combustion engines.   10M

13. A). Explain the working of cone clutch used in an automobile with a neat sketch.   10M

OR

13. B). Explain the mechanism of torsion bar in automobiles and discuss briefly do these components affect the ride quality.   10M

14. A). Classify different types of suspension system and explain in detail the independent suspension system.   10M

OR

14. B). Explain about Davis steering mechanism with neat sketch.   10M

(P.T.O..)

15. A). Write about the International Pollution standards and also briefly discuss the latest clauses   10M
and subdivisions followed by system.

OR

15. B). Write about Biomass, alcohols and LPG as alternate fuels.   10M

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