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

CMR COLLEGE OF ENGINEERING & TECHNOLOGY

(UGC AUTONOMOUS)

B.Tech VI Semester Regular/Supplementary Examinations May-2023

Course Name: BUSINESS MANAGEMENT & FINANCIAL ANALYSIS

(Common for EEE, ME & ECE)

Date: 08.05.2023 AN **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 the Management. 2 M
2. Explain the Delegation of authority. 2 M
3. Describe the Promotion of the product. 2 M
4. Explain the Performance appraisal. 2 M
5. Write about Social environment of business. 2 M
6. What is the importance of managerial economics? 2 M
7. Define the price. 2 M
8. Write about Monopoly market. 2 M
9. Explain the Venture capital. 2 M
10. Write the purpose of balance sheet. 2 M

PART-B

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

11.A). Explain the principles of modern management proposed by Henry Fayol, in detail. 10M

OR

11. B). Describe Maslow's need hierarchy theory of motivation with a suitable diagram. 10M

12. A). Enumerate the objectives and functions of Human Resource management. 10M

OR

12. B). Define plant layout and explain the main types of plant layout. 10M

13. A). What is National Income? Describe the significance of National Income. 10M

OR

13. B). How do you define Demand? Discuss the demand forecasting methods in detail. 10M

14. A). i) What is Break- even analysis? What are the applications of BEA? 5M

ii) Star Industries manufactures electrical goods for which the fixed costs stand at Rs 50,000 and the variable cost to produce a good is Rs 30. The firm sold these goods to produce with a sale price of Rs 50 per unit, find out the Break- even point? 5M

OR

14. B). Explain the concept of Production function with suitable examples, in detail. 10M

15. A). Define Liquidity. Describe the types and importance of liquidity ratios. 10M

OR

15. B). Define the business and explain the types of business enterprises. 10M

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H.T No: | | | | | | | | | | | **R18** **Course Code: A30336**

CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech VI Semester Regular/Supplementary Examinations May-2023

Course Name: ENGINEERING METROLOGY & MEASUREMENTS

(Mechanical Engineering)

Date: 10.05.2023 AN **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 calibration. 2 M
2. Why monochromatic light used in interferometry instead of white light? 2 M
3. Define tolerance and zero line. 2 M
4. List out any four angular measuring instrument used in metrology. 2 M
5. List different factors affecting surface roughness 2 M
6. What is the importance of geometrical tolerance? 2 M
7. List any 4 types of CMMs. 2 M
8. Define pitch circle diameter. 2 M
9. Write the working principle of thermo couple. 2 M
10. What is the difference between the force and torque? 2 M

PART-B

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

11.A). Describe the different types of errors in measurement and their causes. 10M

OR

11. B). With the help of neat sketch explain the construction and working of NPL flatness interferometer. 10M

12. A). Write a short notes on following: 10M
   i) Interchangeability
   ii) Selective assembly

OR

12. B). Explain the following with neat sketch. 10M
   i) Clearance fit
   ii) Interference fit
   iii) Transition fit

13. A). Explain the construction and working of autocollimator with neat sketch and also write its advantage and disadvantages. 10M

OR

13. B). Briefly explain the step by step procedure for determining the roughness of surface by Taylor Habson Taly surf with a neat sketch. 10M

(P.T.O..)

14. A). Explain the procedure for measuring gear tooth thickness by constant chord method. 10M

OR

14. B). Explain the construction and working of bridge type CMM with neat sketch. Also write its applications. 10M

15. A). With a neat sketch explain how bimetallic strips are used for temperature measurement. Also write its advantages and disadvantages. 10M

OR

15. B). Explain the construction and working of hydraulic force meter with neat sketch. Also write its advantages and disadvantages. 10M

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H.T No: | | | | | | | | | | | **R18** **Course Code: A30332**

CMR COLLEGE OF ENGINEERING & TECHNOLOGY

(UGC AUTONOMOUS)

B.Tech VI Semester Supplementary Examinations May-2023

Course Name: MANUFACTURING TECHNOLOGY

(Mechanical Engineering)

Date: 10.05.2023 AN **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 the two basic categories of cutting tools in machining? Name them. 2 M
2. Explain any two tool holding devices used in Engine Lathe. 2 M
3. List out the types of boring machine. 2 M
4. Write the principle parts of Jig boring machine. 2 M
5. List the advantages of shaper. 2 M
6. What is an open side planer? 2 M
7. Define "climb milling". 2 M
8. Where the compound indexing is to be used? 2 M
9. Define grinding operation. 2 M
10. Explain Honing Operation. 2 M

PART-B

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

11.A). Explain any four operations that can be performed on a lathe machine with diagrams. 10M

OR

11. B). Name the different work holding devices or methods in capstan and turret lathes. Describe any one with neat sketch. 10M

12. A). With the help of neat sketch, explain the working of drilling machine. 10M

OR

12. B). Describe the horizontal boring machine with neat diagram. 10M

13. A). Differentiate between shaping, planning and slotting, as regards relative tool and work motions. 10M

OR

13. B). Describe the operation of quick return motion in mechanical shaper. 10M

14. A). With the help of a line diagram, explain the constructional features of a universal milling machine. 10M

OR

14. B). Explain briefly about the methods of Indexing and its importance. 10M

15. A). With a neat sketch, explain the construction and working principle of surface grinding machine. 10M

OR

15. B). Explain the importance of honing and lapping process along with their constructional details. 10M

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H.T No: | | | | | | | | | | | **R18** | **Course Code: A30338**

CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)
B.Tech VI Semester Regular/Supplementary Examinations May-2023
Course Name: HEAT TRANSFER
(Mechanical Engineering)

Date: 12.05.2023 AN **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 thermal conductivity. 2 M
2. Illustrate the periodic heat transfer. 2 M
3. Define Biot number and what is its significance. 2 M
4. What is critical thickness of insulation? Write an equation for critical thickness of insulation in case of cylinder. 2 M
5. Illustrate the thermal boundary layer. 2 M
6. What is the significance of Nusselt number in free convection? 2 M
7. State the Stefan Boltzmann law and also write its equation. 2 M
8. Briefly discuss about black body. 2 M
9. How do you define parallel flow heat exchanger and draw its temperature distribution diagram? 2 M
10. Distinguish between film wise and drop wise condensation. 2 M

PART-B

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

11.A). Derive the general three dimensional heat conduction equation in Cartesian co-ordinate system. 10M

OR

11. B). What are boundary and initial conditions? How many boundary conditions are needed to solve a second order differential equation for heat conduction. 10M

12. A). A 160mm diameter pipe carrying steam is covered by a layer of insulation material of thickness 40 mm (k = 0.8 W/m ^{0}C). Later an extra layer of insulation 10 mm thick (k =1.2 W/m ^{0}C) is added. If the surrounding temperature remains constant and heat transfer coefficient for both the materials is 10 W/m^2 ^{0}C, determine the percentage change in the rate of heat loss due to extra insulation layer. The surface temperature of the tube is 150^{0}C and surrounding air temperature is 30^{0}C. 10M

OR

12. B). An aluminium fin (200 W/mK) of 3 mm thick and 75 mm long protrudes from a wall at 300^{0}C. The ambient temperature is 50^{0}C with heat transfer coefficient of 10 W/m^{2}K. Calculate the heat loss from the pin for unit depth of material. Also calculate its effectiveness and efficiency? 10M

(P.T.O..)

13. A). Apply the dimensional analysis for free convection. 10M

OR

13. B). Air at 27^0C flows over a flat plate at a velocity of 2 m/s. The plate is heated over its entire length to a temperature of 60^0C. Calculate the heat transfer for the first 20 cm of the plate. 10M

14. A). Two parallel rectangular surfaces 1m x 2 m are opposite to each other at a distance of 4m. The surfaces are black and at 100 ^{0}C and 200 ^{0}C respectively. Calculate the heat exchange between radiation between the two surfaces. 10M

OR

14. B). Two concentric cylinders having diameters of 10cm and 20cm have a length of 20cm. Calculate the shape factor between the open ends of the cylinders. 10M

15. A). A heat exchanger is to be designed for a capacity of 100 KW. Water for air conditioning purpose is to be cooled from 15^0C to 5^0C in a counter flow heat exchanger using brine available at -20^0C. The overall heat transfer coefficient is 648 W/m^2 K. Find the area required if the brine outlet temperature is -10 ^{0}C and -5 ^{0}C. Comment on the results. 10M

OR

15. B). Show the various regimes in pool boiling and discuss the heat transfer mechanisms in each region in detail. 10M

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H.T No: | | | | | | | | | | | **R18** **Course Code: A30343**

CMR COLLEGE OF ENGINEERING & TECHNOLOGY

(UGC AUTONOMOUS)

B.Tech VI Semester Regular/Supplementary Examinations May-2023

Course Name: AUTOMATION MANUFACTURING

(Mechanical Engineering)

Date: 15.05.2023 AN **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 geometric modelling? 2 M
2. What are the components of PLC? 2 M
3. Discuss the types of automation. 2 M
4. What are important hydraulic components used in automated system? 2 M
5. What are the common reasons for line stoppages in automated flow lines? 2 M
6. What is 'Lower-bound approach' used in the analysis of transfer lines? 2 M
7. What are various material handling equipment used in manufacturing industries? 2 M
8. List out the traffic control issues for the AGVS. 2 M
9. What are the applications of machine vision system? 2 M
10. List the advantages of using adaptive control systems in turning operation. 2 M

PART-B

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

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

OR

11. B). Discuss the benefits of adaptive control machining. 10M

12. A). Name the different automation strategies. Explain any TWO in details. 10M

OR

12. B). i) Explain the function and working of the following automated machine tools: (a) Transfer Machine (b) Single Station Machine. 10M

13. A). i) Discuss different types of control function that are required in an automated flow line. 5M
ii) Explain the precedence diagram in the line balancing briefly. 5M

OR

13. B). i) The following data apply to a 10-station in-line transfer machine: P = 0.015 (all stations have an equal probability of failure) T_c = 0.4 min T_d = 4.0 min. Using the lower-bound approach, compute the following for the transfer machine: (a) the frequency of line stops, (b) the average production rate (c) the line efficiency. 7M
ii) Discuss the efficiency of automated flow lines with storage buffer with justification. 3M

(P.T.O..)

14. A). i) What are the important categories of Automated Guided Vehicle Systems? Discuss them briefly with the help of neat sketches. 6M

ii) Name the principles need to be considered in material handling system design. 4M

OR

14. B). i) Explain the Storage/Retrieval mechanism of an AS/RS. 5M

ii) Discuss the use of automated work-in-process storage systems. 5M

15. A). i) Explain the variables in the Adaptive Control with Optimization system for drilling process. 7M

ii) List out the differences between ACO and ACC types of adaptive control. 3M

OR

15. B). i) Explain the different types of CMM controls. 5M

ii) Name the different types of contact inspection techniques and explain any one technique. 5M

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H.T No: | | | | | | | | | | | **R18** **Course Code: A30372**

CMR COLLEGE OF ENGINEERING & TECHNOLOGY

(UGC AUTONOMOUS)

B.Tech VI Semester Regular/Supplementary Examinations May-2023

Course Name: AUTOMOBILE ENGINEERING

(Mechanical Engineering)

Date: 17.05.2023 AN **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 the components of chassis? 2 M
2. What is supercharging? 2 M
3. Tell few drawbacks of simple carburetor. 2 M
4. State the advantage of gasoline injection system for SI engines. 2 M
5. State the functions of slip joint. 2 M
6. What is the use of torque convertor? 2 M
7. Define king pin inclination. 2 M
8. What are the benefits of anti -lock brake system? 2 M
9. State few alternative source of energy. 2 M
10. Define detonation and pre-ignition. 2 M

PART-B

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

11.A). Explain in detail about Engine components with function and material. 10M

OR

11. B). Explain how the power can be transmitted in rear wheel drive by using a neat diagram? 10M

12. A). Discuss about the battery coil ignition system for 4-cylinder engine. 10M

OR

12. B). Explain in detail about the principle and working condition of turbo charging and super charging with suitable examples. 10M

13. A). i) Differentiate single plate clutch and multi plate clutch. 4M
ii) Explain about universal joint with neat diagram. 6M

OR

13. B). i) What are the requirements of the clutch? 4M
ii) Explain about torque tube drive with neat diagram. 6M

14. A). i) Explain about independent suspension system. 4M
ii) Differentiate between pneumatic and hydraulic brakes and mention their advantages and applications. 6M

(P.T.O..)

OR

14. B). List out the types of braking systems. And also explain the Disc braking system. 10M

15. A). Explain the use of alternative fuels for emission control. 10M

OR

15. B). i) What are the main pollutants from the engine exhaust and mention its effect on the living organisms? 5M

ii) How is hydrogen fuel used as an alternative fuel? 5M

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H.T No: | | | | | | | | | | | **R18** **Course Code: A30531**

CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech VI Semester Regular/Supplementary Examinations May-2023

Course Name: PYTHON PROGRAMMING

(Common for CE, EEE, ME & ECE)

Date: 19.05.2023 AN **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. Evaluate the following arithmetic expressions using the rules of Operator Precedence in python 2 M
   a) 5 * 6 ** 3
   b) 24 // 6 // 3
2. Which of the following results is True? 2 M
   a) >>>9==9 and 1==1
   b) >>>3==5 or 7==3
   c) >>>9==9 or 1==1
   d) >>>4<1 and 1>6
3. How many numbers will be printed? 2 M

```
i=5
while i>=0:
    print(i)
    i=i-1
```

4. Find the output of the following code. 2 M

```
def f():
    s="Hello World!"
    print(s)

s="welcome to the python programming"
f()
```

5. Identify the output in the following statements 2 M

```
S= "Welcome"
print(S[1:3])
print(S[ :6])
```

6. Differentiate between Tuple and List give an example. 2 M
7. With the help of an example explain the significance of the __init__ () method. 2 M
8. Identify the role of **self** argument in the class methods. 2 M
9. The ---------- module has a variety of commonly used GUI elements. 2 M
10. Give examples of commonly used widgets. 2 M

(P.T.O..)

PART-B

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

11.A). Write a program to prepare grocery bill. For that enter the name of the items purchased, quantity in which it is purchased, and its price per unit. Then display the bill in the following format. 10M

**********BILL**********

Item Name Item Quantity Item Price

****

Total Amount to be paid

OR

11. B). Write a program to calculate salary of an employee given his basic pay (to be entered by the user), HRA=10 percent of basic pay, TA= 5 percent of basic pay. Define HRA and TA as constants and use them to calculate the salary of the employee. 10M

12. A). i) Draw a comparison between recursive and iterative technique for problem solving. 5M

ii) Write a program to print the Fibonacci series without using recursion. 5M

OR

12. B). Write a short notes on the following with an example: 10M

i) Keyword arguments
ii) Default arguments
iii) Lambda functions

13. A). Write a program to get a string made of the first two and last two characters from a given a string. If the string length is less than two return instead the empty string. 10M

OR

13. B). Write a program to print index at which a particular value exists. If the value exists at multiple locations in the list, then print all the indices. Also count the number of times that value is repeated in the list. 10M

14. A). Write a program with class Employee that keeps a track of the number of employees in an organization and also stores their name, designation and salary details. 10M

OR

14. B). What will happen when a class inherits from another class with the same attributes or methods? Will it override them? 10M

15. A). i) Write a program to print the screen size using tkinter. 5M

ii) Write a program to make the window fullscreen. 5M

OR

15. B). Explain the following widgets and their functions: 10M

i) Frame
ii) Button
iii) Text
iv) Canvas
v) Listbox

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