

M

(Printed Pages 2)

(20514)

Roll No.

B.Tech. IV Sem.

TU - 131 (C)

B.Tech. Examination, May 2014

Ag. Engg.

Computer Application

BT - 430 (N)

Time : Two Hours]

[Maximum Marks : 50

Note : Attempt any **five** questions. All questions carry equal marks.

1. Discuss the history of computer in brief. 10
2. Write short notes on following: 10
 - (a) Input devices
 - (b) Output devices
3. What is operating system. Also name three operating system. 10

P.T.O.

4. What do you mean by software application packages? Discuss with example. 10
5. Write short notes on following: 10
 - (a) MS Word
 - (b) Power point
6. What do you mean by D.O.S & UNIX? 10
7. Explain the computer storage. Also explain the importance of computer storage. 10
8. Write short notes on following: 10
 - (a) Primary memory
 - (b) Secondary memory
9. What do you mean by data security? Also discuss how we can secure our data? 10
10. Explain validation & varification. 10

M

(Printed Pages 4)

(20514)

Roll No.

B.Tech. IV Sem.

TU - 132 (D)

B.Tech. Examination, May 2014

Ag. Engg.

Ag. Economics and Farm Management

[BT - 432 (CY)]

Time : Three Hours }

[Maximum Marks : 50

Note : Attempt any **five** questions. **All** questions
carry equal marks.

1. Explain the following in detail in any **four**:

(1) Material Handling 2½ each

(2) Location

(3) Define analysis

(4) Write in detail about the generation of
project ideas.

P.T.O.

(5) Differentiate between monopoly and oligopoly.

2. How will you differentiate between Technical and Financial Analysis? 10

3. Explain the Following in detail any **four**:

(a) Facilities layout 2½ each

(b) Define Markets

(c) Role of FCI in Agricultural Marketing

(d) Integrated Marketing

(e) Marketing Mix.

4. What do you mean by processes in operations Managements? Differentiate between service Processes and Manufacturing processes. 10

5. Explain the following in detail any four :
- (a) Benefit cost ratio 2½ each
 - (b) Farm Management meaning
 - (c) Production efficiency
 - (d) Cropping intensity
 - (e) Irrigation systems.
6. What do you mean by Resource Allocation? Enumerate criteria considered for resource allocation of a project. 10
7. What do you mean by Operations Managements? Discuss the types of decisions involved in operations management? 10
8. Write a detailed note on building up of "Customer satisfaction".
9. What do you understand by the concept of plant concentration? What type of facilities are required for setting of a production plant? 10

10. (a) Derive one dimensional heat conduction
equation in plane wall, 10

(b) What is Fourier's law of conduction?
State also the assumptions on which
this law is based? 10

M

(Printed Pages 4)

(20514)

Roll No.

B.Tech. IV Sem.

TU-130 (B)

B. Tech. Examination, May 2014

Ag. Engg.

ELECTRONICS INSTRUMENTATION

[BT-429 (N)]

Time : Three Hours]

[Maximum Marks : 100

Note: Attempt any **five** questions. **All** questions carry equal marks.

1. (a) Discuss the static characteristics of an instrument system? 10
(b) Draw the 8085 programming model with neat sketch. 10
2. (a) Explain the full wave rectifier with waveform.

P.T.O.

(b) Show how a full adder can be made to subfractor.

3. (a) Draw the C-type bourden tube pressure gauge for pressure measurement.

10

(b) Write logical steps to add the following two hexadecimal numbers. Both the numbers should be saved for future use.

Save the sum in accumulator. Number A2H & BH.

10

4. (a) Explain the working of AC potentiometer with neat sketch.

10

(b) Sample and hold circuit have great importance in ADC, Justify.

10

5. (a) Explain the phase shift oscillator with diagram.

10

(b) What are different arithmetic instructions?

10

6. (a) What is an astable multivibrator? 10
(b) Microprocessor technology is making agriculture more convenient. Elaborate.
7. (a) Draw the V-I characteristics of the thyristor. 10
(b) Describe the following : 10
(i) Sensitive of Instruments.
(ii) Error measurement.
8. (a) Explain the single phase energy meter for energy measurement. 10
(b) Write the performance characteristics of DAC. 10
9. (a) Explain the data interfacing in microprocessor and also discuss the DMA controllers. 10
(b) Describe the op-amp as differential amplifier. 10

10. (a) Explain the working principle of thermocouple with applications. 10
- (b) Explain the J,K flip flop and T flip flop briefly. 10

M (Printed Pages 4)

(20514) Roll No.

B.Tech. IV Sem.

TU-132

B. Tech. Examination, May 2014

FARM POWER

[BT-430 (O)]

Time : Three Hours / [Maximum Marks : 100]

Note: Attempt any five questions. All questions carry equal marks. Use of **calculator** is permitted.

1. (a) What are different sources of farm power? Discuss their merits and demerits. 20(10+10)
- (b) Define renewable energy and list various sources of non conventional energy.

P.T.O.

2. (a) Draw valve timing diagram and explain the importance of late closing of inlet valve and early opening of exhaust valve.

20(10+10)

- (b) Differentiate between Camshaft and Crankshaft.

3. Define the following terms with usual range.

20

- (i) Indicated Horse Power
 - (ii) Brake Horse Power
 - (iii) Mechanical Efficiency
 - (iv) Volumetric Efficiency
 - (v) Brake Thermal Efficiency
4. (a) Discuss in detail working of distributor (Rotary) type fuel injection pump.

20(10+10)

- (b) Differentiate between firing order and firing interval.

5. Discuss the important components and their working in fuel system of diesel engine. Write down the important characteristics of diesel fuel. 20
6. (a) Discuss with help of neat diagram working of diesel cycle. 20(10+10)
(b) Explain in brief various types of lubricating systems used in engine.
7. How many times the power of an engine increases or decreases if the diameter of piston is increased by 20% and stroke length is reduced by 20%. All other factors remaining same. 20
8. (a) Discuss in short dry type and oil bath type air cleaner. 20(10+10)
(b) Explain the working of thermostat valve in water cooled system.

9. Define clutch and explain the working of single plate and multiple plate clutch with their advantages and disadvantages. 20
10. What are different fuels used for internal combustion engines? How much they differ in their specific gravities and calorific values? What do you understand by the quality of fuel? 20

M

(Printed Pages 4)

(20514)

Roll No.

B.Tech. IV Sem.

TU-133(H)

B.Tech. Examination, May 2014

Ag. Engg.

Fluid Mechanics

BT-428(N)

Time : Three Hours /

[Maximum Marks : 100]

Note: Attempt any five questions. All questions carry equal marks.

1. (a) What is the difference between dynamic viscosity and kinematic viscosity? State their units of measurement. 10
- (b) The dynamic viscosity of an oil, used for lubrication b/w a shaft and sleeve is 6 poise. The shaft is of diameter 0.4m and rotates at 190 rpm. Calculate the

P.T.O.

power lost in the bearing for a sleeve length of 90mm. The thickness of the oil film is 1.5m. 10

2. (a) Define the term: meta-centre, centre of buoyancy meta-centric height, gauge pressure and absolute pressure 10

(b) What do you understand by Hydrostatic Law? and also define vacuum pressure 10

3. (a) Define the equation of continuity. obtain an expression for continuity equation for 3-D flow. 10

(b) Define the following : 10

(i) Steady flow

(ii) Non-uniform flow

(iii) Laminar flow

(iv) Two dimensional flow

4. (a) What is the Euler's equation of motion? How will you obtain Bernoulli's equation from it. 10

TU-133(H)/120/2

- (b) Show that the value of the co-efficient of friction for viscous flow through a circular pipe is given by

$$f = \frac{16}{R_e}$$

where R_e = Reynold no.

5. (a) (i) What do you understand by the term Major losses and Minor losses in pipes. 5×2=10
- (ii) Define and explain the terms Hydraulic gradient line and Total Energy line. 10
- (b) Find an expression for the power transmission through pipes. What is the condition for maximum transmission of power and corresponding efficiency of transmission. 10

6. (a) Define the following co-efficient 10

(i) Co-efficient of velocity

(ii) Co-efficient of contraction

(iii) Co-efficient of discharge.

and what is the relationship between them.

(b) Define between a large and a small orifice, obtain an expression for discharge through a large rectangular orifice. 10

7. (a) Define the following non-dimensional numbers. Reynold's number, Froude's No, and Mach's Number. What are their significances for fluid flow problems?

10

(b) (i) Define the terms: model, prototype, model analysis, hydraulic similitude. $5 \times 2 = 10$

(ii) Define fluid Machinery. Also define turbine and pumps.

M

(Printed Pages 4)

(20514)

Roll No.

B.Tech. IV Sem.

TU-129

B.Tech. Examination, May 2014

Ag. Engg.

Heat and Mass Transfer

BT-427(O)

Time : Three Hours]

[Maximum Marks : 100

Note: Attempt any **five** questions. **All** questions carry equal marks. Use of calculator is permitted

1. (a) Define various modes of heat transfer. Specify appropriate form of heat equation and solve the temperature distribution using Fourier's law to determine the heat flux.
(b) An Icebox made of 1.5 cm thick styrofoam has dimension 60cm* 60cm* 30cm. It contains ice at 0°C and is kept in a room at 40°C . Find the

P.T.O.

rate at which the ice is melting. Latent heat of fusion of ice = 3.36×10^5 J/kg and thermal conductivity of Styrofoam = 0.04 W/m

2. (a) Define and explain the Newton's law of cooling.
(b) A liquid cools from 70°C to 60°C in 5 minutes. Calculate the time taken by the liquid to cool from 60°C to 50°C if the temperature of the surrounding is constant at 30°C .
3. (a) Explain absorptivity, reflectivity and transmissivity of radiation.
(b) Explain the Planck's law and find out the Wien's law and Jean's law from it.
4. (a) Explain with equations the procedure for calculating the overall heat transfer coefficient for heat exchanger.
(b) When a heat exchanger was designed its own all heat transfer co-efficient was $600 \text{ kcal/hr m}^2 ^\circ\text{C}$, the heat transfer

area provided = 10 m^2 over a period of time, its overall heat transfer coefficient has fallen to $450\text{ kcal/hr m}^2\text{ }^\circ\text{C}$ due to fouling.

Data

- A. Specific heat of hot fluid = $1\text{ kcal/kg }^\circ\text{C}$
- B. Hot fluid entering temperature = 80°C
- C. Hot cold fluid entering temperature = 60°C
- D. Cold fluid entering temperature = 25°C
- E. Cold fluid leaving temperature = 40°C

Calculate, how much additional area is to be added to mention the same rate of heat transfer?

- 5. Find out an expression for the heat fluid through composite spherical systems.
- 6. (a) Explain Fin efficiency, η_f
(b) Explain Fin Effectiveness E_f .
- 7. Write short notes on
(a) One dimensional steady state through plan

- (b) Nature and forced convection
 - (c) Reynolds analogy
 - (d) Π -theorem
8. Write short notes on
- (a) Explain Stefan-Boltzmann's law
 - (b) Explain Blackbody and monochromatic radiation
 - (c) Explain solid angle
 - (d) A black body surface area 10 cm^2 is heated to 127°C and is suspended in a room at temperature 27°C . Calculate the initial rate of loss of heat from the body to the room.
9. Show by dimensional analysis for forced conduction. $Nu = \phi(Re, Pr)$.
10. (a) Explain Flick's law of diffusion
- (b) State the Fourier's law of heat conduction a negative sign is inserted in its expression. Write the assumption on which Fourier's law is based.

M

(Printed Pages 4)

(20514)

Roll No.

B.Tech. IV Sem.

TU-133E

B.Tech. Examination, May 2014

Ag. Engg.

Kinematics of Machines

BT-433(N)

Time : Two Hours]

[Maximum Marks : 50

Note: Attempt any five questions. All questions carry equal marks.

1. Classify the different types of constrained motions with suitable diagram. 10
2. Classify the different types of joint which are usually found in a chain. 10
3. Explain the following (Any two) 10
 - (i) Bean engine
 - (ii) Degree of Freedom.
 - (iii) Coupling rod of a locomotive.
 - (iv) Pendulum pump.

P.T.O.

4. Find the power transmitted by a belt running over a pulley of 600mm diameter at 200r.p.m. The coefficient of friction between the belt and the pulley is 0.25, an angle of lap 160° and the maximum tension (T_1) in the belt is 2500N. 10

5. Prove that : 10

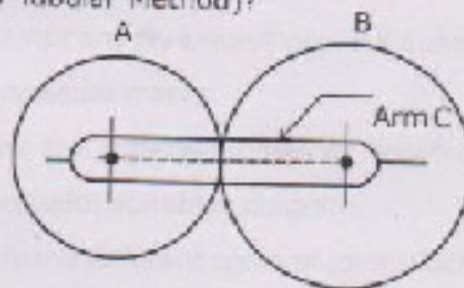
$$2.3 \log \left(\frac{T_1}{T_2} \right) = \mu \cdot \theta$$

6. A single reduction gear of 120 kw with a pinion 250mm pitch circle diameter and speed 650 r.m.p. is supported in bearings on either side. Calculate the total load due to the power transmitted, the pressure angle being 20° . 10

7. Prove that the relation in case of an open belt drive:

$$L = \pi(r_1 + r_2) + 2x + \frac{(r_1 - r_2)^2}{x} \quad 10$$

8. In an epicyclic gear train, an arm carries two gears A and B having 36 and 45 teeth respectively. If the arm rotates at 150rpm in the anticlockwise direction about the centre of the gear A which is fixed, determine the speed of gear B. If the gear A is instead of being Fixed, makes 300rpm in the clockwise direction, what will be the speed of gear B (by Tabular Method)?



9. Explain the following (any four) 10
- (a) Sliding Pair
 - (b) Rolling Pair
 - (c) Turning Pair
 - (d) Screw Pair

(e) spherical Pair

(f) Flat belt & V-belt.

10. Explain the following (Any two): 10

(a) Types of link

(b) Differentiate between machine and Structure.

(c) Types of belts.

M

(Printed Pages 3)

(20514)

Roll No.

B.Tech.-IV Sem.

TU-130

B. Tech. Examination, May 2014

Ag. Engg.

Electrical Circuits and Electrical Machine

BT-428(O)

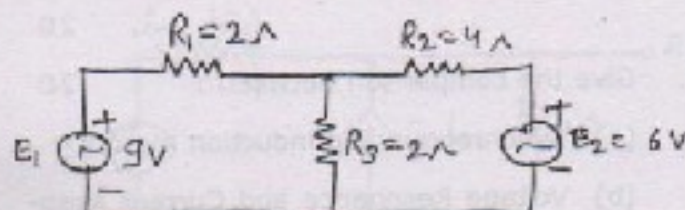
Time : Three Hours]

[Maximum Marks : 100

Note : Attempt any five questions.

1. State and explain "Thevenin's Theorem".

Find current in resistor R_3 of the network shown in fig. by Thevenin theorem. 20



P.T.O.

2. What is Filter? Give the classification of filter.
Explain constant - K and composite filter.

20

3. Explain the principle of operation of a single phase transformer. Where are they used?
Derive emf equation for a single phase transformer.

20

4. A dc shunt generator fails to build up voltage when it run at the rated speed. What may be positive reason for this? Explain.

20

5. What are the various method of speed control of dc shunt motor? Explain them in brief with relative advantage and disadvantages and derive efficiency equation of a dc motor.

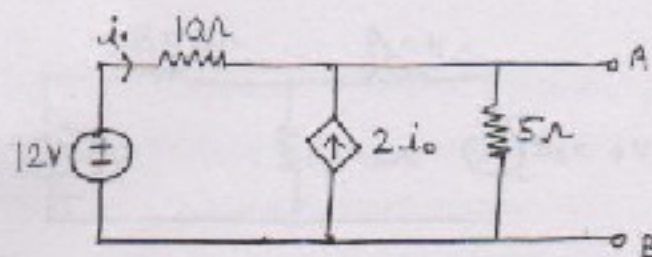
20

6. Give the comparison between :

20

- (a) Synchronous and induction motors
- (b) Voltage Resonance and Current Resonance.

7. Explain the construction, working and application of a stepper motor and A 3-phase Induction motor has a rotor for which the resistance per phase is 0.1Ω and reactance per phase when stationary is 0.4Ω . The rotor induced emf per phase is 100 V when stationary. Calculate the rotor current and rotor power factor
- 20
- (i) When stationary
- (ii) When running with a slip of 5 percent
8. Explain Reciprocity Theorems : and find the Norton's Equivalent circuit across terminals AB of the circuit shown in Figure.
- 20



Figure

M

(Printed Pages 4)

(20514)

Roll No.

B.Tech. IV Sem.

TU-133(F)

B.Tech. Examination, May 2014

Ag. Engg.

Soil Mechanics

BT-428(N)

Time : Two Hours]

[Maximum Marks : 50

Note: Attempt any **five** questions. Each question carry equal marks. Use of calculator is permitted.

1. Explain the detail of Mohr's theory for analysis of shearing strength with help of diagram.

10

2. What do you mean by soil water? Classify the soil water (moisture) in detail.

10

3. Explain in brief :

5×2=10

P.T.O.

- (a) Plastic equilibrium in soil
 - (b) Stability of slope
4. What do you understand by consolidation process? Define spring analogy with help of neat diagram. 10
5. Define stress condition in soil and discuss in detail about effective and neutral pressure. 10
6. Define the following: $2 \times 5 = 10$
- (a) Density Index
 - (b) Bulk density
 - (c) Porosity
 - (d) Degree of saturation
 - (e) Specific gravity
7. A cube of dried clay having sides 4cm long has a mass of 100g. The same cube of soil,

When saturated at unchanged volume, has mass of 125gm. Draw the soil element showing the volumes and weights of the constituents, and then determine the specific gravity of soil solids and the void ratio. 10

8. A cylindrical specimen of dry sand was tested in a triaxial test failure occurred under a cell pressure of 1.2 kg/cm^2 and at a deviator stress of 4.0 kg/cm^2 10

- (i) What is the angle of shearing resistance of soil?
- (ii) What were the normal and shear stresses on the failure plane?
- (iii) What angle did the failure plane make with the minor principal plane?

(iv) What was the max. Shear stress on any plane in the specimen at the instant of failure and how was the plane be oriented with the major principal plane?

10

M

(Printed Pages 4)

(20514)

Roll No.

B.Tech IV Sem.

TU-131

B.Tech. Examination, May 2014

Ag. Engg.

Soil Mechanics

BT-429(O)

Time : Three Hours]

[Maximum Marks : 100

Note: (i) Attempt any **five** questions.

(ii) All questions carry equal marks.

(iii) Calculator is permitted.

1. (a) Discuss Rankin's theory of active and passive earth pressure for cohesive soils.
(b) Explain the standard protector test in detail.
2. A wall with a smooth vertical back, 10m. high supports a purely cohesive soil with $C=9.81 \text{ kN/m}^2$ and $\gamma=17.66 \text{ kN/m}^3$

P.T.O.

Determine-

- (a) Total Rankin's active pressure the wall.
 - (b) Position of zero pressure.
 - (c) Distance of the centre of Pressure above the base.
3. What is the basis of Westergaard's equation for determining stress at different depths in soils underload? Using Westergaard's equation calculate the intensity of stress at depth of 13m. due to load of 1600 KN/m^2 over an area of $3.2\text{m} \times 6.5\text{m}$.
4. Write short notes on :
- (i) Vane shear tester
 - (ii) Principal stress and their relation in soils.
 - (iii) Mohr's stress circle and Mohr's strength envelope.
 - (iv) Coloumb's shear strength theory and its relation with effective and pore pressure in soils.
5. (a) What is Coloumb's emperical Law? Express the relation between principal stresses at failure in a cohesive soil.

- (b) Discuss the shortcomings of Mohr. Strength theory as applied to soil.
6. (a) Differentiate between effective stress and Neutral stress.
- (b) Determine the Neutral and effective stress at a depth of 15m. below the ground surface for the following conditions. Water table is 3m. below the ground surface for the soil with properties given by
 $G=2.65$, $e=6.7$, average m.c. above the water table = 5%
7. A soil sample whose water content is 20% has a bulk density of 2.16 gm/cc. The sample undergoes air drying with insignificant change in void ratio. What is the water content of this sample, what its bulk density is reduced to 2.0 gm/cc.
8. Differentiate between a residual soils and transported soil. Also enumerate the various common soils found in general use. Briefly define and point out the characteristics of any three of these soils.

9. (a) Explain stability analysis of infinite and finite slope.
- (b) Explain, how would you determine the moisture content of a soil with the help of Pycnometer?
10. (a) Define any **four** of the following terms:
- (i) Voids ratio
 - (ii) Porosity
 - (iii) Percentage of voids
 - (iv) Air Content
 - (v) Density Index
- (b) A fully saturated clay sample has a mass of 130 gm, and has a volume of 64 cm^3 . The clay mass is found to be 105 gm. After oven drying. Assuming that the volume does not change during drying determine the following :
- (i) Specific gravity of soil solids
 - (ii) Voids ratio
 - (iii) Porosity
 - (iv) Dry density

M

(Printed Pages 4)

(20514)

Roll No.

B.Tech, IV Sem.

TU-133

B.Tech, Examination, May 2014

AG. ENGG.

S O M

BT-431(O)

Time : Two Hours]

[Maximum Marks : 50

Note: Attempt any five questions. All questions carry equal marks.

1. (a) A steel wire 2m long and 3mm in diameter is extended by 0.75 mm when a weight W is suspended from the wire. If the same weight is suspended from a brass wire, 2.5 m long and 2 mm in diameter, it is elongated by 4.64 mm. Determine the modulus of elasticity of brass if that of steel be $2.0 \times 10^5 \text{ N/mm}^2$
- P.T.O.

(b) Explain in brief, how to construct a Mohr's circle for two perpendicular direct stresses with state of simple shear.

2. Explain the term in brief

(i) Poisson's Ratio

(ii) Volumetric strain

(iii) Temperature stresses

(iv) Simple and compound stresses

3. (a) Calculate the thickness of the metal required for a Cast-Iron main 800 mm in diameter for water at a pressure head of 100 m if the maximum permissible tensile stress is 20 MN/m^2 and weight of water is 10 K N/m^3 .

(b) Sketch and Explain circumferential and longitudinal stresses. 5

4. A built up cylindrical shell of 300 mm diameter, 3 m long and 6mm thick is subjected

TU-13316012

to an internal pressure of 2 MN/m^2 . Calculate the change in length, diameter and volume of the cylinder under that pressure if the efficiencies of the longitudinal and circumferential joints are 80% and 50% respectively. Take, $E=200 \text{ GN/m}^2$, $m=3.5$.

5. (a) Derive an equation for Slope, Deflection and Radius of curvature for Beam.
(b) A beam of channel section $120 \text{ mm} \times 60 \text{ mm}$ has uniform thickness of 15 mm . Draw diagram showing the distribution of shear stresses for a vertical section where shearing force is 50 kN . Find the ratio between maximum and mean shear stresses.
6. A steel girder of uniform section, 14 m long is simply supported at its ends. It carries concentrated loads of 90 kN and 60 kN at two points 3 m and 4.5 m from the two ends re-

spectively, Calculate

(i) The deflection of the girder at the points under the two loads

(ii) The maximum Deflection

Take $I = 64 \times 10^{-4} \text{ m}^4$

and $E = 210 \times 10^6 \text{ KN/m}^2$

7. Derive Euler's formula for different End conditions.

8. A Bar of length 4m when used as simply supported beam and subjected to a UDL of 30 kN/m over the whole span, deflects 15 mm at the centre. Determine the crippling loads when it is used as a column with following end conditions :

(i) Both the ends pin jointed.

(ii) One end fixed and other end hinged.

(iii) Both the ends fixed.

M

(Printed Pages 7)

(20514)

Roll No.

B.Tech. IV Sem.

TU-129(A)

B. Tech. Examination, May 2014

Ag. Engg.

Statistics

BT-427(N)

Time : Three Hours]

[Maximum Marks : 100

Note : Attempt any **five** questions. **All** questions carry equal marks.

1. (a) Find the Standard Deviation of the following series. 10

x	10	11	12	13	14	Total
f	3	12	18	12	3	48

- (b) Write down the method how to analyse Arithmetic Mean, Geometric Mean & Harmonic Means. 10

P.T.O.

2. (a) Find the median and median class of the data. 10

Class Interval	Frequency
15-25	4
25-35	11
35-45	19
45-55	14
55-65	0
65-75	2

- (b) For a Group of 60 male workers, the mean and the standard deviation of their wages are Rs. 65 and Rs. 10 respectively. For a group of 45 female worker these are Rs. 55 and Rs. 7 respectively. Find the standard deviation for the combined group of 115 workers. 10

3. (a) Sketch and explain frequency Polygon Histogram and bar chart.

- (b) The following zero-order correlation coefficients are given :

$$r_{12} = 0.98, r_{13} = 0.44 \text{ and } r_{23} = 0.54$$

Calculate multiple correlation coefficient treating first variable as dependent and second and third variables as independent.

4. (a) Determine the value of r by the alternative method of least square from the following data as given : 10

x	y
6	9
2	11
10	5
4	8
8	7

(b) On the basis of the following information solve : 10

(i) $r_{23.1}$

(ii) $r_{13.2}$

(iii) $r_{12.3}$

where $r_{12} = 0.80$, $r_{13} = 0.63$, $r_{23} = 0.45$

5. (a) Write the method for Fitting equation to data. 5

(b) From the following data obtain the two regression equation. 15

x	y
7	10
3	12
11	6
5	9
9	8

6. (a) Explain in brief about curvilinear regression.
10

(b) You are given the following data :

	X	Y
Arithmetic Mean	36	85
Standard Deviation	11	8

Correlation co-efficient between X and
Y = 0.66.

- (i) Find the two regression equations.
(ii) Estimate the value of X when Y = 75.

7. (a) Explain normal distribution. What are the
properties of normal distribution. 10

(b) Write the assumptions and application
of t-distribution. 10

8. The screws produced by a certain machine
were checked by examining samples of 12.
The following table shows the distribution of
126 samples according to the number of

defective items they contained.

No. of Defectives in sample of 12	No. of Samples
0	7
1	6
2	19
3	35
4	30
5	23
6	7
7	1
Total	128

9. Write down the properties of Multiple Correlation. Also write the Advantages and Disadvantages of Multiple Correlation.
10. (a) What are the Assumption of F-test and method. How to use F-test. 10

- (b) A machine is designed to produce insulating washer for electrical devices of average thickness of 0.025 cm. A Random Sample of 10 washers was found to have an average thickness of 0.024 cm with a standard deviation of 0.02 cm. Test the significance of the deviation. Value of t for 9 degrees of freedom at 5 percent level is 2.262.

x	10	11	12	13	14	Total
f	3	12	19	17	3	54