CBCS SCHEME

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18ME51

Fifth Semester B.E. Degree Examination, July/August 2022
Management and Economics

Time: 3 hrs.   Max. Marks: 100

Note: 1. *Answer any FIVE full questions, choosing ONE full question from each module.*
2. *Use of Interest Factor Table is permitted.*

Module-1

1   a.   Define Management. Explain Nature and characteristics of Management.   (08 Marks)
    b.   Briefly explain the Early Management approaches and the Modern Management approaches.
                                                                                        (12 Marks)

OR

2   a.   Briefly explain the important steps in Planning.   (10 Marks)
    b.   What are the types of Decision? Explain with example.   (10 Marks)

Module-2

3   a.   List and explain in brief the principles of Organisation.   (10 Marks)
    b.   Briefly explain MBO and MBE with advantages and disadvantages.   (10 Marks)

OR

4   a.   Explain briefly Maslow's theory of Motivation.   (10 Marks)
    b.   Explain the essentials of a Sound Control System.   (10 Marks)

Module-3

5   a.   With a neat sketch, explain the Problem solving process in Decision making.   (10 Marks)
    b.   State and explain the Law of Demand and Supply.   (05 Marks)
    c.   Determine the Effective Interest Rate for a Nominal Annual rate of 8% that is compounded :
         i)   Quarterly   ii)   Semi – annually.   (05 Marks)

OR

6   a.   Discuss the Interest rate from Lender's and borrower's Point of view.   (08 Marks)
    b.   A Company 3 years ago borrowed Rs 4,00,000 to pay for a new machine , agreeing to repay
         the load in 100 monthly payments at an Annual Nominal Interest rate of 12% compounded
         monthly. The Company now wants to pay off the loan. How much would this payment be,
         assuming no penalty costs for early payout?
         Interest factors : (A/P , 1% 100) = 0.01587   ;   (P/A , 1% , 64) = 47.10277.   (12 Marks)

Module-4

7   a.   List and explain the conditions assumed for present worth comparisons.   (08 Marks)
    b.   5 Million rupees are donated to a college. 20 students are to be awarded scholarships over
         the next 20 years. The scholarships are each of Rs 12000/- per year, The first year and
         increase at a rate of Rs 1500 per year over the following 19 years. Starting with the end of
         third year, Rs 15000 are to be spent for maintenance of the college building. This costs rises
         linearly at the rate of Rs 2000 per year, starting with year 4. Assuming 10% interest rate,
         determine how much money will be available to construct on Auditorium now.
         (A/G , 10% , 20) = 6.50808   (P/A , 10% , 20) = 8.51356
         (A/G , 10% , 18) = 6.05256   (P/A , 10% , 18) = 8.20141
                                             (P/F , 10% , 2) = 0.82645.   (12 Marks)

OR

8   a. Explain briefly Rate of Return , MARR , IRR and ERR.   (08 Marks)
    b. Briefly explain the following terms as applied to Asset life :
       i) Service life   ii) Accounting life   iii) Economic life.   (06 Marks)
    c. A Company can purchase a new central computer for Rs 17500 or can lease it for 3 years
       with annual payments of Rs 8400. Determine at what interest rate the leasing and purchasing
       costs would be equivalent , if lease payments were due at the end of each year.
       (P/A , 20% , 3) = 2.10648   ;   (P/A , 25% , 3) = 1.95200.   (06 Marks)

Module-5

9   a. Explain how selling price is determined for a product with a block diagram.   (07 Marks)
    b. Differentiate between Estimation and Costing.   (05 Marks)
    c. The catalogue price of a washing machine is Rs 9000 and the commission allowed to the
       proprietor of the show room is 20%. The administrative and the selling expenses are 60% of
       the factory cost and material cost, labour cost and factory overheads are in the ratio of 2:3:1.
       If the cost of the labour on the manufacturing of machine is Rs 1650, determine the profit on
       each washing machine.   (08 Marks)

OR

10 a. What is Depreciation? What are the causes of Depreciation?   (06 Marks)
    b. List different methods of determining depreciation and explain any two of them.   (06 Marks)
    c. A car was purchased for 400,000 and salvage value was estimated as Rs 100,000 at the end
       of 8 year of useful life. Calculate the book value of the car at the end of 5th year by declining
       balance method and straight line method of depreciation. Also find the accumulated
       depreciation at the end of 6th year by Declining Balance method.   (08 Marks)

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18ME52

Fifth Semester B.E. Degree Examination, July/August 2022
Design of Machine Elements – I

Time: 3 hrs.

Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. Use of design data hand book is permitted.
3. Assume missing data suitably.

Module-1

1   a. Briefly explain the important mechanical properties of metals. **(06 Marks)**
    b. Define standards and codes. **(04 Marks)**
    c. A Cantilever beam of rectangular cross section mode of steel has permissible tensile stress of 90 MPa. It is used to support a pulley on which a load of 4.5 kN is suspended. If FOS = 2.5 and the ratio of depth to width of cross section is 2, find the dimensions of the cross section. Refer Fig. Q1 (c). **(10 Marks)**
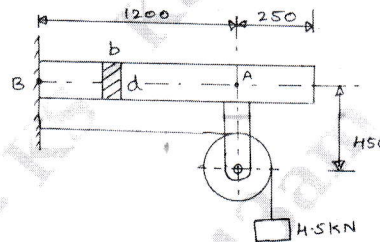
Fig. Q1 (c)

OR

2   a. Explain the reasons for stress concentration in machine members and the methods adopted to relieve the same. **(05 Marks)**
    b. A point in a structural member subjected to plane stress is shown in Fig. Q2 (b). Determine the following :
    (i)   Principal stresses and principal planes.
    (ii)   Maximum shear stress and the direction of the planes on which it occurs.
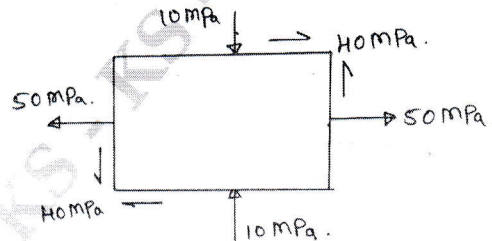   (iii) Verify the answer by Mohr's circle method. **(15 Marks)**

Fig. Q2 (b)

Module-2

3   a. Derive an expression for impact stress in a axial bar of cross section 'A' and length 'L' due to impact of a load 'W' falling from a height 'h'. **(10 Marks)**
    b. A steel wire 5 mm diameter is firmly held in clamp from which it hangs vertically. An anvil, the weight of which may be neglected is secured to the wire 2 m below the clamp. The wire is to be tested allowing a weight bared to the slide over the wire to drop freely from 1.5 m above the anvil. Calculate the weight required to stress the wire to 700 MPa, assuming the wire to be elastic up to the this stress. Take E = 210 GPa. **(10 Marks)**

OR

4 a. Explain the terms Fatigue, Fatigue failure and endurance strength. **(06 Marks)**

   b. A steel shaft is subjected to a bending moment varies from 100 N-m to 200 N-m and transmits 10 kW at 150 rpm. The torque varies over a range of $\pm 40\%$. The shaft is made of steel whose yield stress is 400 MPa and endurance stress is 300 MPa. Surface co-efficient factor is 0.9. Size factor is 1.2. FOS is 5. SCF is 1.94. Determine the diameter 'd' based on Soderberg criterion. **(14 Marks)**

Module-3

5 a. Design a shaft to transmit power from an electric motor to a lathe head stock through a pulley by means of a belt drive. The pulley weighs 200 N and is located at 300 mm from the center of bearing. The diameter of the pulley is 200 mm and the maximum power transmitted is 1 kW at 120 rpm. The angle of lap of the belt is 180° and coefficient of friction between the belt and the pulley is 0.3. The shock and fatigue factors for bending and twisting are 1.5 and 2.0. The allowable shear stress in the shaft may be taken as 35 MPa. **(10 Marks)**

   b. A hollow shaft of diameter ratio 0.375 is required to transmit 500 kW at 110 rpm, the maximum torque being 20% greater than the mean. The shear stress is not to exceed 60 MPa and angle of twist in a length of 3 m is not to exceed 1.4°. Calculate the shaft diameter if G = 84 GPa. Take $K_t = 1.25$. **(10 Marks)**

OR

6 a. Explain the various types of keys and their applications. **(06 Marks)**

   b. In a flange coupling used to connect two co-axial shafts of diameter 80 mm to transmit 60 kW at 200 rpm, 6 bolts of M14×1.5 are used on a bolt circle diameter of 240 mm. The hub diameter is 150 mm and flange thickness is 20 mm. Take key way factor is $\eta = 0.75$. Determine (i) Shear stress induced in shaft (ii) Shear stress induced in bolt. (iii) Shear stress induced in key if allowable bearing stress on the key is 80 MPa. (iv) Shear stress induced in flange **(14 Marks)**

Module-4

7 a. Design a double riveted lap joining of chain type to connect two plates each 20 mm thick. The allowable stress for rivets and plates are 90 MPa in tension, 60 MPa in shear and 150 MPa in crushing. **(10 Marks)**

   b. A tie bar in a bridge consists of plate 350 mm wide and 20 mm thick. It is connected by a plate of same thickness by a cover butt joint. Design an economical structural joint, if permissible stresses are 90 MPa in tension, 60 MPa in shear and 150 MPa in compression. **(10 Marks)**

OR

8 a. A plate of 80 mm wide and 10 mm thick is to be welded to another plate by means of two parallel fillet welds. The plates are subjected to a load of 50 kN. Find the length of weld so that maximum stress does not exceed 50 MPa. Consider the joint under static loading and then under dynamic loading. **(10 Marks)**

   b. A solid circular shaft 25 mm in diameter is welded to a support by means of a fillet weld as shown in Fig. Q8 (b). Determine the leg dimensions of the weld if the permissible shear stress is 95 MPa. **(10 Marks)**
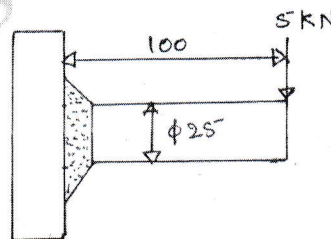

Fig. Q8 (b)

Module-5

9 a. Obtain the expression for torque required to lift the load on a square threaded screw.

(08 Marks)

b. Design a Knuckle joint to connect two circular rods subjected to an axial tensile force of 50 kN. The rods are coaxial and a small amount of angular movement between their axes is permissible. The design stresses may be taken as 80 MPa in tension, 40 MPa in shear and 80 MPa in compression.

(12 Marks)

OR

10 a. The jaws of a machine vice weigh 5000 N and are slided by a two start acme thread, 50 mm diameter and 8 mm pitch at a speed of 800 mm/min. The ends of the screw carried a thrust washer of mean diameter 56 mm. The coefficient of thread friction is 0.14. Determine the power of the motor required in 'KW' and the efficiency of the drive. Take $\mu_c = 0.147$.

(10 Marks)

b. A square threaded power screw has a nominal diameter of 30 mm and a pitch of 6 mm with double threads. The load on the screw is 6 kN and the mean diameter of the thrust collar is 40 mm. The co-efficient of friction for the screw is 0.1 and the collar is 0.09. Determine :

    (i)   Torque required to raise and lower the screw with the load.
    (ii)   Overall efficiency.
    (iii)   Is this screw self-locking.

(10 Marks)

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Fifth Semester B.E. Degree Examination, July/August 2022
Dynamics of Machines

Time: 3 hrs.   Max. Marks: 100

Note: *Answer any FIVE full questions, choosing ONE full question from each module.*

Module-1

1 a. State the condition for static equilibrium of a body subjected to a system of
      i) 2 Forces   ii) 3 Forces   iii) Member with two forces and torque. **(06 Marks)**
   b. For the mechanism shown in Fig.Q1(b), find the required input torque for the static
      equilibrium. The length OA = 250mm, AB = 650mm, F = 500N.

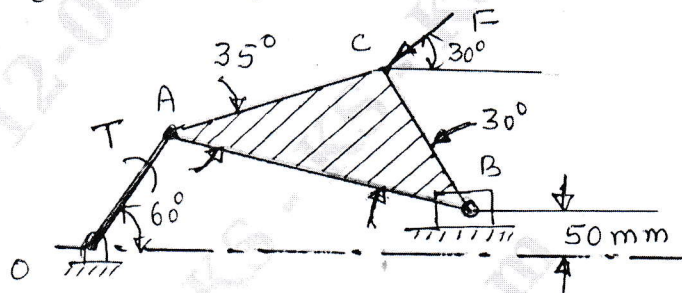Fig.Q1(b)   **(14 Marks)**

OR

2 a. Explain in brief 'D'Almert's principle. **(05 Marks)**
   b. Derive an expression for the velocity and acceleration of piston and also the angular
      acceleration of the connecting rod of a reciprocating engine. **(15 Marks)**

Module-2

3 a. What do you mean by static and dynamic balancing? **(04 Marks)**
   b. Four masses are attached to a shaft of planes A, B, C and D at equal radii. The distance of
      the planes B, C and D from A are 400mm, 50mm and 1200mm respectively. The masses at
      A, B and C are 60kg, 45kg and 70kg respectively. If the system is in complete balance,
      determine the mass at D and the position of masses B, C and D with respect to A. **(16 Marks)**

OR

4 A 5 cylinder inline engine running at 500r/min has successive cranks at 144° apart. The
   distance between the cylinder centre line is 300mm. Piston stroke = 240mm, Length of
   connecting rod is 480mm. Examine the engine for balance of primary and secondary forces
   and couples. Find the maximum value of these and position of central crank at which these
   maximum value occur. The reciprocating mass for each cylinder is 150N. **(20 Marks)**

Module-3

5 a. Define the following with respect to the working of governors. i) Sensitiveness
      ii) Isochronism   iii) Effort of a governor   iv) Stability of a governor. **(08 Marks)**
   b. The arms of a porter governor are each 300mm long and are hinged on the axis of rotation.
      The mass of each ball is 5kg and mass of the sleeve is 15kg. The radius of rotation of the
      ball is 200mm when the governor beings to lift and 250mm when the governor is at the
      maximum speed. Determine :
      i) Range is speed neglecting the sleeve friction
      ii) Range of speed if the frictional force at the sleeve is 30N. **(12 Marks)**

OR

6 a. Explain in brief :
      i) Angular momentum   ii) Spin motion   iii) Processional motion.   (06 Marks)
   b. A rail car has a total weight of 39240N, there are two axles, each which together with wheels has moment of inertia of 30kg-m^2. The centre distance between the two wheels on an axle is 1.5m and each wheel is of 370.5mm radius. Each axle is driven by a motor and its speed is 3 times the speed of wheel. Each motor has a moment of inertia of 15kg-m^2 and runs opposite to the of axle. The centre of gravity of 1050mm above rails. Determine the limiting speed when it is negotiating a curve of 240m radius such that no wheel leaves the rail.   (14 Marks)

Module-4

7 a. Find the natural frequency of a spring mass system, the mass of the spring can be taken into account by adding one-third of its mass to the main mass.   (10 Marks)
   b. The cylinder of mass m, radius r rolls without slipping on a cylindrical surface of radius R. Determine the natural frequency for small oscillations about the lowest point.   (10 Marks)

OR

8 a. Obtain the response of viscous damped system for critically damped case.   (10 Marks)
   b. Find the equation of motion for the system shown in Fig.Q8(b) when $\xi = 2$. If the mass m is displaced by a distance of 3cm and released.
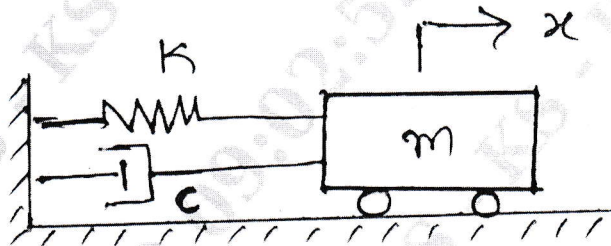

Fig.Q8(b)   (10 Marks)

Module-5

9 a. What is magnification factor? Derive an expression for the same and discuss its variation with frequency ratio.   (10 Marks)
   b. A 75kg machine is mounted on springs of stiffness K = 11.76 × 10^{5}N/m with damper of $\xi = 0.2$. A 2kg piston within the machine has reciprocating motion with stroke of 0.08m and a speed of 3000r/min. Assuming the motion of the piston to be harmonic, determine the amplitude of vibration of the machine.   (10 Marks)

OR

10 a. A shaft 40mm diameter and 2.5m long has a mass of 15kg per meter length. It is simply supported at the ends and carrier 3 masses 90kg, 140kg and 60kg at 0.8m, 1.5m and 2m respectively from the left support. Taking E = 200G N/m^2. Find the frequency of transverse vibration.   (10 Marks)
    b. Derive an expression for the critical speed of light shaft having single disc with damping.   (10 Marks)

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Fifth Semester B.E. Degree Examination, July/August 2022
Turbomachines

Time: 3 hrs.   Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. Use of Steam Tables is permitted.

Module-1

1 a. Define a turbomachine. With a neat sketch, explain the parts of a turbomachine. **(06 Marks)**
   b. Compare a turbomachine and a positive displacement machine. **(06 Marks)**
   c. Define specific speed of pump. Derive an expression for the same in terms of discharge, speed and head. **(08 Marks)**

OR

2 a. Define Static and Stagnation States. **(04 Marks)**
   b. Starting from the first law, derive an expression for the work output of a turbomachine. **(08 Marks)**
   c. Show that for a turbine polytropic efficiency is given by

$$\eta_p = \left[\frac{n-1}{n}\right]\left[\frac{\gamma}{\gamma-1}\right]$$

where n is index of polytropic process, γ is ratio of specific heats. **(08 Marks)**

Module-2

3 a. With a neat sketch derive an expression for Euler's turbine equation. **(10 Marks)**
   b. At a 50% reaction stage axial flow turbine the mean blade diameter is 0.6 mts. The maximum utilization factor is 0.9 and steam flow rate is 10 kg/sec. Calculate the inlet and outlet absolute velocities and power developed if the speed is 2000 rpm. **(10 Marks)**

OR

4 a. Define degree of reaction for an axial flow machine. Prove that degree of reaction for an axial flow device with constant velocity of flow is given by

$$R = \frac{V_f}{2U}\left[\frac{\tan\beta_1 + \tan\beta_2}{\tan\beta_1 \tan\beta_2}\right]$$ **(10 Marks)**

   b. An inward flow reaction turbine has outer and inner diameter wheels as 1m and 0.5m respectively. The vanes are radial at inlet and discharge is radial at outlet and fluid enters the vanes at an angle of 10°. Assuming the velocity of flow to be constant and equal to 3m/s. Find (i) Speed of wheel (ii) Vane angle at outlet (iii) Degree of reaction. **(10 Marks)**

Module-3

5 a. Define Steam Turbine. List the difference between impulse and reaction steam turbines. **(06 Marks)**
   b. What is the necessity for compounding steam turbines? Name the different compounding methods. **(04 Marks)**
   c. A single stage impulse turbine has a diameter of 1.5m and running at 3000 rpm. The nozzle angle is 20°. Speed ratio is 0.45. Ratio of relative velocity at the outlet to that at inlet is 0.9. The outlet angle of the blade is 3° less than inlet angle. Steam flow rate is 6 kg/sec. Draw the velocity diagrams and find the following:
(i) Velocity of Whirl (ii) Axial thrust (iii) Blade angles (iv) Power developed. **(10 Marks)**

OR

6 a. Prove that the maximum blade efficiency of a reaction turbine is given by

$$\eta_{b\,max} = \frac{2\cos^2\alpha_1}{1+\cos^2\alpha_1}$$
(10 Marks)

   b. In a reaction turbine, the inlet and outlet blade angles are 50° and 20° respectively. Steam enters at 18° to the plane of the rotor wheel and leaves at 40°. The rotor sped is 260 m/s. Calculate the speed ratio, specific work and degree of reaction. **(10 Marks)**

Module-4

7 a. Show that the maximum hydraulic efficiency of a Pelton wheel turbine is given by

$$\eta_{h\,max} = \frac{1+C_b\cos\beta_2}{2}.$$ Also draw the inlet and exit velocity triangles. **(10 Marks)**

   b. A double overhung Pelton wheel unit is to produce 30000 kW of a generator under an effective head 300m at the base of the nozzle. Find the size of the Jet, mean diameter of the runner, runner speed and specific speed of each Pelton turbine. Assume generator η = 93%, Pelton wheel efficiency = 0.85, speed ratio = 0.46, Jet velocity coefficient = 0.97 and Jet ratio = 12. **(10 Marks)**

OR

8 a. Draw a neat sketch of a Francis turbine and draw the inlet and outlet velocity triangles. **(06 Marks)**

   b. Explain the function of a draft tube and mention its types. **(06 Marks)**

   c. A Kaplan turbine develops 10 MW under an effective head of 8m. The overall efficiency is 0.86, the speed ratio is 2 and the flow ratio 0.6. The hub diameter of the wheel is 0.33 times the outside diameter of the wheel. Find the diameter and speed of the turbine. **(08 Marks)**

Module-5

9 a. Define the following for the Centrifugal Pump:
      i) Manometric head
      ii) Suction head
      iii) Net Positive Suction Head [NPSH] **(06 Marks)**

   b. Explain with a neat sketch, multistage centrifugal pump arrangement. **(04 Marks)**

   c. A centrifugal pump having outer diameter equal to 2 times inner diameter and running at 1200 rpm works against a total head of 75m. The velocity of flow through the impeller is constant and equal to 3 m/s. The vanes are setback at an angle of 30° at outlet. If the outer diameter of impeller is 60 cm and width at outlet is 5 cm, determine i) Vane angle at inlet ii) Work done iii) Monometric efficiency. **(10 Marks)**

OR

10 a. With reference to centrifugal air compressor, explain the following :
      i) Choking   ii) Surging   iii) Slip factor   iv) Pressure coefficient **(08 Marks)**

   b. What are the types of diffuser used in centrifugal compressor? **(02 Marks)**

   c. A centrifugal compressor runs at a speed of 15000 rpm and delivers 30 kg/s of air. The exit diameter is 70 cm relative velocity at exit is 100 m/s at an exit angle of 75°. The total temperature at inlet is 300 K and total pressure at inlet is 1 bar. Determine
      i) Power required to drive the compressor   ii) Ideal head developed
      iii) Work done   iv) Total exit pressure. **(10 Marks)**

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Fifth Semester B.E. Degree Examination, July/August 2022
Fluid Power Engineering

Time: 3 hrs.   Max. Marks: 100

Note: *Answer any FIVE full questions, choosing ONE full question from each module.*

Module-1

1 a. What are the main components of hydraulic system? Write with neat sketch explain hydraulic system. **(08 Marks)**
   b. What do you mean by static and dynamic seal? Mention sealing materials used. **(06 Marks)**
   c. What are the desirable properties of a fluid explain any five? **(06 Marks)**

OR

2 a. Define Pascal's Law? With neat sketch, explain for any one application. **(06 Marks)**
   b. Mention some advantages and disadvantages of fluid power system. **(08 Marks)**
   c. For a simple hydraulic Jack the following data is given, force on pump piston is 100N, area of pump piston is 50cm^2, displacement of pump piston is 10cms, find force and area of load cylinder that carries also find energy input and energy output. Take area of load cylinder 500cm^2. **(06 Marks)**

Module-2

3 a. Give the classification of pumps. With neat sketch explain balanced vane pump. **(08 Marks)**
   b. With neat sketch explain construction of external gear motor. **(06 Marks)**
   c. A vane pump have volumetric displacement 115cm^2. It has a rotor diameter of 63.5mm, a cam ring diameter of 88.9mm and a vane width of 50.8mm, find the eccentricity. **(06 Marks)**

OR

4 a. With neat sketch explain bent axis types axial piston pump. Derive the equation for theoretical flow rate. **(10 Marks)**
   b. Find the flow rate in ltr/sec that an axial piston pump delivers at 1000 RPM. The pump has 9 numbers 15mm diameter piston arranged on a 125mm diameter piston circle. The offset angle is set at 10° and the volumetric efficiency is 94%. **(10 Marks)**

Module-3

5 a. With neat sketch explain solenoid actuated 4/3 direction control valve. **(06 Marks)**
   b. With neat sketch explain Shuttle valve. **(06 Marks)**
   c. With neat sketch explain circuit used for punching operation. **(08 Marks)**

OR

6 a. With neat sketch explain non compensated flow control valve, with symbol. **(08 Marks)**
   b. Explain the regenerative circuit with diagram. Derive the equations for velocity. **(12 Marks)**

Module-4

7 a. With a neat diagram, explain the structure of pneumatic system. **(08 Marks)**
   b. Explain different types of cylinder cushioning. **(06 Marks)**
   c. What are the characteristics of compressed air? **(06 Marks)**

OR

8 a. Differentiate between hydraulic system and pneumatic systems. (06 Marks)
   b. With neat sketch explain FRL unit with symbol (08 Marks)
   c. With a circuit diagram explain
      i) Quick exhaust valve
      ii) Time delay valve. (06 Marks)

Module-5

9 a. Explain OR and AND gates in pneumatic systems with circuits. (10 Marks)
   b. With neat sketch and symbol explain 2/2 poppet valve. (06 Marks)
   c. What are the two types of air Throttling? Differentiate between them. (04 Marks)

OR

10 a. What are the rules to be followed to draw a motion diagram? (06 Marks)
    b. With a neat diagram, explain signal flow pneumatic structure. (08 Marks)
    c. Briefly explain about relay and contactors. (06 Marks)

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Fifth Semester B.E. Degree Examination, July/August 2022
Operations Management

Time: 3 hrs.   Max. Marks: 100

Note: *Answer any FIVE full questions, choosing ONE full question from each module.*

Module-1

1   a. Define Operations Management and explain briefly how the production systems are classified. (10 Marks)
    b. Explain briefly with a schematic model the functions within Business Organisation and Operations Management. (10 Marks)

OR

2   a. What is Decision Making? Briefly explain the characteristics of Operation decisions (10 Marks)
    b. Explain Break Even Analysis with necessary equations, graphs and assumptions. (10 Marks)

Module-2

3   a. Define Forecasting and explain briefly the steps involved in Forecasting process. (10 Marks)
    b. Briefly explain the components of Time Series method with sketches. (10 Marks)

OR

4   a. Explain the following methods :
        i) Exponential Smoothing   ii) Linear Regression. (10 Marks)
    b. A Company adopts method of least squares to develop a linear trend equation for the data as shown in the table below :

Year (X)	1	2	3	4	5	6	7	8	9	10	11
Shipment in (Tons) (Y)	2	3	6	10	8	7	12	14	14	18	19

    Calculate the trend for the year 12 and 20. (10 Marks)

Module-3

5   a. Define the following : i) Design capacity   ii) System capacity
        iii) Capacity planning   iv) Facility layout. (10 Marks)
    b. Sketch and explain any two types of layouts. (10 Marks)

OR

6   a. List and explain the various factors influencing plant location. (10 Marks)
    b. Sketch and explain the different types of layouts. (10 Marks)

Module-4

7   a. Define Aggregate and Master Scheduling. Explain the Pure strategies used for aggregate planning in brief. (10 Marks)
    b. Discuss the techniques of aggregate planning process with flow chart. (10 Marks)

OR

8   a.   What are the objectives and importance of Aggregate Planning?   (10 Marks)
      b.   Explain Master Scheduling Methods.   (10 Marks)

Module-5

9   a.   What is Material Requirement Planning? What are the various steps involved in the implementation of MRP.   (08 Marks)
      b.   What are the benefits and limitations of MRP?.   (06 Marks)
      c.   Define CRP and BOM.   (06 Marks)

OR

10   a.   What is Supply Chain Management? What are its functions?   (08 Marks)
      b.   Briefly explain Make (or) Buy decisions.   (06 Marks)
      c.   Explain the different approaches to SCM.   (06 Marks)

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