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06AL51

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Fifth Semester B.E. Degree Examination, December 2011
Management and Entrepreneurship

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions, selecting at least TWO questions from each part.***

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

PART – A

1 a. Define the management. Explain the functions of management. **(10 Marks)**
b. Distinguish between the administration and management. **(05 Marks)**
c. Briefly explain the contributions of F.W. Taylor to the scientific management. **(05 Marks)**

2 a. Explain the importance of planning. Mention its limitations. **(06 Marks)**
b. Define the objectives. Discuss the characteristics of business objectives. **(06 Marks)**
c. What are planning premises? Explain the classification of planning premises, with examples. **(08 Marks)**

3 a. Define the organization. Explain the purpose of an organization. **(05 Marks)**
b. Describe a matrix organization, with chart. Mention its advantages and disadvantages. **(06 Marks)**
c. What is staffing? Explain its importance. **(05 Marks)**
d. Distinguish between:
i) Authority and responsibility
ii) Selection and recruitment. **(04 Marks)**

4 a. Explain the Herzberg's two – factor theory of motivation. **(08 Marks)**
b. What is communication? Describe its importance. **(06 Marks)**
c. State and explain the steps involved in the controlling process. **(06 Marks)**

PART – B

5 a. Briefly explain the characteristics of an entrepreneur. **(06 Marks)**
b. Discuss the evolution and growth of industrial entrepreneurship in India. **(08 Marks)**
c. Explain the stages in entrepreneurial process. **(06 Marks)**

6 a. Define small scale industry. Discuss its important characteristics. **(06 Marks)**
b. Explain the role of SSIs in the economic development. **(05 Marks)**
c. Briefly explain the major observations of new small enterprise policy 1991. **(05 Marks)**
d. List the supporting agencies of government for SSIs. **(04 Marks)**

7 a. Explain the objectives and functions of TECSOK and KIADB. **(08 Marks)**
b. What is SIDBI? Discuss the various types of assistances the SIDBI provides to small enterprises. **(04 Marks)**
c. Explain: i) DIC ii) SISI. **(08 Marks)**

8 a. Define the project. Discuss the need and significance of a project report. **(06 Marks)**
b. Explain the guidelines given by planning commission to formulate a project report. **(08 Marks)**
c. Discuss the common errors in a project report. **(06 Marks)**

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06ME52

Fifth Semester B.E. Degree Examination, December 2011
Design of Machine Elements – I

Time: 3 hrs. Max. Marks:100

Note: ***1. Answer any FIVE full questions, selecting at least TWO questions from each part.***
2. Use of design hand book is permitted.
3. Missing data may be suitably assumed.

PART – A

1 a. Briefly explain the important mechanical properties of metals. **(06 Marks)**

b. Define standards and codes. **(04 Marks)**

c. A cantilever beam of circular cross section is loaded as shown in Fig.Q.1(c). Determine the maximum and minimum normal stresses and maximum shear stress at point A and B. **(10 Marks)**

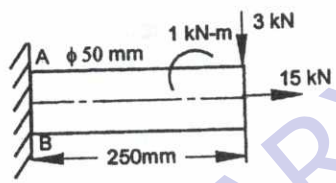

Fig.Q.1(c)

2 a. Briefly explain maximum normal stress theory and maximum shear stress theory. State when they are used. **(06 Marks)**

b. Give any three examples of stress raisers and show how the stress concentration can be reduced in these cases. **(07 Marks)**

c. An unknown weight falls through 10mm on a collar rigidly attached to the lower end of a bar 3m long and 600mm^2 in section. If the maximum instantaneous extension is 2mm, what is the corresponding stress and the value of unknown weight? Take E = 200 GPa. **(07 Marks)**

3 A cold drawn steel cantilever member shown in Fig.Q.3 is subjected to a transverse load at its end that varies from 50 N to 150 N and an axial load varies from 100N (compression) to 500 N (tension). Determine the required diameter at the change of section for infinite life using a factor of safety of 2. The material has an ultimate strengths of 550 MPa and yield strength of 470 Mpa. Take a notch sensitivity factor for the fillet as 0.9. **(20 Marks)**

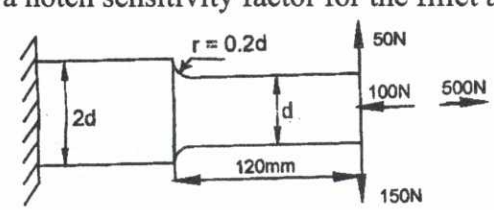

Fig.Q.3

4 a. A bolt carries a tensile load of 8 kN and tightening load is 3 kN. It is made of steel having allowable tensile stress of 120 Mpa. Find its size. A soft copper gasket is used. **(06 Marks)**

b. A bracket is bolted as shown in Fig.Q.4(b). All the bolts are identical and have yield strength of 400 Mpa. Determine the size of bolts assuming factor of safety as 3. **(14 Marks)**

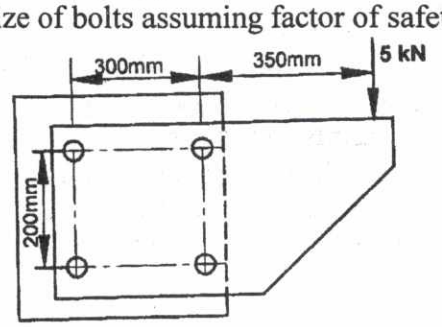

Fig.Q.4(b)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
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PART – B

5 A horizontal piece of commercial shafting is supported by two bearings 1.5m apart. A keyed gear, 20° involute and 175 mm diameter, is located 400 mm to the left of the right bearing and is driven by a gear directly behind it. A 600 mm diameter pulley is keyed to the shaft 600 mm to the right of the left bearing and drives a another pulley by means of a belt drive inclined at 45° to the horizontal below the shaft and in front of it. The tension ratio of the belt is 3:1. The drive transmits 45 kW at 330 rpm cw when viewed from right side. The allowable shear stress for shaft material is 40 Mpa. The combined shock and fatigue factors for torsion and bending are 1.5 and 2.0 respectively. Draw the moment diagrams and calculate the necessary shaft diameter. **(20 Marks)**

6 a. Design and sketch the assembly of a cotter joint to connect two rods, subjected to an axial pull of 600 kN. The material selected for the joint has the following permissible stresses : 300 MPa in tension, 220 MPa in shear and 450 MPa in crushing. **(12 Marks)**

b. A cast iron protective type flange coupling is used to connect two shafts of 80 mm diameter. The shaft runs at 250 rpm and transmits a torque of 4300 N-m. The permissible shear stress for shaft and bolt materials is 50 MPa and permissible shear stress for flange is 8 MPa. Design the bolts, hub and flange for the coupling. **(08 Marks)**

7 a. Design a triple riveted longitudinal double strap butt joint with unequal straps for a boiler. The inside diameter of the congest. Course of the drum is 1.3 m. The joint is to be designed for a steam pressure of 2.4 MPa. The working stresses to be used are : σ_t = 77 MPa, τ = 62 MPa and σ_c = 120 MPa. Assume the efficiency of the joint as 81%. The longer pitch in outer row is twice the pitch In inner row and the inner rows are zig – zag. **(12 Marks)**

b. A bracket as shown in Fig.Q.7(b) carries a load of 10 kN. Find the size of the weld if the allowable shear stress is not to exceed 80 MPa. **(08 Marks)**

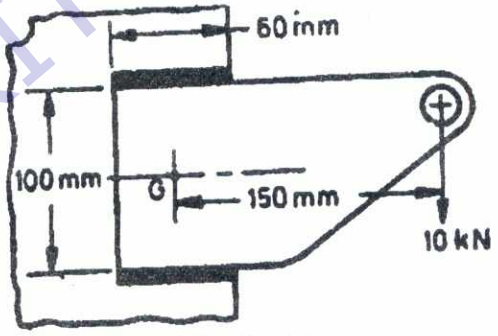

Fig.Q.7(b)

8 a. Explain self locking and overhauling in power screws. **(06 Marks)**

b. A sluice gate weighing 600 kN is raised by means of two square threaded screws. The coefficient of collar friction is 0.03 and coefficient of thread friction is 0.14. The outer diameter of the collar is 100 mm and inner diameter is 50 mm. The gate is raised at a rate of 0.6 m/min. The permissible stress of the screws material in tension and compression is 80MPa and that in shear is 60 MPa. Design the screw and nut, check for the stresses induced. Also determine the speed of screw and power required at the motor to raise the gate, assuming an efficiency of 75% for reduction drive. The permissible bearing pressure is 15 MPa. **(14 Marks)**

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06ME53

Fifth Semester B.E. Degree Examination, December 2011
Dynamics of Machines

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions, selecting at least TWO questions from each part.***

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

PART – A

1 a. State the conditions for static equilibrium of a body, subjected to a system of i) two forces ii) three forces. **(04 Marks)**

b. A four bar mechanism under the action of two external forces is shown in the Fig.Q1(b). Determine the torque to be applied on the link AB for static equilibrium. The dimensions of the links are AB = 50mm, BC = 66mm, CD = 55mm, CE = 25mm, CF = 30mm, AD = 100mm, angle BAD = 60°, P = 500N and Q = 600N. **(16 Marks)**

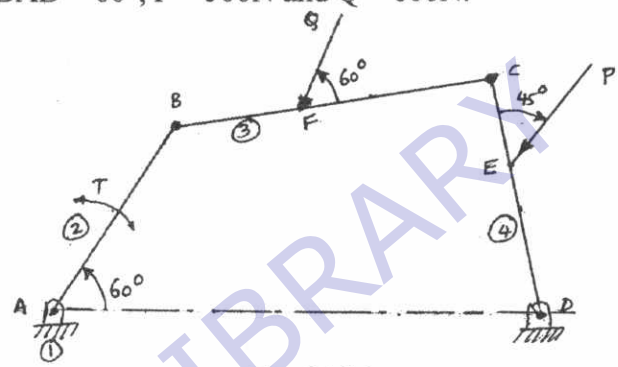

Fig.Q1(b)

2 a. Define coefficient of fluctuation of speed and coefficient of fluctuation of energy **(05 Marks)**

b. The turning moment diagram of a multicylinder engine has been drawn to a scale of 1mm = 500Nm torque and 1mm to 6° of crank displacement. The intercepted areas between output torque curve and mean resistance line, taken in order from one end, in square millimeter are : –30, +410, –280, +320, –330, +250, –360, +280 and –260. If the mean speed is 800rpm and fluctuation of speed is not to exceed 2% of mean speed, determine i) mass of the flywheel ii) mean diameter of the flywheel, if the centrifugal stress in the flywheel rim is limited to 8 N/mm^2. iii) Dimensions of the rectangular cross-section of the rim by taking the width of the rim as 5 times the thickness. The density of cast iron is 7200kg/mm^3. Neglect the effect of hubs and arms of the flywheel. **(15 Marks)**

3 a. State the laws of dry friction. **(05 Marks)**

b. Derive an expression for the ratio of tensions in a flat belt drive. **(05 Marks)**

c. A 8mm thick belt is required to transmit 15kW running over a pulley at a speed of 15 metres per second. If the coefficient of friction between the belt and the pulley is 0.3 & the angle of lap is 180°, find the width of belt required. The maximum tension in the belt material is not to exceed 20 N/mm width of the belt. The density of belt material is 1000 kg/m^3. **(10 Marks)**

4 a. What do you mean by static balancing and dynamic balancing? **(05 Marks)**

b. A rotating shaft carries four masses A, B, C and D, which are radially attached to it, along the shaft axis. The mass centres are 40mm, 50mm, 60mm and 70mm respectively from the axis of rotation. The masses B,C and D are 60kg, 50kg and 40kg respectively. The angles of the masses C and D with respect to mass B are 90° and 210° in same sense, respectively. The planes containing B and C are 0.5m apart. For a complete balanced system, determine

i) The mass and angular position of mass A.

ii) The position of planes containing masses A and D. **(15 Marks)**

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PART – B

5 a. A single cylinder reciprocating engine has the following data:
Speed the engine = 120rpm; Stroke = 320mm ; Mass of reciprocating parts = 45kg ; Mass of revolving parts = 35kg at crank radius. If 60% of the reciprocating parts and all revolving parts are to balanced, find i) Balance mass required at radius of 300mm and ii) unbalanced force when the crank has turned 60° from the TDC. **(10 Marks)**

b. A 90° V engine has 2 cylinders, placed symmetrically. The two connecting rods operate a common crank. The length of connecting rods are 320mm each and crank radium is 80mm. The reciprocating mass per cylinder is 12kg. If the engine runs at 600rpm, determine the resultant primary and secondary forces. Also, find the maximum resultant secondary force. **(10 Marks)**

6 a. Define the following, with respect to the working of governors:
i) Sensitiveness ii) Isochronism iii) Hunting of governors
iv) Effort of a governor v) Stability of a governor **(10 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 begins to lift and 250mm, when the governor is at the maximum speed. Determine:
i) Range of speed, neglecting the sleeve friction.
ii) Range of speed, if the frictional force at the sleeve is 30N. **(10 Marks)**

7 a. Derive an expression for the gyroscopic couple. **(05 Marks)**

b. A ship is propelled by a turbine rotor of mass 2000kg and has a speed of 1800 rpm. The rotor has a radius of gyration of 0.35m and rotates in the clockwise direction, when viewed from the bow. Determine the gyroscopic couple and its effect when the ship
i) turns right at a radius of 200m with a speed of 15 knots (1 knot = 1.853km/hr)
ii) pitches with bow raising, with an angular velocity of 0.08 rad/sec.
iii) rolls at angular velocity of 0.1 rad/sec. **(15 Marks)**

8 A straight sided cam has both sides tangential to the base circle, with a radius of 25mm. The total angle of action = 120°. A lift of 10mm is given to the roller 20mm diameter, the centre of which moves along a straight line, passing through the axis moves along a straight line passing through the axis of the cam. The camshaft has a speed of 240 rpm. Determine
i) The radius of the nose arc.
ii) The velocity and acceleration of the roller centre when the roller is in contact with the cam at the end of one of the straight flanks adjacent to the nose.
iii) The acceleration of roller centre at the peak. **(20 Marks)**

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06ME54

Fifth Semester B.E. Degree Examination, December 2011
Energy Engineering

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions, selecting at least TWO questions from each part.***

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

PART – A

1 a. Explain the traveling grate stoker, with a neat sketch. **(06 Marks)**

b. What is pulverized coal? Discuss the advantages and disadvantages of pulverized coal. **(06 Marks)**

c. Explain the pneumatic ash handling system, with a neat sketch. **(08 Marks)**

2 a. Explain the Velox boiler, with a neat sketch. **(08 Marks)**

b. Explain with sketches, any two boiler accessories. **(06 Marks)**

c. A chimney is 28 m high and the temperature of hot gases inside it is 320°C. The temperature of outside air is 27°C. The furnace is supplied with 15 kg of air per kg of coal burnt. Calculate : i) Draught produced in mm of water ii) Draught height in metres of hot gases. **(06 Marks)**

3 a. Draw the layout of a diesel power plant. **(06 Marks)**

b. Explain different methods of starting the diesel engine. **(06 Marks)**

c. Why the cooling and cleaning of lubricating oil is necessary? Explain, with a sketch, the lubricating system used for a medium capacity diesel power plant. **(08 Marks)**

4 a. Explain clearly storage, pondage and pumped storage hydro-electric power plants. **(06 Marks)**

b. Explain the necessity of using the components like surge tank, gates and valves in hydel power stations. **(06 Marks)**

c. The following run-off data is obtained for ten months, at a particular site of a river:

Months	1	2	3	4	5	6	7	8	9	10
Discharges	200	100	20	20	260	180	40	280	60	120

Discharges are given in millions of cu-m per month. Explain the procedure to determine size of the reservoir and hence find its numerical value. **(08 Marks)**

PART – B

5 a. Explain the principle of release of nuclear energy by fussion and fission reactions. **(06 Marks)**

b. Explain the sodium-graphite nuclear reactor, with a neat sketch. **(08 Marks)**

c. Write short notes on radiation hazards and disposal of radioactive wastes. **(06 Marks)**

6 a. Explain the low temperature solar thermal power generation, with a neat sketch. **(08 Marks)**

b. Explain the method of harnessing wind energy, using the horizontal axis wind machine, with a neat sketch. **(06 Marks)**

c. The incident beam of sunlight has a power density of 0.9 kW/m^2 in the direction of the beam. The angle of incidence θ is 60°. Calculate the power collected by the surface, having a total flat area of 100 m^2. **(06 Marks)**

7 a. Explain the method of harnessing tidal energy using the double basin system. **(08 Marks)**

b. Explain the ocean thermal energy conversion system, with a neat sketch. **(08 Marks)**

c. Write a note on scope of geothermal energy. **(04 Marks)**

8 a. Differentiate biomass and biogas. **(04 Marks)**

b. Explain the principle of operation of a KVIC biogas digester, with a neat sketch. **(10 Marks)**

c. Write a note on photosynthesis and anaerobic fermentation. **(06 Marks)**

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06ME55

Fifth Semester B.E. Degree Examination, December 2011
Turbomachines

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions, selecting atleast TWO questions from each part.***

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
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PART - A

1 a. Explain with a neat sketch, the principal components of a turbomachine. **(06 Marks)**

b. Define specific speed of a turbine and derive it. **(06 Marks)**

c. Using Buckingham's method, prove that the wave resistance of a ship is given by $V = \sqrt{gH}\ \phi\ [\ d/H,\ \mu/\rho VH\ ]$, where H = head of liquid over the orifice, d = diameter of the orifice, μ = viscosity of the liquid, L = linear dimension, V = velocity of the ship, ρ = density of the liquid, ϕ = a functional relation. **(08 Marks)**

2 a. An inward flow radial reaction turbine has axial discharge at the outlet, with an outlet blade angle of 45^0. The radial velocity of flow is constant. The blade speed at the inlet is twice that at the exit. Express the energy transfer per unit mass and degree of reaction in terms of inlet nozzle angle α_1. Assume $V_m = \sqrt{2g_c}$. At what values of α_1 will the degree of reaction be zero and unity? What are the corresponding values of energy per unit mass? **(10 Marks)**

b. In a mixed flow compressor, handling air at 16000 RPM, the stagnation temperatures of air at the compressor inlet and outlet are respectively 27^0C and 215^0C. The absolute velocity of the air at the rotor inlet is axial while at the exit the tangential component of the absolute velocity is 0.93 times the tangential impellor speed. If the mass flow rate of air through the impeller is 15kg/s and specific heat assumed to be constant, find the impellor diameter and total power input. **(10 Marks)**

3 a. In a turbomachine, prove that the maximum utilization factor is given by **(10 Marks)**

$$\epsilon_{max} = \frac{2\phi.\cos\alpha_1}{1+2\phi R\ \cos\alpha_1}$$, where ϕ = speed ratio , R = degree of reaction , α_1 = nozzle angle.

b. At a stage of an impulse turbine, the mean blade dia is 0.75m, its rotational speed being 3500 RPM. The absolute velocity of the fluid discharging from a nozzle inclined at 20^0 to the plane of wheel, is 275m/sec. If the utilization factor is 0.9 and the relative velocity of the fluid at the rotor exit is 0.9 times that at the inlet, find the inlet and exit rotor angles. Also find the power output from the stage for a mass flow rate of 2kg/s and axial thrust on the shaft. **(10 Marks)**

4 a. Define and explain i) static state ii) stagnation state for a fluid. **(04 Marks)**

b. What is a reheat factor? Show that the reheat factor is greater than unity. **(06 Marks)**

c. Compressor A has total pressure ratio of 4, a total head adiabatic efficiency of 86% and an exit velocity of 130m/s at the point of measurement. Compressor B has static pressure of 6 bar, a static temperature of 245^0C and a velocity of 100m/s at the point of measurement. Which compressor has the best polytropic efficiency? Assume the ambient temperature and pressure are 15^0C and 1 bar respectively. **(10 Marks)**

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PART - B

5 a. Explain the phenomenon of i) surging ii) choking in the centrifugal compressor. **(06 Marks)**

b. What is the necessity of providing the pre – whirl at the inlet of the centrifugal compressor? **(02 Marks)**

c. Find the number of stages of axial flow compressor with symmetric blades $\beta_1 = 40°C$ and $\beta_2 = 60°C$ needed to produce a total pressure rise from 1 bar to 4 bar. The blade height is 3 cm and the rotor mass diameter 10cm. The speed of the machine is 24000 rpm. The stage efficiency is 82%. Assume the air enters at 30^0C. What will be the actual pressure rise? **(12 Marks)**

6 a. Derive an expression for H – Q characteristic curve for a centrifugal pump. Discuss the H – Q curve for the forward, radial and backward curved vanes. **(08 Marks)**

b. What is meant by cavitation in centrifugal pumps? What are the causes of cavitation? **(04 Marks)**

c. A centrifugal pump has straight (radial) vanes from inner radius 8cm to outer radius 24cm. The width of the impeller is constant and 6cm between the shrouds. The speed is 1500 RPM and the discharge is 250 lit/s. Find the outlet pressure if the inlet pressure = 0.8kPa and water flow is outward. **(08 Marks)**

7 a. Define and explain i) nozzle efficiency ii) diagram efficiency iii) stage efficiency iv) compounding of steam turbines. **(08 Marks)**

b. In a curtis stage turbine, steam enters the first row of moving blades at 700m/s. The outlet angles of the nozzle, the first rotor blade, the stator blade and the last rotor blade respectively are 17^0, 23^0, 19^0 and 37^0. The mean blade speed is 160m/sec, the blade coefficient is 0.93 for all blades and steam flow rate is 162 kg/min. Estimate i) power developed in the stage ii) rotor efficiency iii) axial thrust and iv) tangential force on the blades. **(12 Marks)**

8 a. Show that for maximum utilization, the speed of the wheel is equal to half the speed of jet. **(08 Marks)**

b. Explain the functions of a draft tube. **(04 Marks)**

c. A single jet pelton wheel produces 20MW, operating against a head of 500m. If the overall efficiency is 0.85 and specific speed (SI units) is 12, estimate the jet and wheel diameter. Assume speed ratio $\phi = 0.46$. **(08 Marks)**

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06ME56

Fifth Semester B.E. Degree Examination, December 2011

Engineering Economics

Time: 3 hrs. Max. Marks:100

Note: 1. ***Answer any FIVE full questions, selecting at least TWO questions from each part.***
2. ***Use of compounding interest factors tables is permitted.***

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

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PART – A

1 a. Differentiate between tactics and strategy. **(05 Marks)**
b. Explain the law of returns. **(05 Marks)**
c. State and explain the reasons for charging interest from the borrower's point of view and lender's point of view with cash flow diagram (CFD). **(10 Marks)**

2 a. State and explain the conditions of present worth comparisons. **(08 Marks)**
b. What nominal interest rate compounded monthly yields an effective annual rate of 19.56 percent? **(04 Marks)**
c. Machine 'A' has first cost of Rs.9000, has no salvage value at the end of 6 year useful life, and annual operating cost of Rs.5000. The machine 'B' costs Rs.16000 new and has an expected resale value of Rs.4000 at end of its 9 year economic life. Operating costs for machine 'B' are Rs.4000 per year. Compare the two alternatives on the basis at their present worths, using the repeated projects assumption at 10 percent annual interest rate with CFD. **(08 Marks)**

3 a. Briefly explain the following terms as applied to assets life :
i) Service life ii) Accounting life iii) Economic life. **(10 Marks)**
b. A stand by electric power generator was purchased 6 years ago for Rs.8000, at that time it was expected that the equipment would be used for 15 years and would have a salvage value of 10 percent of the first cost. The generator is no longer needed and is to be sold for Rs.2500. Using an interest rate of 15 percent, determine the difference between the anticipated and actual equivalent annual capital costs. **(10 Marks)**

4 a. What is depreciation? List the causes of depreciation. **(04 Marks)**
b. A machine purchased for Rs.80000. Its estimated life is 10 years and its scrap value is Rs.20000. If the depreciation is charged according to declining balance method, determine the percentage by which the value of machine should be reduced every year and also determine amount of depreciation fund and book-value at the end of 5^{th} year. **(08 Marks)**
c. In 2004 a small apartment was purchased for Rs.2,00,000. Receipts from rent have received Rs.30,200 a year; taxes maintenance and repair costs have totaled Rs.8620 annually. The owner intends to hold the property until she retires in 2014. If at that time property sells for Rs.2,00,000, what rate of return will be obtained on the investment? **(08 Marks)**

PART – B

5 a. Explain briefly the standard cost and the marginal cost. **(04 Marks)**
b. Explain briefly the components of cost. **(06 Marks)**

5 c. A factory making CFL tubes in batches 1000. The direct material cost of these 1000 pieces is Rs.1600 and direct labour cost Rs.2000. The factory on cost is 35 percent of total material and labour cost. Selling and distribution overhead charges are 20 percent of factory cost. If the management wants to make a profit of 20 percent on gross cost, determine the selling price of each tube. **(10 Marks)**

6 a. Differentiate between profit and loss account and balance sheet. **(08 Marks)**

b. Prepare the profit and loss account for the given data. Find the net profit for ordinary shares, profit before taxes and reserves surplus at 31st March 2010.

	Rs. (lakhs)
Sales (cash)	2,80,000
Credit sales	11,20,000
Cost of goods sold	8,40,000
Selling and administrative expenses	1,40,000
Depreciation	98,000
Interest on long term loan	42,000
Taxes	1,40,000
Preferred dividend	17,000
Reserves and surplus at 1st April 2009	1,82,000
Dividend paid to equity shares	25,000

(12 Marks)

7 a. List and explain various financial ratios. **(12 Marks)**

b. What are the essentials of profit planning and financial planning? **(08 Marks)**

8 a. List the objectives of budget and budget control. **(08 Marks)**

b. Explain briefly :

i) Sales budget

ii) Production budget

iii) Master budget. **(12 Marks)**

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