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06AL51

Fifth Semester B.E. Degree Examination, June 2012
Management and Entrepreneurship

Time: 3 hrs.

Max. Marks:100

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

PART – A

- 1 a. Define management. Briefly discuss about the process of management. (08 Marks)
b. Distinguish between administration and management. (04 Marks)
c. List the 14 principles of administrative management and elaborate any two. (08 Marks)
- 2 a. Define planning and briefly explain its importance. (06 Marks)
b. Distinguish between policy and procedure. (04 Marks)
c. List and explain the steps in planning. Mention at least four limitations of planning. (10 Marks)
- 3 a. Discuss the meaning, importance and factors governing the span of management. (06 Marks)
b. List all the 16 principles of organizing. (04 Marks)
c. Define delegation. Brief about advantages and barriers of effective delegation. (10 Marks)
- 4 a. Define direction and brief about the main five requirements of effective direction. (05 Marks)
b. Define motivation. Show the motivation process by means of diagram. (05 Marks)
c. List all the six theories of motivation and discuss about Maslow's need hierarchy theory. (05 Marks)
d. List and explain the steps in control process. (05 Marks)

PART – B

- 5 a. Define an entrepreneur. Briefly discuss about types of entrepreneurs. (10 Marks)
b. Explain Entrepreneur Development Programme (EDP). Mention all its models. (05 Marks)
c. Distinguish between entrepreneur and intrapreneur. (05 Marks)
- 6 a. List and briefly discuss about the steps to start a SSI. (12 Marks)
b. Write a brief note on government policies towards SSI, its objectives and classifications. (08 Marks)
- 7 a. Write a note on the aims and objectives of KIADB. (05 Marks)
b. Brief about important activities of KSSIDC. (05 Marks)
c. Write short note on KSIMC. (05 Marks)
d. Write a note on TECSOK. (05 Marks)
- 8 a. Define project. Discuss briefly about project classification. (06 Marks)
b. List out common errors in project report. Explain briefly. (08 Marks)
c. List at least five network techniques. List the advantages and limitations of PERT. (06 Marks)

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Fifth Semester B.E. Degree Examination, June 2012
Design of Machine Elements – I

Time: 3 hrs.

Max. Marks:100

- Note: 1. Answer FIVE full questions, selecting at least TWO questions from each part.**
2. Use of machine design data hand book is permitted.

PART – A

- 1 a. Identify the following engineering materials giving specifications: (04 Marks)
 i) FG350 ii) FeE300 iii) C35Mn75 iv) X20Cr18Ni2
- b. A point in a structural member is subjected to plane state of stress as shown in Fig. Q1 (b). Determine the following : (10 Marks)
 i) Normal and tangential stress intensities at an angle of $\theta = 45^\circ$.
 ii) Principal stresses σ_1 and σ_2 and their directions.
 iii) Maximum shear stress and its plane.
- c. Determine the required thickness 'b' of the steel bracket at section A – A, when loaded as shown in Fig. Q1 (c) in order to limit the maximum tensile stress to 70 MPa. (06 Marks)

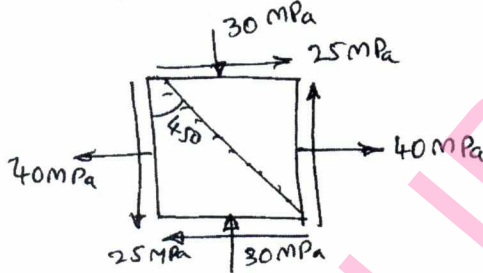


Fig. Q1 (b)

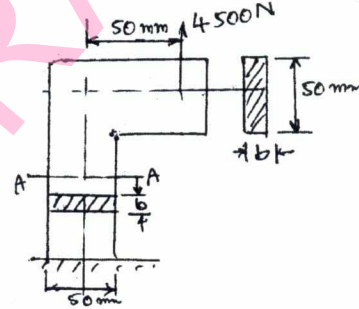


Fig. Q1 (c)

- 2 a. Explain the following theories of failure and state when they are used: (05 Marks)
 i) Maximum principal stress theory.
 ii) Maximum shear stress theory.
- b. A round stepped shaft is made of brittle material cast iron FG 260 and subjected to a bending moment of 15 N-m as shown in Fig. Q2 (b). The stress concentration factor at the fillet is 1.5. Determine the following : (10 Marks)
 i) step diameter ii) magnitude of stress at fillet
 iii) factor of safety.
- c. Derive an expression for impact stress in a axial bar of cross section 'A' and length 'L' due to the impact of a load 'W' falling from a height 'h' on the bar, as shown in Fig. Q2 (c). (05 Marks)

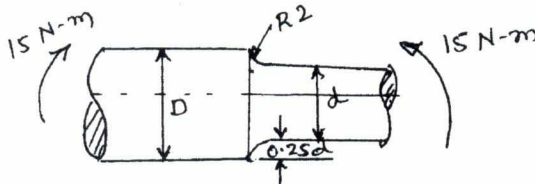


Fig. Q2 (b)

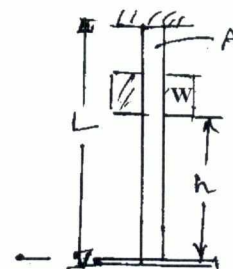
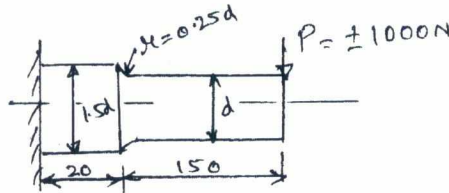
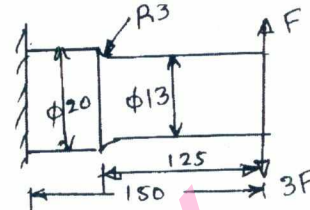


Fig. Q2 (c)

- 3 a. A Cantilever beam made of 35C8 steel ($\sigma_{ut} = 540$ MPa) is subjected to a completely reversed load of 1000 N as shown in Fig. Q3 (a). The notch sensitivity factor 'q' at the fillet can be taken as 0.85 and expected reliability is 90%. Determine the diameter of the beam for a life cycle of 10000 cycles. (10 Marks)

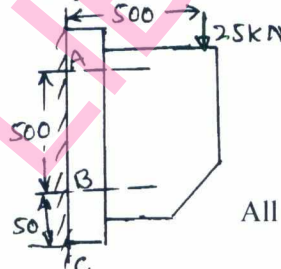


All dimensions in mm
Fig. Q3 (a)



All dimensions in mm
Fig. Q3 (b)

- b. A cantilever beam made of cold drawn C30 steel ($\sigma_{ut} = 550$ MPa and $\sigma_{yt} = 470$ MPa) subjected to a load which varies from $-F$ and $3F$, as shown in Fig. Q3 (b). Determine the maximum load that this member can withstand for an indefinite life using a factor of safety '2'. The stress concentration factor effect has to be considered with notch sensitivity of 0.9. Analyse at the fillet section only. (10 Marks)
- 4 a. Write a note on bolts of uniform strength. (06 Marks)
- b. A wall bracket is attached to a wall by means of 4 identical bolts, two at A and two at B, as shown in Fig. Q4 (b). Assuming that the bracket is held against the wall and prevented from tipping about C, by all four bolts, and using an allowable stress in the bolts as 35 MPa, determine the size of bolts on the basis of maximum principal stress theory, selecting ISO, metric threads of not more than 1.5 mm pitch. (14 Marks)



All dimensions in mm

Fig. Q4 (b)

PART – B

- 5 A transmission shaft running at 500 rev/min is supported on bearings 800 mm apart. Twenty K.W power is supplied to the shaft through a 450 mm dia pulley which is located 400 mm to the right of right bearing and receives power from a motor placed directly below the shaft. The shaft further transmits this power to a spur gear of 300 mm pitch circle diameter, which is located at 400 mm to the right of left bearing. The gear has 20° involute teeth and ratio of belt tensions is 3:1. The gear drives another gear which is placed directly above the shaft. The gear and pulley are keyed to the shaft. Selecting the material as steel having $\sigma_{ut} = 700$ MPa and $\sigma_{yt} = 460$ MPa as per ASME code, determine the diameter of shaft. Assume shock factors for bending and torsion as 1.5. (20 Marks)
- 6 a. The standard cross-section of a flat key, which is fitted on a 50 mm diameter shaft is 16×10 mm. The key is transmitting 475 N-m torque from the shaft to the hub. The key is made of commercial steel for which yield strength in both tension and compression may be taken as 230 N/mm². Determine the minimum length of key required if the factor of safety is 3. (06 Marks)

- 6 b. It is required to design a rigid type flange coupling to connect two shafts. The input shaft transmits 37.5 KW at 180 rev/min to the output shaft through the coupling. The starting torque is 50% higher than the rated torque. Select material for flanges as cast iron FG200 ($\sigma_{ut} = 200$ MPa) with a factor of safety 6, material for shafts as carbon steel with $\sigma_{yt} = 380$ MPa, with a factor of safety 2.5, material for key and bolts may be taken as steel with $\sigma_{yt} = 400$ MPa (in tension) and $\sigma_{yc} = 600$ MPa (in compression) respectively and a factor of safety 2.5. Design the coupling and give major dimensions. (14 Marks)
- 7 a. Design a double riveted butt joint with two cover plates for the longitudinal seam of a boiler shell 1.5 m in diameter subjected to a steam pressure of 0.9 MPa. Assume joint efficiency as 75%. Allowable stress in tension for the plate is 83 MPa in compression 138 MPa and shear stress in rivets may be assumed as 55 MPa. Assume chain riveted joint. (10 Marks)
- b. A circular shaft 50 mm in diameter is welded to a support by means of a fillet weld and loaded as shown in Fig. Q7 (b). Determine the size of weld if the permissible shear stress in the weld is limited to 100 MPa. (10 Marks)



Fig. Q7 (b)

- 8 a. Derive an expression for the maximum efficiency of a square threaded screw and thus show that for self locking screw the efficiency is always less than 50%. (06 Marks)
- b. The lead screw of a lathe has single start ISO metric trapezoidal threads of 52 mm nominal diameter and 8 mm pitch. The screw is required to exert an axial force of 2 kN in order to drive the tool carriage during turning operation. The thrust is carried on a collar of 100 mm outer diameter and 60 mm inner diameter. The values of co-efficient of friction at the screw threads and collar are 0.15 and 0.12 respectively. The lead screw rotates at 30 rev/min. Calculate :
- The power required to drive the screw.
 - The efficiency of the screw.

(14 Marks)

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06ME53

Fifth Semester B.E. Degree Examination, June 2012
Dynamics of Machines

Time: 3 hrs.

Max. Marks:100

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

PART – A

- 1 a. Explain static force analysis of two and three force members. (06 Marks)
b. Explain principle of virtual work application to static force analysis. (06 Marks)
c. Explain the procedure for static force analysis of four bar mechanism. (08 Marks)
- 2 a. Explain turning moment diagrams of 4-stroke IC engine and multi-cylinder engine. (06 Marks)
b. A three cylinder single acting engine has its cranks set equally at 120° and it runs at 600 rpm. The torque crank angle diagram for each cycle is a triangle for the power stroke with a maximum torque of 90 N-m at 60° from dead centre of corresponding crank. The torque on the return stroke is sensibly zero. Determine : i) Power developed ; ii) Coefficient of fluctuation of speed ; iii) Coefficient of fluctuation of energy and iv) Maximum angular acceleration of the flywheel. Take mass of flywheel is 12 kg and radius of gyration of 80 mm. (14 Marks)
- 3 a. Derive an expression of total friction torque for a pivot bearing subjected to uniform pressure. (08 Marks)
b. A pulley is driven by a flat belt, the angle of lap being 120° . The belt is 100mm wide, 6mm thick and density of 1000 kg/m^3 . If the coefficient of friction is 0.3 and the maximum stress in the belt is not to exceed 2 MPa, find the greatest power which the belt can transmit and the corresponding speed of the belt. (12 Marks)
- 4 a. Explain balancing of several masses rotating in the same plane. (06 Marks)
b. Four masses A, B = 10 kg, C = 5 kg, D = 4 kg are placed at radius 100, 125, 200 and 150mm respectively. The distance between the planes are 600mm. Find the required mass A and the relative angular positions of the four masses to achieve complete balance. (14 Marks)

PART – B

- 5 a. Check the conditions of primary and secondary balancing of 2-cylinder and 3-cylinder in line engine. (06 Marks)
b. In an in line six cylinder engine working on two stroke cycle, the cylinder centre lines are spaced at 600 mm. In the end view, the cranks are 60° apart and in the order 1-4-5-2-3-6. The stroke of each piston is 400mm and the connecting rod length is 1m. The rotating and reciprocating mass is 300 kg/cylinder and operating speed is 300 rpm. Examine the engine for the balance of primary and secondary forces and couples. (14 Marks)

- 6 a. Explain sensitiveness, isochronism, effort and power of a governor. (08 Marks)
b. In a spring loaded Hartnell governor, the extreme radii of rotation of the balls are 80mm and 120mm. The ball arm and sleeve arm of the bell crank lever are equal in length. The mass of each ball is 2 kg. If the speeds at the two extreme positions are 400 and 420 rpm. Find :
i) the initial compression of the central spring and ii) the spring stiffness. (12 Marks)
- 7 a. Explain the effect of gyroscopic couple on an aeroplane. (06 Marks)
b. A four-wheeled vehicle of mass 2500 kg runs round a track of radius 30m at 24 km/hr. The distance between the wheels of rear end is 1.5m, diameter of each wheel is 0.75m. The direction of rotation of wheels and engine are opposite and the speed ratio of engine to wheel is 5. The $I_W = 18 \text{ kg m}^2$, $I_E = 12 \text{ kg m}^2$ and centre of gravity of the vehicle is 0.9m above the ground. Determine the gyroscopic couples and reaction at outer and inner wheel. (14 Marks)
- 8 A symmetrical circular cam operating a flat-faced follower has the following particulars :
Minimum radius of the cam = 30mm; nose radius = 5mm ; total lift = 20mm ; angle of lift = 75° and operating speed = 600 rpm. Find : i) The principal dimensions of the cam and ii) the acceleration of the follower at the beginning of the lift, at the end of contact with the circular flank, at the beginning contact of the nose and at the apex of the nose. (20 Marks)

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06ME54

Fifth Semester B.E. Degree Examination, June 2012
Energy Engineering

Time: 3 hrs.

Max. Marks:100

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

PART – A

1.
 - a. Draw a line diagram of pneumatic ash handling system. Explain the difficulties encountered in its design and operation. (08 Marks)
 - b. With a neat sketch, explain the working of chain grate stoker, state the disadvantages of it. (09 Marks)
 - c. How are steam power plants classified? (03 Marks)

2.
 - a. Explain with neat sketch, the construction and working of Velox high pressure boiler. What are all its advantages? (10 Marks)
 - b. Determine the height and diameter of the chimney used to produce a draught for a boiler which has an average coal consumption of 1800 kg/h and flue gases formed per kg of coal fired are 14 kg. The pressure losses through the system are given below. Pressure loss in fuel bed = 7mm of water, pressure loss in boiler flue = 7mm of water, pressure loss in bends = 3mm of water, pressure loss in chimney = 3mm of water. Pressure head equivalent to velocity of flue gases passing through the chimney = 1.3 mm of water. The temperatures of ambient air and flue gases are 35°C and 310°C respectively. Assume actual draught is 80% of theoretical one. (10 Marks)

3.
 - a. Explain the necessity of the cooling system in a diesel engine. With the help of neat diagram explain the working principle of thermostatic cooling. (09 Marks)
 - b. What are the applications of diesel electric power plant? (06 Marks)
 - c. Name the essential components of a diesel electric plant. (05 Marks)

4.
 - a. What is a spillway? Why are spillways required? What are the different types of spillways? (10 Marks)
 - b. The run off data of a river at a particular site is tabulated in the following table :

Month	Mean discharge (millions of cu.m.)	Month	Mean discharge (millions of cu.m.)
January	- 30	July	- 80
February	- 25	August	- 100
March	- 20	September	- 110
April	- 0	October	- 65
May	- 10	November	- 45
June	- 50	December	- 30

- i) Draw the hydrograph and find the mean flow.
- ii) Draw flow duration curve.
- iii) Find the power developed if the head available is 90m and the overall efficiency of generation is 86 percent. Assume each month f 30 days. (10 Marks)

PART – B

- 5 a. Classify nuclear reactors used. (04 Marks)
b. With neat sketch, explain the working of Pressurized Water Reactor (PWR), and discuss its advantages. (08 Marks)
c. Draw a neat diagram of breeder reactor and list out its advantages and disadvantages. (08 Marks)
- 6 a. Explain with the help of neat sketch a solar pond electric power plant. (07 Marks)
b. What is a photovoltaic cell? (04 Marks)
c. A 10m/sec wind is at 1 standard atm pressure at 15°C temperature. Calculate : i) the total density in the wind stream ; ii) maximum obtainable power density ; iii) a reasonable obtainable power density in W/m^2 and iv) total power produced (in kW) if the turbine diameter is 120m. Assume $\eta = 40\%$. (06 Marks)
d. Name basic components of a wind electric system. (03 Marks)
- 7 a. Explain with neat sketch Rankine cycle OTEC plant. (08 Marks)
b. How the power can be obtained from tides? How the tidal plants are classified? (05 Marks)
c. With a neat sketch, explain the working of “flash steam open type system” geothermal plants. (07 Marks)
- 8 a. How are the gasifiers classified? With a schematic diagram, explain the working of down drat gasifier. (10 Marks)
b. Write short notes on :
i) Anaerobic fermentation
ii) Photosynthesis. (10 Marks)

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06ME55

Fifth Semester B.E. Degree Examination, June 2012
Turbomachines

Time: 3 hrs.

Max. Marks:100

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

PART – A

1.
 - a. Explain any six major differences between turbomachines and positive displacement machines. (06 Marks)
 - b. Define specific speed of a pump. Derive the expression for specific speed for a pump. (06 Marks)
 - c. Two geometrically similar pumps are running at the same speed of 1000 rpm. One pump has an impeller diameter of 0.3 m and lifts water at rate of 20 l/s against a head of 15 m. Determine the head and impeller diameter of other pump to deliver half the discharge. (08 Marks)

2.
 - a. Draw the inlet and exit velocity triangles for a turbine. Derive an expression for alternate form of Euler's turbine equation. (06 Marks)
 - b. In a radial inward flow turbomachine the radii and tangential velocity components at the inlet and outlet are 15 cm and 7.5 cm and 350 m/s and 60 m/s respectively. Find the torque due to 1 kg/s of mass flow. (06 Marks)
 - c. In an axial flow machine discharge blade angles are 20° each for both stator and rotor. The steam speed at the exit of fixed blade is 140 m/s. The ratio $\frac{V_{ax}}{U} = 0.7$ at entry and 0.76 at exit. Find the inlet blade rotor angle, power developed by the blade ring and degree of reaction for a mass flow rate of 2.6 kg/s. (08 Marks)

3.
 - a. Draw inlet and exit velocity triangles for an axial flow compressors. Show that degree of reaction for axial flow compressor is given by, $R = \frac{V_a}{2U}(\tan \gamma_1 + \tan \gamma_2)$. Assume axial velocity $V_{a_1} = V_{a_2} = V_a$ is constant. γ 's are air angles. (10 Marks)
 - b. For a 50% degree of reaction axial flow turbomachine, inlet fluid velocity is 230 m/s, outlet angle of guide blade is 30°, inlet rotor angle is 60° and outlet rotor angle is 25°. Find utilization factor, axial thrust and power output per unit mass flow. Axial velocity at inlet is different from axial velocity at exit. (10 Marks)

4.
 - a. Show that polytropic efficiency of a turbine is given by, $\eta_p = \frac{\frac{\gamma}{\gamma-1} \log_e \frac{T_2}{T_1}}{\log_e \frac{P_2}{P_1}}$, further show

$$\text{that stage efficiency is given by, } \eta_{st} = \frac{1 - \left(\frac{P_2}{P_1}\right)^{\frac{\gamma-1}{\gamma} \eta_p}}{1 - \left(\frac{P_2}{P_1}\right)^{\frac{\gamma-1}{\gamma}}}$$

Draw the corresponding T-S or h-s diagram.

(10 Marks)

- 4 b. An air compressor has 8 stages of equal pressure ratio of 1.3. The flow rate through the compressor and its overall efficiency are 45 kg/s and 80% respectively. If the conditions of air at entry are 1 bar and 35°C, determine i) state of compressed air at exit, ii) Polytropic efficiency, iii) stage efficiency. (10 Marks)

PART – B

- 5 a. Air at a temperature of 300 K flows in a centrifugal compressor running at 18000 rpm. Isentropic efficiency is 0.76, outer blade tip diameter is 550 mm, slip factor is 0.82, calculate i) temperature rise of air passing through compressor ii) static pressure ratio. Assume that the absolute velocity of air at inlet and exit of compressor is same. Take $C_p = 1005 \text{ J/kgK}$. (10 Marks)
- b. Briefly explain the following :
- Surging of compressors.
 - Slip factor or slip coefficient. (10 Marks)
- 6 a. The impeller of a centrifugal pump is 30 cm in diameter and 5 cm wide at outlet, vanes are curved backwards at 35°. Thickness of vanes occupy 20% of peripheral area and velocity of flow is constant. The discharge is 75 ℓ/s when rotating at 800 rpm. Calculate pressure rise in impeller and percentage of total work converted to kinetic energy. (10 Marks)
- b. Explain the following with mathematical expression:
- Manometric efficiency
 - Mechanical efficiency
 - Volumetric efficiency
 - Overall efficiency
 - Static head (10 Marks)
- 7 a. An axial flow single stage steam turbine has a mean rotor diameter of 55 cm and runs at 3300 rpm. The speed ratio is 0.45 and blade velocity co-efficient is 0.91. If the nozzle angle at the rotor inlet is 20°. Find
- Rotor blade angles assuming axial exit.
 - Draw the inlet and exit velocity triangles.
 - Power output per unit mass flow rate.
- Assume absolute velocity at inlet to be 211 m/s. (10 Marks)
- b. Show that for a 50% degree of reaction axial flow reaction turbine, the blade speed is given by $U = V_f(\cot\beta_2 - \cot\beta_1)$. Assume velocity of flow or axial velocity to be constant. β_2 is exit rotor blade angle and β_1 is inlet rotor blade angle. (10 Marks)
- 8 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 C_b is bucket velocity coefficient and β_2 is exit blade angle. (10 Marks)
- b. The external and internal diameters of inward flow reaction turbine are 1.2 m and 0.6 m respectively. The head on turbine is 22 m, and velocity of flow through the turbine is constant and equal to 2.5 m/s. The guide blade angle is 10° and runner vanes are radial at inlet. If the discharge at outlet is radial, determine i) speed of turbine ii) vane angle at outlet of runner iii) velocity triangles at inlet and exit iv) hydraulic efficiency. (10 Marks)

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06ME56

Fifth Semester B.E. Degree Examination, June 2012
Engineering Economics

Time: 3 hrs.

Max. Marks:100

- Note: 1. Answer FIVE full questions, selecting at least TWO questions from each part.**
2. Use of 'discrete interest factors' table is permitted.

PART – A

- 1** a. Discuss with suitable / relevant examples the different engineering economic problems an engineer confronts with. (06 Marks)
b. Distinguish between : i) Intuition and analysis, ii) Tactics and strategy. (06 Marks)
c. You have a chance to buy a new car with a list price of Rs.12,00,000/-. You have to pay a down payment of Rs.200,000/- and the dealer will finance the remainder at a nominal rate of 6% per annum compounded monthly for 5 years. Determine the amount of your monthly payment and the total interest you pay over 5 years. (08 Marks)
- 2** a. List and explain the methods of present – worth comparison of alternatives / assets having unequal service lives. (06 Marks)
b. A proposal is to be selected among the two available. The net cash flows of the proposals are given below: (Rate of interest = 12%)

Proposal	Cash flow in Rs. at the end of year				
	0	1	2	3	4
A	-20000	7000	9000	7000	8000
B	-20000	10000	6000	7000	6000

- Select the best proposal based on present – worth comparison. (08 Marks)
- c. A deferred annuity is to pay Rs.5000 per year for 10 years with the first payment coming 6 years from today. Determine the present-worth of annuity using an interest rate of 12% per annum. (06 Marks)
- 3** a. Explain the conditions for annual-worth comparison. (06 Marks)
b. Reliance petrochem has several retail outlets across the country. The company has decided that a major TV advertisement (ad) will greatly improve the income. Initial developmental costs for the ad will be Rs.120,000. Monthly TV airing costs are estimated as Rs.35,000 for the first month, decreasing by Rs.500 per month thereafter during the period in which the ads will run, which is 18 months. Revenues are expected to be Rs.40,000 in the first month and increase by Rs.700 per month thereafter for 11 months more. The last 6 months of the study are expected to see a linear decline of Rs.300 per month from the peak increase. Determine whether the ad campaign is economically viable using an equivalent monthly worth analysis. Assume a nominal annual interest rate of 12% with monthly compounding. (10 Marks)
c. A project has a first cost of Rs.750,000, operating and maintenance cost of Rs.100,000 during each year of its 8 years life, and a salvage value of Rs.150,000. What is its equivalent annual cost if the interest rate is 12% per annum? (04 Marks)

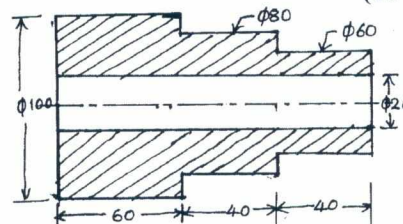
- 4 a. What is depreciation? List different methods of determining depreciation. Explain any two of them. (06 Marks)
- b. A new corporate bond was initially sold by a stockbroker to an investor for Rs.1000. The issuing corporation (company) has promised to pay the bondholder Rs.40 as interest every six months, and to repay Rs.1000 at the end of 10 years. After one year, the bond was sold by the original buyer for Rs.950.
- What rate of return did the original buyer receive on his investment?
 - What rate of return can the new buyer expect to receive if he keeps the bond for its remaining 9 years life? (10 Marks)
- c. An equipment with an initial cost of Rs.70000 has a life of 5 years, without any salvage value. Determine the depreciation reserve at the end of year 3, and book value at the end of year 3. Use double declining balance method. (04 Marks)

PART – B

- 5 a. Explain why estimation and costing is necessary. (05 Marks)
- b. Explain, with a neat block diagram, how the selling price of a product is determined. (05 Marks)
- c. A cast iron component, as shown in Fig.Q5 (c) is to be manufactured. Estimate the selling price per piece from the following data:
- Density of material = 7.2 gms/cc; Cost of molten metal = Rs.20/kg;
 Process scrap = 20% of net weight; Scrap return value = Rs.6/kg;
 Administrative overheads = Rs.30 per hr ; Sales overheads = 20% of factory cost ;
 Profit = 20% of factory cost.

Other expenditures are:

Operation	Time/piece (min.)	Labour cost/hr (Rs.)	Shop over heads (Rs./hr)
Moulding & Pouring	15	20	60
Shot blasting	5	10	40
Fettling & inspection	6	10	40



All dimensions are in mm
 Dimensions include machining allowance

(10 Marks)

Fig. Q5 (c)

- 6 a. Explain the terms 'assets' and 'liabilities', with suitable examples, as applicable to financial accounting. (05 Marks)
- b. Explain how a 'Journal' is prepared taking a suitable example. (05 Marks)
- c. A company X has certain reserves and surplus as per the details given below, as on 31st December 2010.

(Amount is Rs.)

Dividend payable	72000	Debtors	160000
Bank balance	10000	Bills payable	20000
Equity shares	200,000	Plant and equipment	80000
Provision for taxes	40000	Bills receivable	20000
Stock	77000	Creditors	55000
Preference shares	135000	General reserve	40000
Land & building	200,000	Cash in hand	15000

Prepare a balance sheet for the company as on 31st December 2010.

(10 Marks)

- 7 a. What do you mean by the term ratio analysis? List the advantages and limitations of ratio analysis. (05 Marks)
- b. The balance sheet of M/s. Evergreen Co. Ltd. is presented below for the year ending 31st December 2009.

Liabilities	Amount Rs.	Assets	Amount Rs.
Creditors	20000	Cash at bank	15,380
Bills payable	12750	Trade debtors	11,260
Debentures	100,000	Stock on hand	56,160
Reserves	67,250	Fixed assets	217,200
Share capital	100,000		

Other details are:

Sales – Rs.180,000

Net profit – Rs.16,000

Gross profit – Rs.40,000

Find : i) Current ratio ii) Gross profit ratio iii) Proprietary ratio
iv) Debtor's turnover ratio v) Operating ratio (15 Marks)

- 8 a. What is profit planning? List the objectives of profit planning. (03 Marks)
- b. List different types of budgets. Explain any four factors affecting a production budget. (05 Marks)
- c. A company XYZ is producing four products A, B, C and D. Prepare a production budget for 3 months ending 31st March 2009 based on the following information:

Product	Estimated stock, units	Estimated sales (units) during 3 months	Desired closing stock (units) as on 31 st March 2009
A	20000	100000	30000
B	30000	150000	50000
C	40000	130000	30000
D	30000	120000	20000

The production cost of products A and B is Rs.150 each, and that of products C & D is Rs.200 each. (12 Marks)

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