
Subject Code

- Any - ▼

Chapter Name

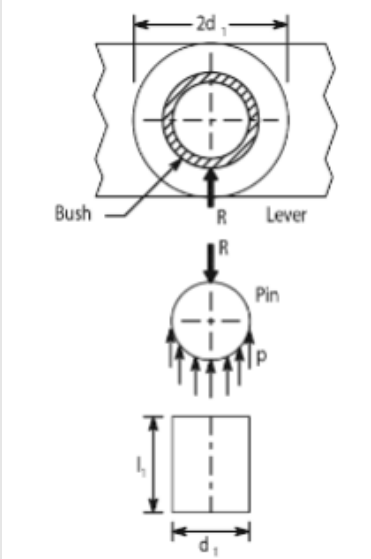
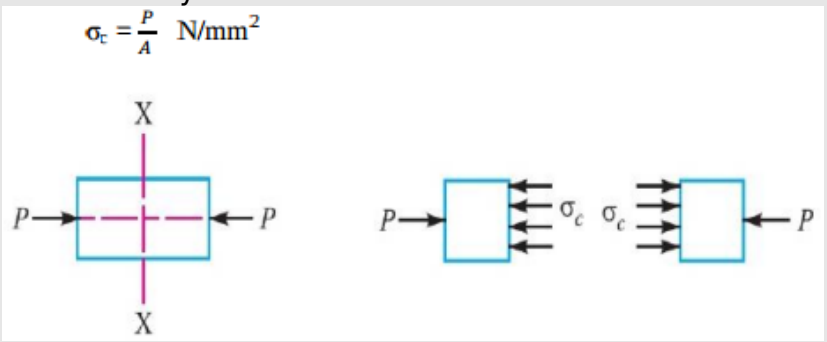
- Any - ▼

Apply

Examination: 2017 SUMMER

Que.No	Marks	
Q 1b)(i)	6	Question: **i) What are the factors to be considered for selection of materials for design of machine elements?** Answer: Factors to be considered for selection of material for design of machine elements a) Availability: Material should be available easily in the market. b) Cost: the material should be available at cheaper rate. c) Manufacturing Consideration: the manufacturing play a vital role in selection of material and the material should suitable for required manufacturing process. d) Physical properties: like colour, density etc. f) Mechanical properties: such as strength, ductility, Malleability etc. g) Corrosion resistance: it should be corrosion resistant. ----------

Que.No	Marks	
Q 1 I)	8	Question: **What is factor of safety? State its importance in design of machine elements.** Answer: **Factor of safety:** It is defined as ratio of Maximum stress to the working stress (permissible /design stress Mathematically, Factor of safety = $\frac{\text{Maximum stress}}{\text{working stress / Designstress}}$ For Ductile Material, Factor of safety = $\frac{Yield\ stress}{working\ stress\ /\ Designstress}$ For Brittle material, Factor of safety = $\frac{Ultimate\ stress}{working\ stress\ /\ Designstress}$---------- In design analysis, number of parameters which are difficult to evaluate accurately such as a) Variation in the properties of material like yield strength or ultimate strength. b) Uncertainty in magnitude of externals forces acting on the components. c) Variations in the dimensions of the components due to imperfect workmanship. In order to ensure the safety against such circumstances, factor of safety is useful in design. ----------

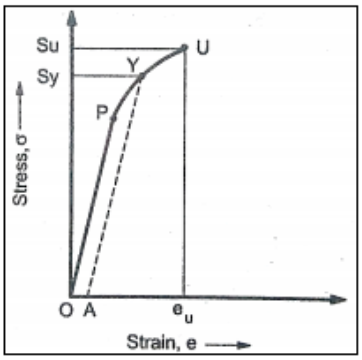
Que.No	Marks	
Q 2c)(ii)	8	Question: **Explain the following types of stresses a) Transverse shear stress b) Compressive stress c) Torsional shear stress** Answer:  Explanation of stresses : a) Transverse shear stress: When a section is subjected to two equal & opposite forces acting tangentially across the section such that it tends to shear off across the section. The stress is produced is called as transverse stress For Single shearing, Shear stress Ƭ = W/A For Double shearing, Shear stress Ƭ = W/2A b)Compressive stress: When a body is subjected to equal & opposite axial push forces, the stress produced is called as compressive stress. It is denoted by " σc"  ----------

Que.No	Marks	
Q 4a)(i)	4	Question: **a) Attempt any THREE of the following: 12 (i) Give the composition of : 1) 35Mn 2 Mo28 2) 30Ni 4 Crl and 3) 25 Cr 3 Mo 55** Answer: Composition in percentage 1) Carbon-0.3-0.4 %, manganese 0.5 % and molybdenum 2.8 % 2) Carbon-0.26-0.34, ,Nickel 1 % and Chromium 0.25 % 3) Carbon-0.2-0.3,chromium 0.75 % and molybdenum 5.5 % ----------
Q 4b)(ii)	6	Question: **Explain the importance of Aesthetic considerations in design by giving any two examples.** Answer: Each product is to be design to perform a specific function or a set of functions to the satisfaction of customers. In a present days of buyer's market, with a number of products available in the market are having most of the parameters identical,the appearance of the product is often a major factor in attracting the customer. For any product, there exists a relationship between the functional requirement and the appearance of a product. The aesthetic quality contributes to the performance of the product, through the extent of contribution varies from product to product. The job of industrial designer is to create new shapes and forms for the product which are aesthetically appealing. For ex.(1) The chromium plating of automobile components improves the corrosion resistance along with the appearance.(2) the aerodynamic shape of the car improves the performance as well as gives the pleasing appearance ----------

Examination: 2017 WINTER

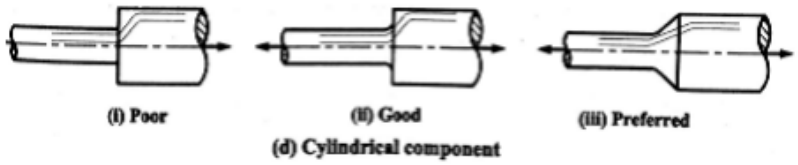
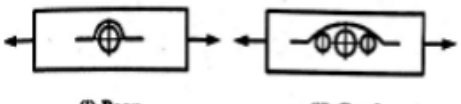
Que.No	Marks	
Q 1 a)	2	Question: **Define machine design.** Answer: Machine design is the process of selection of the materials, shapes, sizes and arrangements of mechanical elements so that the resultant machine will perform the prescribed task. OR Machine Design is the creation of new and better machines and improving the existing ones ----------

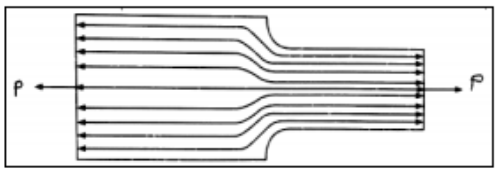
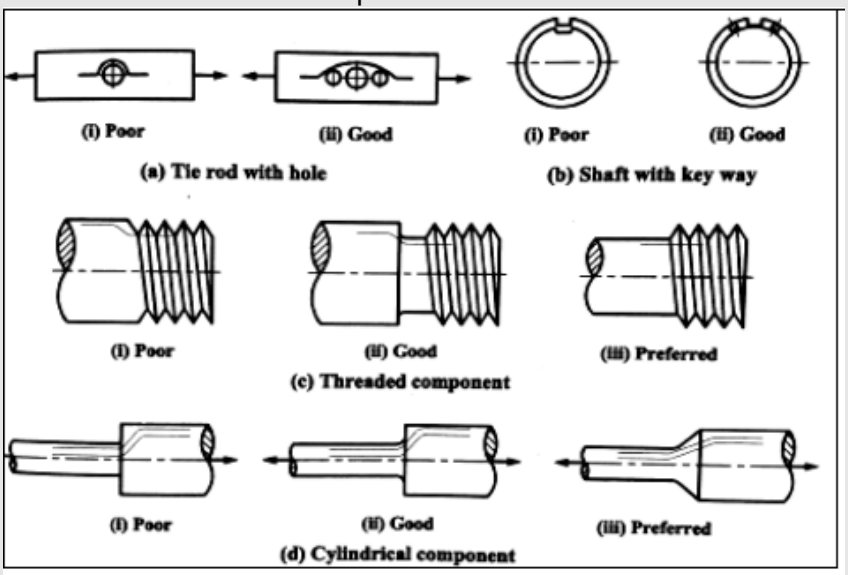
Que.No	Marks	
Q 1 b)	2	Question: **Give the composition of :- (i) FeE220: (ii) 20C8** Answer: (i) FeE220: Steel having yield strength of 220 N/mm2 . (ii) 20C8 : Carbon steel containing 0.15 to 0.25 percent (0.2 percent on average) carbon and 0.60 to 0.90 percent (0.80 percent on average) manganese. ----------
Q 1b)(ii)	8	Question: **2) Define : a) Ductility b) Toughness c) Creep** Answer: a) Ductility: the property of material which enables it to be drawn into thin wire under the action of tensile load is called as ductility. b) Toughness: The property which resists the fracture under the action of impact loading is called as toughness. Toughness is energy for failure by fracture. c) Creep: when a component is subjected to constant stress at a high temperature over a long period of time ,it will undergo a slow& permanent deformation called creep Or it is defined as “slow and progressive deformation of material with time under constant stress at elevated temperature. E.g : Bolts & pipes in thermal power plants ----------
Q 1 c)	2	Question: **State four types of loads acting on machine elements** Answer: (i) Dead or steady load (ii) Live or variable load (iii) Suddenly applied or shock load (iv) Impact load ----------
Q 1 d)	2	Question: **What do you mean by creep?** Answer: When a machine part is subjected to a constant stress at high temperature for a long period of time, it will undergo a slow and permanent deformation called ‘creep’. This property is considered in designing internal combustion engines, boilers and turbines ----------
Q 1 e)	2	Question: **Define Ergonomics.** Answer: Ergonomics is defined as the scientific study of the man – machine working environment relationship and the application of anatomical, physiological, psychological principles to solve the problems arising from this relationship. ----------

Que.No	Marks	
Q 1 n)	2	Question: **Draw stress – strain diagram for brittle material.** Answer:  **Fig. Stress vs Strain diagram for Brittle materials** ---

Que.No	Marks	
Q 2 b)	8	Question: **State the theories of elastic failure. Explain maximum normal stress theory and maximum shear stress theory with equations. Or Explain Maximum shear stress theory. {Maximum shear stress theory is also called as?}** Answer: **Theories of Failures** Maximum shear stress theory is explained below The principal theories of failure for a member are as follows: (i) Maximum principal or normal stress theory (ii) Maximum shear stress theory (iii) Maximum principal or normal strain theory (iv) Maximum strain energy theory (v) Maximum distortion energy theory **Maximum normal stress theory (Maximum principal stress theory or Rankines theory** According to this theory, the elastic failure occurs when the greatest principal stress reaches the elastic limit value in a simple tension test irrespective of the value of other two principal stresses. Taking factor of safety (F. S.) into consideration, the maximum principal or normal stress (σt) is given by, σt = σyt / F. S. (for ductile materials) σt = σu / F. S. (for brittle materials) where, σyt = Yield point stress in tension as determined from simple tension test σu = Ultimate stress This theory ignores the possibility of failure due to shear stress, therefore it is not used for ductile, However, for brittle materials which are relatively strong in shear but weak in tension and compression, this theory is generally used. This theory is also known as maximum principal stress theory or Rankine's theory. **Maximum Shear Stress Theory (Guest's theory or Tresca's theory)** Maximum Shear Stress Theory According to this theory, the failure or yielding occurs at a point in a member when the maximum shear stress reaches a value equal to the shear stress at yield point in a simple tension test. Mathematically, τmax = τyt / F. S. where, τmax = Maximum shear stress τyt = Shear stress at yield point as determined from simple tension test F. S = Factor of safety. Since the shear stress at yield point in a simple tension test is equal to one half the yield stress in tension, therefore τmax = σyt / (2 x F. S.).This theory is mostly used for designing members of ductile materials. This theory is also known as Guest's theory or Tresca's theory. ==========Answer to question ends here========== For further understanding and details follow following material. ----------

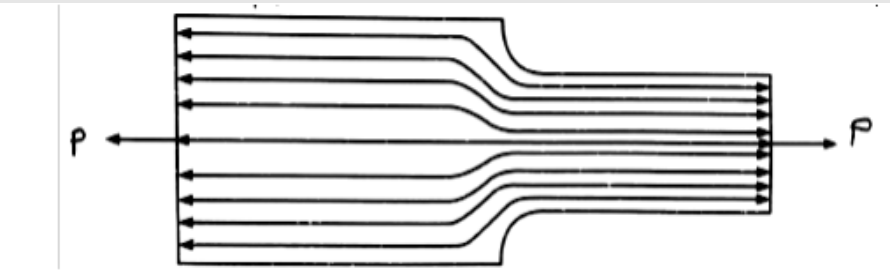
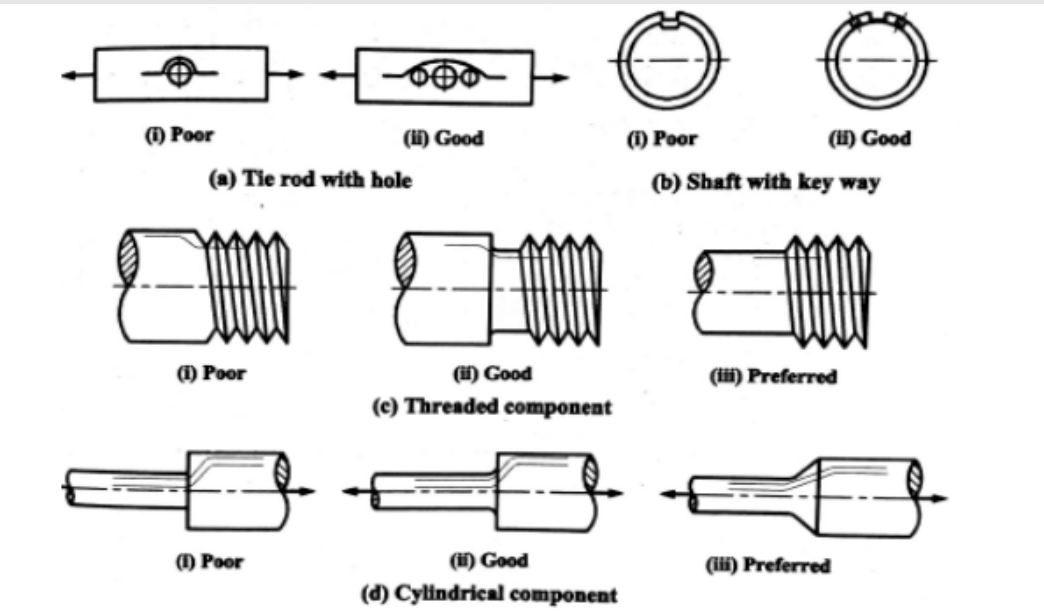
Que.No	Marks	
Q 2c)(i)	8	Question: **(i) State and describe in brief about four ergonomic considerations in the designing of machine elements.** Answer: The different areas covered under the ergonomics are: 1. Communication between the man (user) and the machine. 2. Working environment. 3. Human anatomy and posture while using the machine. 4. Energy expenditure in hand and foot operations. Communication between man and machine The machine has a display unit and a control unit. A man (user) receives the information from the machine display through the sense organs. He (or she) then takes the corrective action on the machine controls using the hands or feet. This man-machine closed loop system in influenced by the working environmental factors such as: lighting, noise, temperature, humidity, air circulation, etc. Working Environment The working environment affects significantly the man-machine relationship. It affects the efficiency and possibly the health of the operator. The major working environmental factors are: Lighting, Noise, Temperature, Humidity and air circulation. Ergonomics Considerations in Design of Controls The control devices should be logically positioned and easily accessible. The control operation should involve minimum and smooth moments. The control operation should consume minimum energy. The controls should be painted in proper colour to attract the attention. Ergonomics Considerations in the Design of Displays The scale should be clear and legible. The size of the numbers or letters on the scale should be taken appropriate. The pointer should have a knife-edge with a mirror in a dial to minimize the parallax error while taking the readings. The scale should be divided in a linear progression such as 0 – 10 – 20 – 30… and not as 0 – 5 – 25 – 45….. The number of subdivisions between the numbered divisions should be as less as possible. The numbering should be in clockwise direction on a circular scale, from left to right on a horizontal scale and from bottom to top on a vertical scale. ----------

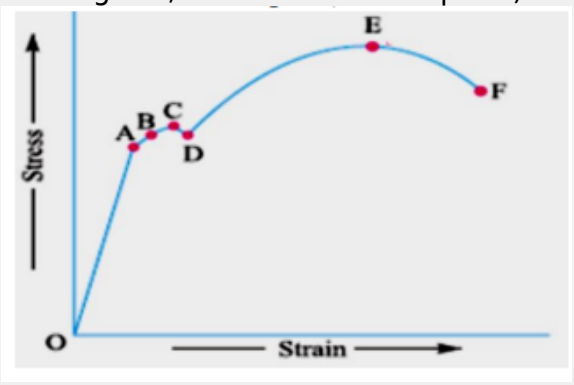
Que.No	Marks	
Q 3a)(i)	4	Question: **Explain with neat sketches only (i) Methods of reducing stress concentration in cylindrical members with shoulders. (ii) Methods of reducing stress concentration in cylindrical members with holes.** Answer: **Methods of reducing stress concentration in cylindrical members with shoulders**  (i) Poor (ii) Good (iii) Preferred (d) Cylindrical component Stress concentration can be reduced in cylindrical members with shoulders by providing fillet at sharp corners of shoulders. Fig 1. Showing cylindrical member with shoulder having sharp corners i.e change in C/S is sudden and therefore stress distribution line get disturbed .so for fig 1, stress concentration is more. fig. 2 & 3 members shoulder having gradual change in C/S. so here stress line maintain spacing and therefore stress concentration is less. **Methods of reducing stress concentration in cylindrical members with holes**  (i) Poor (ii) Good (a) Tie rod with hole ----------

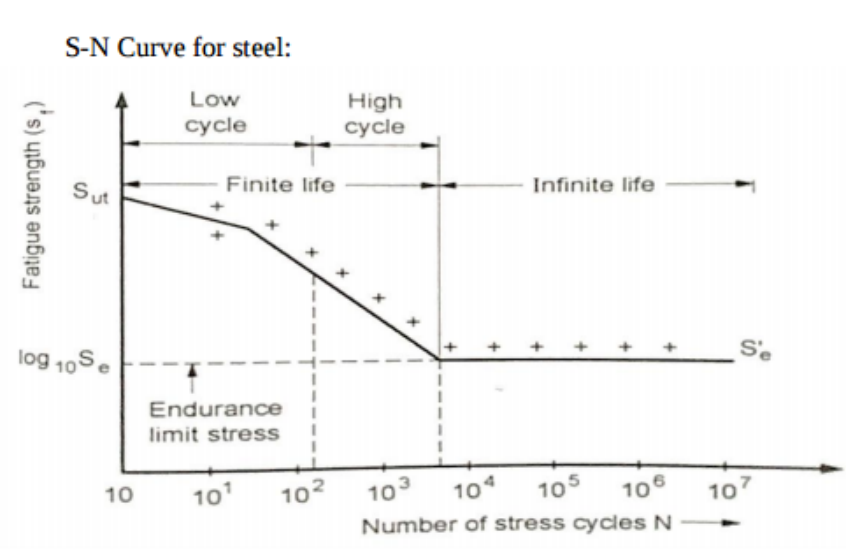
Que.No	Marks	
Q 3 c)	8	Question: **Define stress concentration. What are the causes of stress concentration? State any four methods of reducing stress concentration with neat sketches.** Answer: Stress concentration: Whenever a machine component changes the shape of its cross section, the simple stress distribution no longer holds good and the neighbourhood of the discontinuity is different. This irregularity in the stress distribution caused by abrupt changes of form is called 'stress concentration'.  **Fig. Stress concentration** Causes of stress concentration The various causes of stress concentration are as follows: (i) Abrupt change of cross section (ii) Poor surface finish (iii) Localized loading (iv) Variation in the material properties Methods of reducing stress concentration The presence of stresses concentration cannot be totally eliminated but it can be reduced, so following are the remedial measures to control the effects of stress concentration. 1. Provide additional notches and holes in tension members. a) Use of multiple notches. b) Drilling additional holes. 2. Fillet radius, undercutting and notch for member in bending. 3. Reduction of stress concentration in threaded member. 4. Provide taper cross-section to the sharp corner of member  **Fig. Methods of reducing stress concentration** ----------

Que.No	Marks	
Q 6b)(i)	8	Question: **Identyfiy the metrial and its compotion A) X10Cr 18 Ni9 Mo 4 Si 2 B) XT72W18Cr4V1:** Answer: A) X10Cr 18 Ni9 Mo 4 Si 2 : High Alloy steel having carbon 0.10% , chromium 18%, nickel 9 % ,Molybdenum 4% & silicon 2% B) XT72W18Cr4V1: high speed tool steel having carbon 0.72% ,chromium 4% , tungsten 18% , vanadium 1% ----------

Examination: 2016 SUMMER

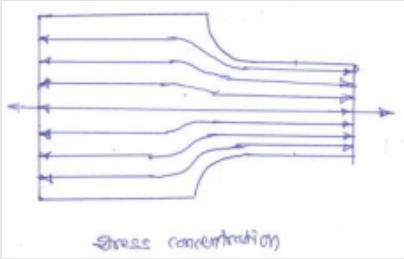
Que.No	Marks	
Q 1b)(I)	6	Question: **What is stress concentration ? State the remedial measures to control the effect of stress concentration with neat sketches** Answer: i. Stress Concentration: Whenever a machine component changes the shape of its cross-section, the simple stress distribution no longer holds good and the neighborhood of the discontinuity is different. This irregularity in the stress distribution caused by abrupt changes of form is called stress concentration. It occurs for all kinds of stresses in the presence of fillets, notches, holes, keyways, splines, surface roughness or scratches etc.  The presence of stresses concentration cannot be totally eliminated but it can be reduced, so following are the remedial measures to control the effects of stress concentration. 1. Provide additional notches and holes in tension members as shown in fig (a) a)Use of multiple notches. b)Drilling additional holes as shown in fig(b) 2. Fillet radius, undercutting and notch for member in bending. 3. Reduction of stress concentration in threaded members as shown in fig(c) 4. Provide taper cross-section to the sharp corner of member as shown in fig(d)  ----------

Que.No	Marks	
		Question: **Draw stress-strain diagram for ductile material stating salient points** Answer: Stress-Strain diagram for ductile material stating salient points (1 Mark for diagram, 3 Marks for description) 
Q 1 i)	4	Proportional limit (A): The stress is proportional to strain. Beyond point A, the curve slightly deviates from the straight line. It is thus obvious, that Hooke's law holds good up to point A and it is known as Proportional limit. Elastic limit (B): If the load is increase between point A and B, the body will regain its original shape when load is removed; it means body possesses elasticity up to point B, known as Elastic Limit. Upper yield point (C): If the material is stressed beyond point B, the plastic stage will reach and the material will start yielding known as Upper Yield Point. Lower yield point (D): Further addition of small load drops the stress-strain diagram to point D, as soon as the yielding start, this point 'D' is known as Lower yield point. Ultimate stress point (E): After the end of yielding, if the load is increase beyond point 'D', there is increase in stresses up to point E and thus maximum value of stresses at point 'E' is called as Ultimate Stress point. Breaking Stress point (F): After the specimen has reached the ultimate stress, a neck is formed, which decreases the cross-sectional area of the specimen. The stress corresponding to point F is known as Breaking stress. ----------
Q 2a)(i)	8	Question: **State any four factors that govern 'factor of safety'.** Answer: a. Reliability of applied load. b. The extent of simplifying assumptions. c. The certainty as to exact mode of failure. d. Reliability of properties of material and change in these properties during service. e. Extent of stress concentration. f. The reliability of test results to actual machine parts. g. The extent of initial stresses set up during manufacturing. h. The extent of loss of life, if failure occurs. ----------

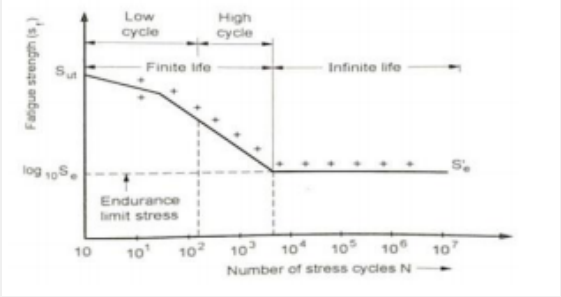
Que.No	Marks	
Q 3 a)	4	Question: **State any four advantages of standardization.** Answer: i. It saves effort of design of engineers to design and manufacture new machines, as standard components are readily designed by experts. ii. It ensures certain minimum specified quality. iii. It help in manufacturing the components on mass production. iv. Easy and quick replacement of the components is possible. v. Interchangeability of components is possible. vi. It helps in manufacturing the components quickly and economically. vii. Effective utilization of resources. viii. It also contributes to ensure the safety ----------
Q 4a)(i)	4	Question: **Define Endurance limit and draw typical S-N curve for steel.** Answer: Endurance Limit: It is defined as maximum value of the completely reversed bending stress which a polished standard specimen can withstand without failure, for infinite number of cycles (usually 107 cycles).It is known as endurance or fatigue limit (бe).  ----------

Que.No	Marks	
Q 4b)(i)	6	Question: **Describe the importance of aesthetic considerations in design related to shape, colour and surface finish.** Answer: 1) The shape should not be like blocks but various forms like sculpture, streamlined, aerodynamic, taper should be used. 2) The component should be symmetrical at lean about one axis. 3)proper shape of a product help to make the product more attractive. 4) The shape of the product should be regular, even & proportionate Regarding Colour: …….Any 2 pt : 1 M Each 1) The colour and shape of component should be such that in should attract appeal and impress customer. 2) The colour should match with conventions, moods e.g. red for danger, gray for dull, yellow for cautions, green for safe etc. 3) Too bright colour should be avoided. 4) The colour should be compatible with conventional ideas of the operator. Regarding Surface finish …….Any 2 pt : 1 M Each 1) Products with better surface finish are always aesthetically pleasing' 2) The surface coating processes like spray painting, anodizing, electroplating etc greatly the aesthetic appeal of product ----------

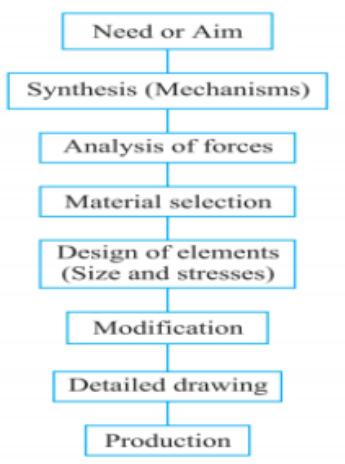
Examination: 2016 WINTER

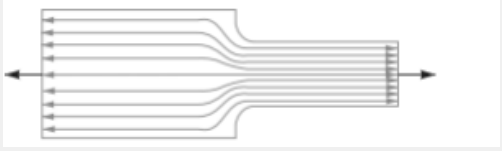
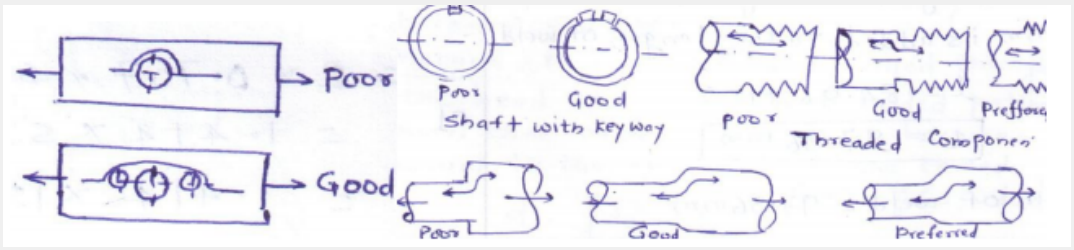
Que.No	Marks	
Q 1a)(i)	4	Question: **What is stress concentration? State its significance in design of machine elements** Answer: Whenever a machine component changes the shape of its cross section, the simple stress distribution no longer holds good. This irregularity in the stress distribution caused by abrupt changes of form is called as stress concentration  In most machine elements have some forms of discontinuity, namely sudden change in cross section, grooves ,holes, keyways and other changes in sections. these continuity in machine element alter the stress distribution in the neighborhood so that the elementary stress equations no longer described the actual state of stress in the part, such discontinuity is called stress raisers and in the region in which these occur is called the area of stress concentration. Internal cracks and flaws, cavities in welds, blowholes, and pressure in certain points are the common examples of stress raisers. ----------
Q 1b)(i)	6	Question: **State and explain main considerations in machine design.** Answer: Main considerations in machine design Type of loads and stresses caused by the load: the load on a machine component, may act in several ways, due to which, the internal stresses are set up. Mechanism: the successful operation of any machine depends largely upon the simplest arrangement of the parts, which will give desired motion Selection of material: designer should know the deep knowledge of properties of materials and behavior under working conditions Convenient and economical features: the designed machine must be convenient to operate and cost wise economical for the customer Use of standard part: reduced the overall cost Safety of operation: to avoid accidental hazards, care should be taken by designer Workshop facilities: a designer should be familiar with the limitations of his employer’s workshop, in order to avoid necessity of vendors Number of machines to be manufactured Cost of construction and assembly: designed machine should be cheap and easy to assem6ble Frictional resistance and lubrication: designer should provide necessary lubrication to the parts, where there is a sliding, rolling and rotating motion ----------

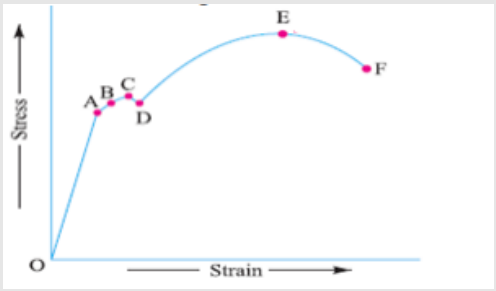
Que.No	Marks	
Q 2c)(i)	8	Question: **State applications of maximum shear stress theory and principal normal stress theory** Answer: (i) Applications of maximum shear stress theory : for ductile material , crank shaft, propeller shafts , c frames (ii) Applications of maximum principle normal stress theory : for brittle material , machine spindle, machine beds , c frames, overhang crank ----------
Q 3 a)	4	Question: **State the composition of the materials 30 Ni 16 Cr5, 40C8, FeE230 X15Cr25Ni 12** Answer: 30 Ni 16 Cr5 : alloy steel carbon 0.3% of average, Nickel 16%, chromium 5% 40C8 : Plain carbon steel carbon 0.4% of average, manganese 0.8% FeE230 : Steel with yield strength of 230N/mm2 X15Cr25Ni12 : high alloy steel carbon 0.15% of average, chromium 25%, Nickel 12%, ----------
Q 4a)(i)	4	Question: **State four examples of ergonomic considerations in the design of a lathe machine.** Answer: Ergonomics consideration in the design of Lathe machine Any 4 1) The controls on lathe should be easily accessible and properly positioned. 2) the control operation should involve minimum motions. 3) Height of lathe should be match with worker for operation 4)Lathe machine should make less noise during operation. 5) force& power capacity required in turning the wheel as per operation or human being can apply normally. 6) should get required accuracy in operation. ----------

Que.No	Marks	
Q 4b)(ii)	6	Question: **Draw S-N curve. Explain the concept of endurance limit and its need in design of machine elements** Answer: S-N Curve:  Endurance Limit: It is defined as maximum value of the completely reversed bending stress which a polished standard specimen can withstand without failure, for infinite number of cycles (usually 107 cycles).It is known as endurance or fatigue limit (бe). Need of Endurance Limit in Machine Design: Endurance limit is used to describe a property of materials: the amplitude (or range) of cyclic stress that can be applied to the material without causing fatigue failure. ----------

Examination: 2015 WINTER

Que.No	Marks	
Q 1a)(I)	4	Question: **What are the steps involved in general design procedure? Explain.** Answer: 1. Recognition of need. First of all, make a complete statement of the problem, indicating the need, aim or purpose for which the machine is to be designed. 2. Synthesis (Mechanisms). Select the possible mechanism or group of mechanisms which will give the desired motion. 3. Analysis of forces. Find the forces acting on each member of the machine and the energy transmitted by each member. 4. Material selection. Select the material best suited for each member of the machine. 5. Design of elements (Size and Stresses). Find the size of each member of the machine by considering the force acting on the member and the permissible stresses for the material used. It should be kept in mind that each member should not deflect or deform than the permissible limit. 6. Modification. Modify the size of the member to agree with the past experience and judgment to facilitate manufacture. The modification may also be necessary by consideration of manufacturing to reduce overall cost. 7. Detailed drawing. Draw the detailed drawing of each component and the assembly of the machine with complete specification for the manufacturing processes suggested. Prepare assembly drawing giving part numbers, overall dimensions and part list. The component drawing is supplied to the shop flow for manufacturing purpose, while assembly drawing is supplied to the assembly shop 8. Production. The component, as per the drawing, is manufactured in the workshop  ----------

Que.No	Marks	
Q 1a)(I)	6	Question: **What is stress concentration? Explain any four methods to reduce it.** Answer: Stress Concentration: Whenever a machine component changes the shape of its cross-section, the simple stress distribution no longer holds good and the neighborhood of the discontinuity is different. This irregularity in the stress distribution caused by abrupt changes of form is called stress concentration. It occurs for all kinds of stresses in the presence of fillets, notches, holes, keyways, splines, surface roughness or scratches etc.  Causes of stress concentration are as under. i) Abrupt changes in cross-section like in keyway, steps, grooves, threaded holes results in stress concentration. ii) Poor surface finish – The surface irregularities is also one of the reason for stress concentration. iii) Localized loading – Due to heavy load on small area the stress concentration occurs in the vicinity of loaded area. iv)Variation in material properties – Particularly defects like internal flaws, voids, cracks, air holes, cavities also results in stress concentration. Two methods of reducing stress concentration :(Any two Methods with sketch 4 Marks) 1) Introducing additional notches and holes in tension member 2) Fillet radius ,undercutting & notches for member I bending 3) Reduction of stress concentration in threaded portion 4) Drilling additional holes for shaft  ----------

Que.No	Marks	
Q 2c)(i)	8	Question: **Explain with neat sketch the stress-strain diagram for ductile material.** Answer:  Point A: Proportional limit Point B: Elastic limit Point c: Upper yield point Point D: Lower yield point Point E: Ultimate tensile stress point Point F: Breaking Stress point. 1. Proportional limit. We see from the diagram that from point O to A is a straight line, which represents that the stress is proportional to strain. Beyond point A, the curve slightly deviates from the straight line. It is thus obvious, that Hooke's law holds good up to point A and it is known as proportional limit. It is defined as that stress at which the stress-strain curve begins to deviate from the straight line. 2. Elastic limit. It may be noted that even if the load is increased beyond point A upto the point B, the material will regain its shape and size when the load is removed. This means that the material has elastic properties up to the point B. This point is known as elastic limit. It is defined as the stress developed in the material without any permanent set. 3. Yield point. If the material is stressed beyond point B, the plastic stage will reach i.e. on the the load, the material will not be able to recover its original size and shape. A little consideration will show that beyond point B, the strain increases at a faster rate with any increase in the stress until the point C is reached. At this point, the material yields before the load and there is an appreciable strain without any increase in stress. In case of mild steel, it will be seen that a small load drops to D, immediately after yielding commences. Hence there are two yield points C and D. The points C and D are called the upper and lower yield points respectively. The stress corresponding to yield point is known as yield point stress. 4. Ultimate stress. At D, the specimen regains some strength and higher values of stresses are required for higher strains, than those between A and D. The stress (or load) goes on increasing till the point E is reached. The gradual increase in the strain (or length) of the specimen is followed with the uniform reduction of its cross-sectional area. The work done, during stretching the specimen, is transformed largely into heat and the specimen becomes hot. At E, the stress, which attains its maximum value is known as ultimate stress. Itis defined as the largest stress obtained by dividing the largest value of the load reached in a test to the original cross-sectional area of the test piece. 5. Breaking stress. After the specimen has reached the ultimate stress, a neck is formed, which decreases the cross-sectional area ofthe specimen, as shown in Fig. The stress is, therefore, reduced until the the specimen breaks away at point F. The stress corresponding to point F is known as breaking stress. ----------

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Q 3 a)	4	Question: **State the composition of following materials (i) Fe E 230 (ii) X 20 Cr 18 Ni 2 (iii) 35 C 8 (iv) 40 Ni 2 Cr 1 Mo 28** Answer: i) Fe E 230 : Steel with min.Yield strength of 230N/mm2 ii) X20Cr 18 Ni 2:Specification: It is ALLOY STEEL having Carbon 0.20% ,Chromium 18% and Nickel 2% iii)35 C 8 : steel with 0.35% carbon & 0.8% Manganese. iv) 40 Ni 2 Cr 1 Mo 20 :Alloy Steel having 0.4% carbon,0.5% Nickel, 0.25% chromium,2.8% Molybdenum. ----------
Q 4a)(I)	4	Question: **State the meaning of following colour codes in aesthetic consideration while designing the product: (1) Red (2) Orange (3) Green (4) Blue** Answer: 1) Red: Danger,Hot 2) Orange: Possible Orange 3) Green : Safe 4) Blue: Cold ----------