



WINTER – 15 EXAMINATIONS

Subject Code: **17623**

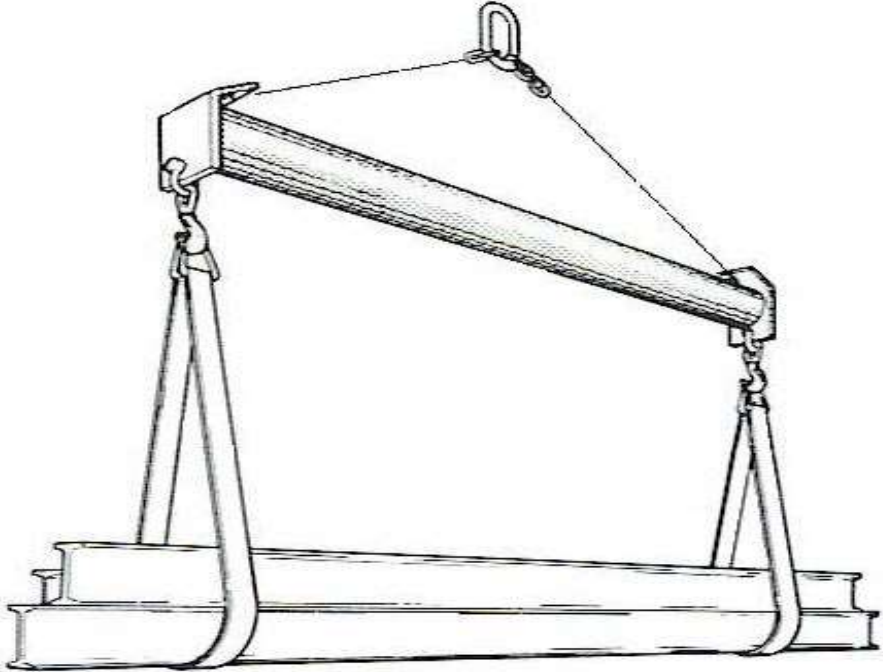
Model Answer

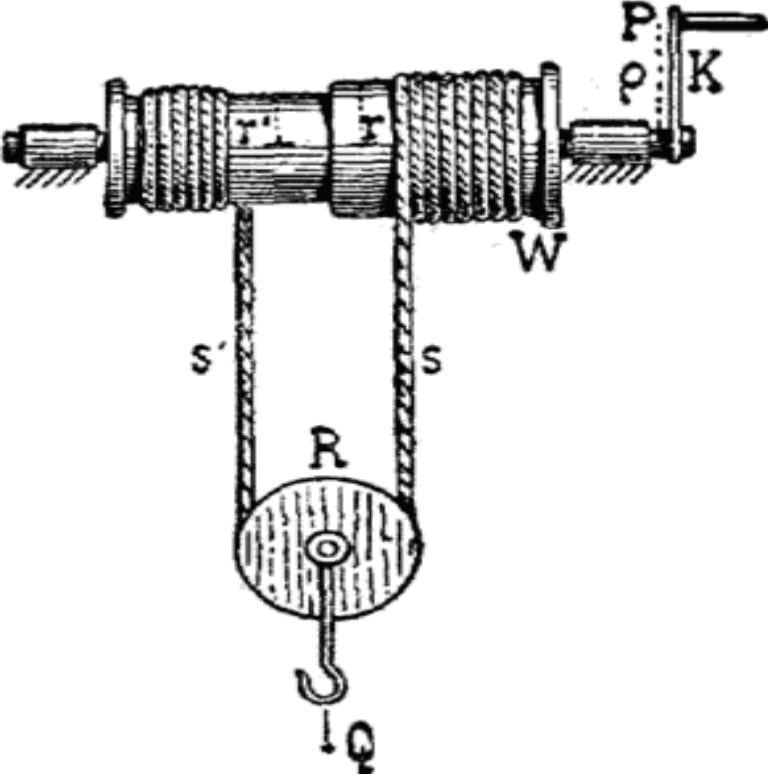
Important Instructions to examiners:

- 1) The answers should be examined by key words and not as word-to-word as given in the model answer scheme.
- 2) The model answer and the answer written by candidate may vary but the examiner may try to assess the understanding level of the candidate.
- 3) The language errors such as grammatical, spelling errors should not be given more importance. (Not applicable for subject English and Communication Skills)
- 4) While assessing figures, examiner may give credit for principal components indicated in the figure. The figures drawn by candidate and model answer may vary. The examiner may give credit for any equivalent figure drawn.
- 5) Credits may be given step wise for numerical problems. In some cases, the assumed constant values may vary and there may be some difference in the candidate's answers and model answer.
- 6) In case of some questions credit may be given by judgment on part of examiner of relevant answer based on candidate's understanding.
- 7) For programming language papers, credit may be given to any other program based on equivalent concept.



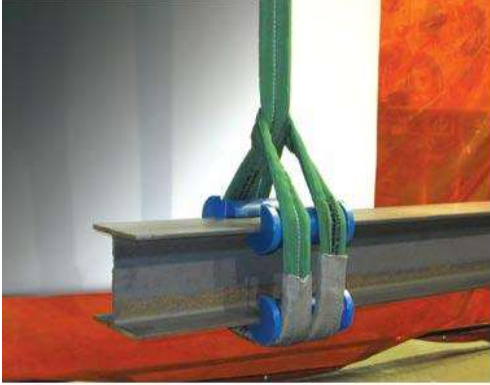
Q. NO.	MODEL ANSWER	MARKS	TOTAL MARKS
Q.1.	Attempt any FIVE	5x4	20
a.	<p>Precautions in handling and storing of Natural fibre ropes.</p> <ol style="list-style-type: none">1) When A NFR is attached to hook for handling load a thimble should be used in the loop or eye of the rope to reduce the wear and tear of the rope and decreases the stress developed in the rope. When it is bend around a small diameter when a rope is used as a sling, it should not pass over sharp edges of the box.2) The Rope should not be dragged over concrete pavements or through sand or any abrasive material as the outside surface of the rope can be cut by the abrasive action of the material, Also some particles may get in between the fibres or strands leading to internal damage.3) The Angle made by the legs of string when placed in a position to carry a load influence there stranght,i.e.,if the leg of the rope makes an angle of 60° to horizontal they have only 86% of the strength, if they made 45% degree strength is 70% and at an angle of 30° strength only 50% of the original strength of rope.4) The rope should be discarded if it is affected by acids or chemicals.5) If rope is frozen it should not be used until defrosted completely otherwise the frozen fibre will break because their resist bending. <p>The following precautions must be taken to ensure in handling storing of Natural fibre ropes.</p> <ol style="list-style-type: none">1) This rope should never be kept on a floor or in a box or in a small room where air circulation is restricted .Coil of the rope should be stores in cool and well maintain dry place to allow air to freely circulate around them. It should be stored in a wooden grating platform about 6 inch. Above the floor level.2) NFR should not in direct contact with bare steel work.3) If the rope is the to be stored in open space it should be protected from direct sunlight as the fibres may get damage due to the UV rope.	<p>2m for precautions(any 2 points 2m)</p> <p>2m for handling(any2 points 2m)</p>	4m

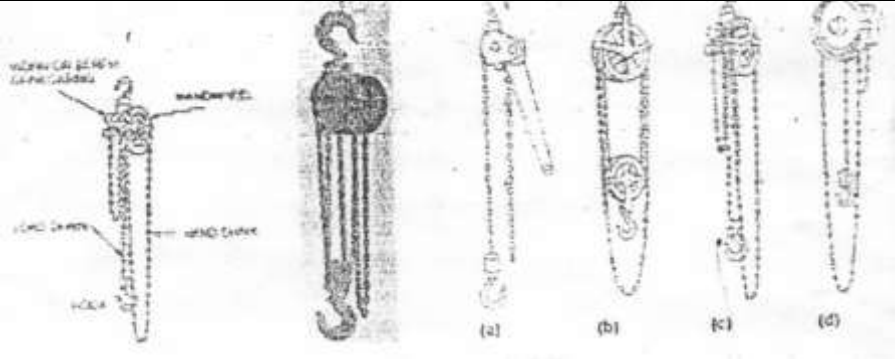
<p>b.</p>	<p>Merits:</p> <ul style="list-style-type: none"> • promote safety • saves money • saves time • compact design • versatile as on sling does many job • easily adjustable to accommodate a wide range of application • no time wasted searching for right sling <p>Demerits:</p> <ul style="list-style-type: none"> • Slings are much heavier • heavy to carry • heavy to transport • heavy to install and expensive. 	<p>2m for merits</p> <p>2m for demerits</p>	<p>4m</p>
<p>c.</p>	<div style="text-align: center;">  </div> <p>Spreader bar are used while lifting huge containers as shown in the fig. The spreader bar is used to avoid toppling of the load and for better balance. The bar is used even to avoid damage to the sling or rope used for lifting.</p>	<p>2m for diagram</p> <p>2m for points</p>	<p>4m</p>

<p>d.</p>	 <p>Differential Type of chain hoist</p> <p>In this type of chain hoist a dual patch upper sleeve consisting of a large wheel and a small wheel is connected to lower single groove by an endless chain sling. The difference in the diameter of the double sleeve is so small that friction of the several engaging parts serve to keep the load suspended at any point when the pull on hand chain causes. The hoist hook is suspended from a yoke, which is suspended from an axle supported by lower sleeve. It is raised or lowered by pulling downward on either side of the endless chain. Primarily the hoist is suited for intermittent service where occasional lifting is required. It is used where there is no limitation of time and effort.</p>	<p>2m diag 2m explanation</p>	<p>4m</p>
<p>e.</p>	<p>Injury cause to an individual due to certain reasons and factors is known as personal injury.</p> <p>Injury caused to the property or the industrial infrastructure is called as property damage</p>	<p>2m for each point</p>	<p>4m</p>
<p>f.</p>	<p>Major causes of accidents.</p> <p>The following list of possible causes should be included while considering a failure of any industrial installation.</p> <p>1) Component failure</p>	<p>1m for each cause</p>	<p>4m</p>



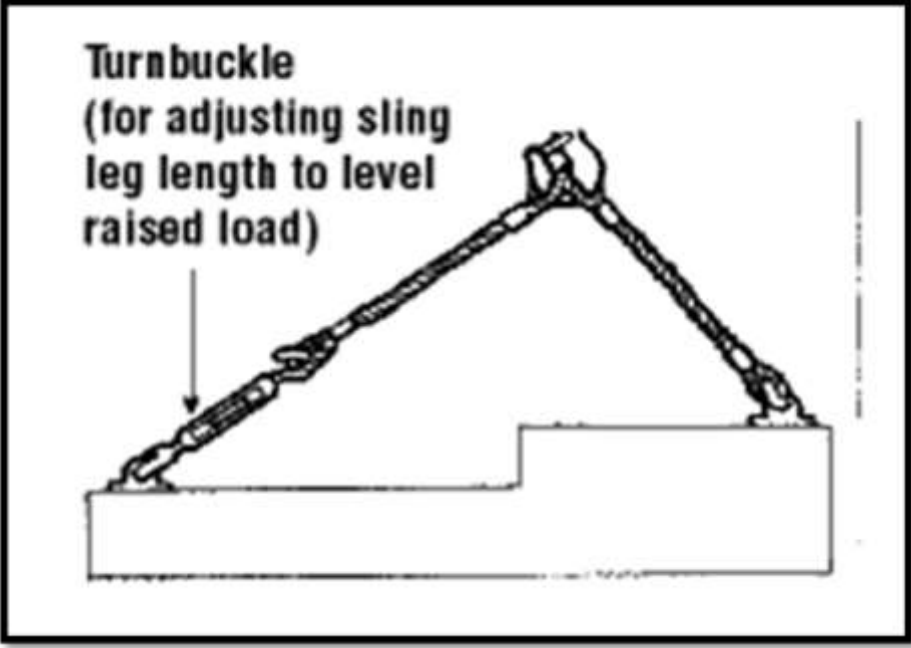
	<p>2) Deviation from normal operating condition.</p> <p>3) Human and organization error</p> <p>4) Outside accident interference</p> <p>5) Natural forces.</p> <p>6) Act of mischief and sabotages.</p>		
g.	<p>Steps in erection costing:</p> <ul style="list-style-type: none">• To find out the cost of the direct material used for installation or erection pupose.this is also involves in direct expenditure on material handling equipment such as ropes,chains,splices,jigs etc. Along with other attachment or fixture.it also involves cost of lubricant and coolants.• To find out the labour involved in certain erection work. These labours are mostly on temporary bases and will be paid on daily or weekly wages. Hence it is very necessary to have an overview of member involved in the work.• To find out overheads which cannot be categories in any particular area this involves cost of repair and maintancace, insurance for various people and machines. It also includes the electricity charges and water utility tax.	2m for each step	4m
Q.2	Attempt any FOUR	4x4	16
a.	<p>The features of Manila Rope:</p> <p>This type of rope is made from manila plant or abaca which belongs To banana family and is grown extensively in Philippines, Ecuador, Costa Rica. Also in east Asian country like Sumatra Islands. The quality of the ropes depends upon the processing from the bark of the plant, This rope is smooth and glossy, strong, Flexible, durable easy to handle and good resistance to water. It stretches about 25% of its length on loading. For lifting comparatively lighter loads. Used for preparing slings. Used for toing rope of a boat. It can be used for making rope ladder.</p>	4m	4m

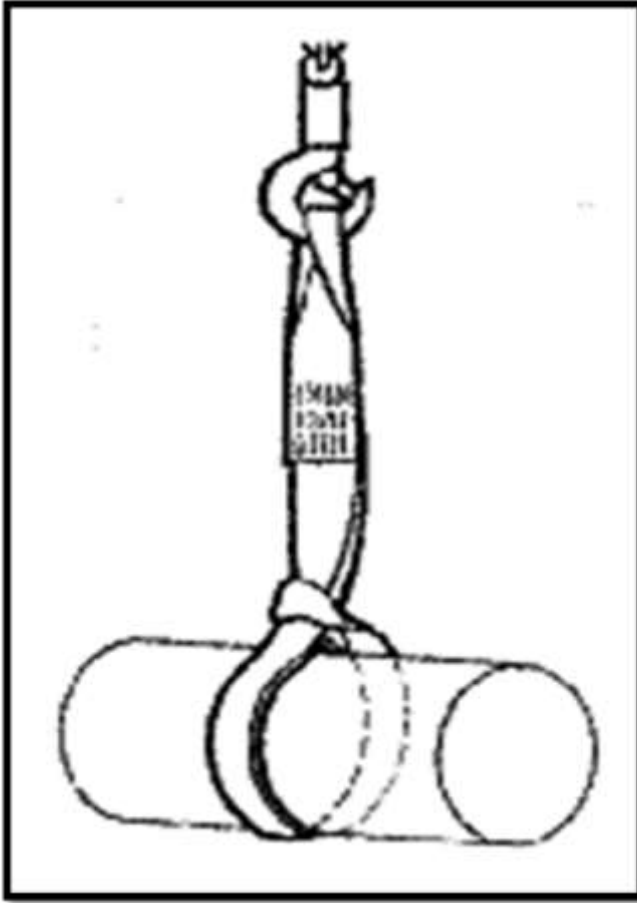
<p>b.</p>	<div style="text-align: center;">  </div> <p>The pads are used in case of sharp edges for two main reasons.</p> <ul style="list-style-type: none"> • To avoid damage to the rope in case of friction between the edges and rope • To avoid any kind of damage or deformation of the loads lifted. 	<p>2m for diag</p> <p>2m explanation</p>	<p>4m</p>
<p>c.</p>	<p>Knot:</p> <p>A knot is a method of fastening or securing a linear material such as rope by tying or intertwisting. It may consist of a length of one or several segment of rope, string, strap or even a chain inter woven such that it can bind to itself or do some other object.</p> <p>Hitch:</p> <p>It is a type of knot used for binding a rope to an object.</p>	<p>2m for each pint</p>	<p>4m</p>

<p>d.</p>	 <p>Spur Geared hoist:</p> <p>This contains hand chains and load chain and train of gear assembled in a case. The drive pinion that actuates the gear train is mounted on the hand chain wheel valve shaft and gets its motion from the hand chain wheel ensures the holding of the load on its shaft to a friction brake assembly which ensures the holding of the load in the suspended position when there is no pull applied to the hand chain. To lower the load chain the hand chain must be pulled continuously in the reverse direction.</p> <p>This type of chain hoist is made with a capacity of 10T with a simple gear train. Multiple gear trains gives a capacity of 50T or more.</p> <p>These are most efficient manually operated hoist efficient more than 80% however they are costlier than other type.</p>	<p>1m diag</p> <p>3m explanation</p>	<p>4m</p>
<p>e.</p>	<p>Prevention of major industrial hazard or accident:</p> <ul style="list-style-type: none"> • The work management should control the major hazard installation by sound engineering and management practices • A good plant design, fabrication and installation including the use of high standard components can avoid accidents to certain extent. • they can be also be avoided by: <ol style="list-style-type: none"> 1. Regular plant maintenance 2. Good plants operation 3. Good management and safety on site <p>Regular inspection of installation with repair and replacement of component whenever necessary.</p>	<p>1m for each point</p>	<p>4m</p>
<p>f.</p>	<p>Tools used in the erection of boilers are as follows.</p>	<p>2m for tools</p>	<p>4m</p>

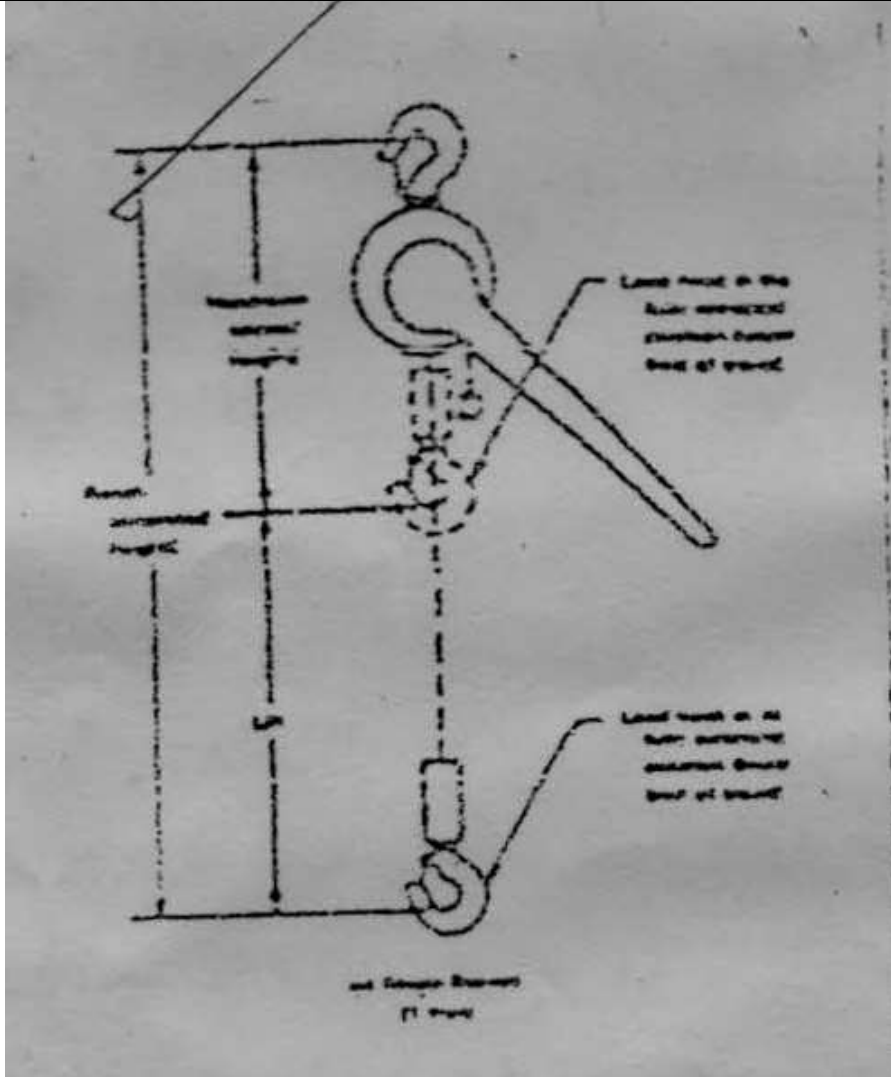


	<ul style="list-style-type: none"> • Ropes • Chain hoist • Cranes • slings, shackles, and othe rope attachments <p>steps in Erection of Boiler.</p> <p>The boiler installation or erection is divided into 2 main types.</p> <ul style="list-style-type: none"> • Advanced planning- that is to be done before the actual erection work starts • Site operations- the improvisation when the actual erection work starts. 	2m for its steps																	
Q.3.	Attempt any FOUR	4x4	16																
a.	<p>Construction of steel wire Rope:</p> <p>A steel wire rope consist of (1) A Coire or heart (2) Strands.</p> <p>It is designated by using two number e.g. 6 x 7</p> <p>Where 6= number of strands.</p> <p>7 = Number of wire in each strand.</p> <p>Based upon this steel wire rope is divide in their main types</p> <table border="1" style="width: 100%; border-collapse: collapse; margin: 10px 0;"> <thead> <tr> <th style="width: 10%;">No.</th> <th style="width: 20%;">Type</th> <th style="width: 30%;">Construction</th> <th style="width: 40%;">Uses</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td>Regular SWR</td> <td>6 x 7, 6 x 12</td> <td>Rigging, cagos, etc</td> </tr> <tr> <td style="text-align: center;">2</td> <td>Flexible SWR</td> <td>6 x 19, 6 x 24, 6 x 30</td> <td>Used in pulley, towing ropes, hoisting etc</td> </tr> <tr> <td style="text-align: center;">3</td> <td>Extra Flexible SWR</td> <td>6 x 37, 6 x 61</td> <td>Heavy duty loads, Cranes, Bridge etc</td> </tr> </tbody> </table> <p>Applications of steel wire rope</p> <ol style="list-style-type: none"> 1) It acts as cushion on which the strands of SWR rest allowing them to take their natural position, after is it is unloaded. 2) It absorbed lined ion or natural /lubricant or any other lubricant and acts as a reservoir with which the wire should be regularly field up to the saturation point. When the rope is stretched under load the 	No.	Type	Construction	Uses	1	Regular SWR	6 x 7, 6 x 12	Rigging, cagos, etc	2	Flexible SWR	6 x 19, 6 x 24, 6 x 30	Used in pulley, towing ropes, hoisting etc	3	Extra Flexible SWR	6 x 37, 6 x 61	Heavy duty loads, Cranes, Bridge etc	3m for const. 1m for applicat ion	4m
No.	Type	Construction	Uses																
1	Regular SWR	6 x 7, 6 x 12	Rigging, cagos, etc																
2	Flexible SWR	6 x 19, 6 x 24, 6 x 30	Used in pulley, towing ropes, hoisting etc																
3	Extra Flexible SWR	6 x 37, 6 x 61	Heavy duty loads, Cranes, Bridge etc																

	<p>surpluses oil is squeezed out and thus lubricating the SWR and reducing the penetration of moisture and break down in service.</p>		
<p>b.</p>	<p>A host is defined as piece of machine either suspended from overhead or mounted a foundation or other supporting structure and it is used for lifting and lowering freely suspended loads.</p> <p>The chain hoist is generally used in isolated locations where no motion power is avail and where handling small loads are required. This may improve many small maintained and erection jobs where besides non availability of power, portability and load handling in confined areas is required.</p> <p>Chain pulley blocks are availability and have slow lifting speeds; most of the pulley blocks are assembly of gear, pulley and chains. In a chain hoist usually 2 chains are used.one as a hand chain and other as load chain. The pull applied to the hand chain is transmitted through load chain after being multiplied up to 20 times. The pulley blocks are low in cost and are easy to operate. The chain hoist is normally supported thus a hook at the top knows as Anchor hook or support hook while another hook called the load hook is provide at the end of the load chain to hold the load.</p>	<p>2m for each point</p>	<p>4m</p>
<p>c.</p>	<div style="border: 2px solid black; padding: 10px;"> <p>Turnbuckle (for adjusting sling leg length to level raised load)</p>  </div>	<p>2m for diag</p> <p>2m for explanation.</p>	<p>4m</p>



The sling is an important device for lifting as well as for handling of loads. These are flexible straps so the usability of Sling is Varied. They are devices used for tying of the loads and supporting them so that the load is balanced and also handling can be done safely. The length of the sling needs to be arranged according to the load lifted.

<p>d.</p>	 <p>Pull lift ham hoist:</p> <p>It is the simplest and most economical in operation. It operates through a lever instead of a hand chain. It uses ratchet for operating and holding the load. However since the operating lever is located at the anchor hook, It is not convenient for vertical lifts. As it is mainly for horizontal puling;it is used for pulling the horizontal trolleys etc. It can be used for removing boilers from the site. Tree steam from roads. Vehicles stuck in mud.</p>	<p>2m for construction</p> <p>2m for operation</p>	<p>4m</p>
<p>e.</p>	<p>Major causes of accidents.</p> <p>The following list of possible causes should be included while considering a failure of any industrial installation.</p> <ol style="list-style-type: none"> 1. Component failure 2. Deviation from normal operating condition. 	<p>1m for each point</p>	<p>4m</p>



	<p>3. Human and organization error</p> <p>4. Outside accident interference</p> <p>5. Natural forces.</p> <p>6. Act of mischief and sabotages.</p>		
f.	<p>Boiler Mountings</p> <p>These are the fittings, which are mounted on the boiler for its proper and safe functioning. Though there are many types of boiler mountings, yet the following are important from the subject point of view:</p> <p>1. Water level indicator;</p> <p>2. Pressure gauge;</p> <p>3. Safety valves;</p> <p>4. Stop valve;</p> <p>5. Blow off cock;</p> <p>6. Feed check valve; and</p> <p>7. Fusible plug.</p>	<p>2m for list</p> <p>2m for explaining</p>	<p>4m</p>
Q.4.	<p>Attempt any TWO</p>	<p>2x8</p>	<p>16</p>
a. i	<p>The different types of wire rope attachment</p> <p>(1) Knot</p> <p>(2) Hitch</p> <p>(3) Splice</p> <p>(1) Knot:</p> <p>A knot is a method of fastening or securing a linear material such as rope by tying or intertwisting. It may consist of a length of one or several segment of rope, string, strap or even a chain inter woven such that it can bind to itself or do some other object.</p> <p>(2) Hitch:</p> <p>It is a type of knot used for binding a rope to an object.</p>	<p>2m for the names</p> <p>2m for explanation of any one</p>	<p>4</p>



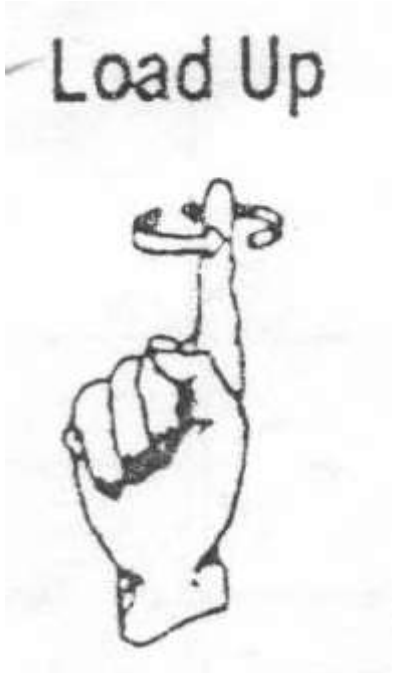
	<p>(3) Splice;</p> <p>It is a method of creating a permanent loop in the end of multi-stranded rope. The ends of the rope are braided back into the standing end to form the loop.</p> <p>Three braids are minimum for NFR and five are necessary for synthetic fibre rope.</p> <p>Type of splice include:</p> <ol style="list-style-type: none">1) Eye splice2) Round E.S3) Pro eye splice4) Lever's E.S5) Liverpool splice <p>Hook:</p> <p>A rope bend into curved shape. Typically with one end free and other end secured to a rope or other attachment.</p> <p>A hook is usually equipped with a safety latch to prevent the disengagement of the lifting wire rope sling chain or rope to which load is attached.</p> <p>Shackles:</p> <p>It is a U shape piece of metal secured with quick released pin mechanism. It's similar to the hand cuffs and primarily used in all manner of rigging system from boats or ships to industrial crane rigging.</p>		
ii	<p>Connecting tools.</p> <ul style="list-style-type: none">• Hooks and Shackle• Wedge socket• Connecting bar• Fork wrench• Slings• Bull pin	<p>2m for types</p> <p>2m for exp</p>	4m



	<ul style="list-style-type: none">• Splices• Thimble		
b.	Major causes of accidents.	1m per point	4m
i	<p>The following list of possible causes should be included while considering a failure of any industrial installation.</p> <ul style="list-style-type: none">• Component failure• Deviation from normal operating condition.• Human and organization error• Outside accident interference• Natural forces.• Act of mischief and sabotages.		
ii	<p>Efficient production and a good working environment are complementary. The elimination of inefficiencies and accident hazards caused by unfavourable conditions in and about the workplace is essential in getting the job done properly and safely. The attention to these important details—which may be overlooked when management’s attention is concentrated upon such amenities as good cloakrooms, canteens, rest rooms, recreational facilities, etc.—is widely referred to as “good housekeeping”. Good housekeeping involves every phase of industrial operations and should apply throughout the entire premises, indoors and out. It is more than mere cleanliness. It requires orderly conditions, the avoidance of congestion, and attention to such details as an orderly layout of the whole workplace, the marking of aisles, adequate storage arrangements, and suitable provision for cleaning and maintenance.</p>	4m	4m
c.	<p>Advance Planning:</p> <ol style="list-style-type: none">1) Availability of all required drawing giving detail dimension, weight, etc of the pressure vessel being erected is to be ensured2) Drawing for foundation and instruction for erection i.e. erection manual should be prepared.3) Lay out drawing of site indicating the position of material handling equipment, other utilities etc. should be prepared to ensure good housekeeping at the site.4) The erection schedule specifying the operation time required in	1m per point	8m



	<p>metal handling or material handling etc. should be made.</p> <p>5) A schedule for transportation of work force, equipment and material is required at the site based on the erection procedure.</p> <p>6) The schedule of man power requirement for the erection work, particularly in regards to fitters, welders, riggers etc. is to be planned. erection is a highly skilled and specialized job hence proper selection of selection through is very important.</p> <p>7) Schedule for estimated cost for erection activity are to be prepared in order to control the cost of project.</p> <p>8) Arrangements for receiving and unloading material, food, ventilation, first aid etc. are to be made at site.</p> <p>9) The arrangement of safety equipment such as gloves, shoes, goggles, helmets etc. should be provided at site.</p>		
Q.5 a.	Attempt any ONE	4	4
i	<p>Plain rope construction:</p> <p>This type of construction it most widely used for general purpose synthetic fibre rope. It is made by three strands laying together, each strand is made from uniform filament of specific polymer so as to obtain rope of specific strength. It has higher obtained rope of specific strength. It has higher number of twist than compared to NFR</p> <p>Braided rope construction:</p> <p>In this type of construction the coir rope is surrounded by braided shield, rope is balance in such a way that the load is equally distributed on the shield. It has god flexibility and absorption, easy handling I wet and dry condition. It has more grip on wrapping drum or capstan. If the shield wears out gradually regardless to wear or damage. The core rope will remain undamaged.</p>	1m for each	2m
ii	<p>List of the types of costs in erection work.</p> <p>1) Prime cost</p> <p>2) Direct cost</p> <p>3) Factory cost</p>	1\2 m for each type	2m

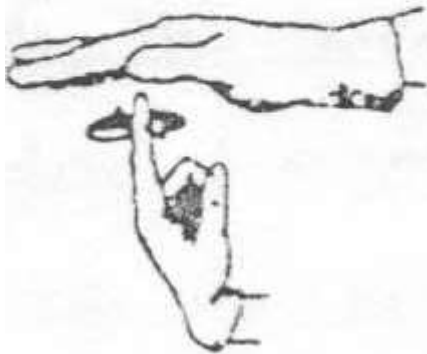
	<p>4) Office cost</p> <p>5) Total cost</p> <p>6) Actual cost</p>		
b.	Attempt any TWO	6 x 2	12
i	<p>Following are the conditions for handling of load.</p> <ul style="list-style-type: none"> • Estimation of Center of Gravity • Use of Pads at the edges • Hook position while erection or lifting. <p>(Explain any one)</p>	<p>3m for condition</p> <p>3m for explanation</p>	6m
ii	<p>Different types of Hoist Signals</p> <p>1.</p> <div style="text-align: center;">  </div> <p>2.</p>	<p>1 ½ m for each types (any 4)</p>	6

Load Down

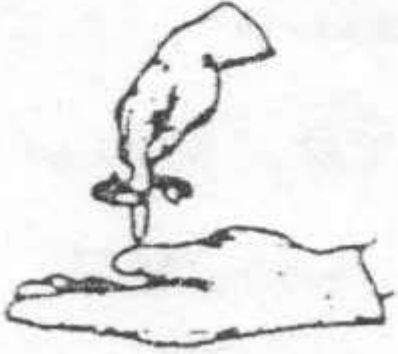





3.

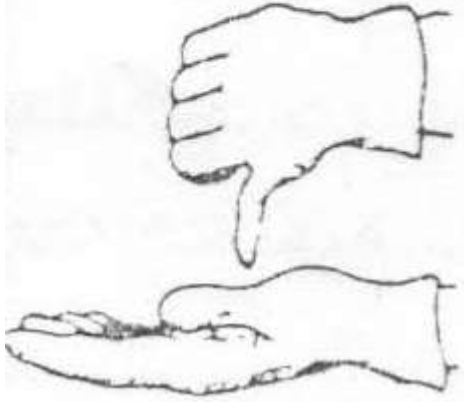
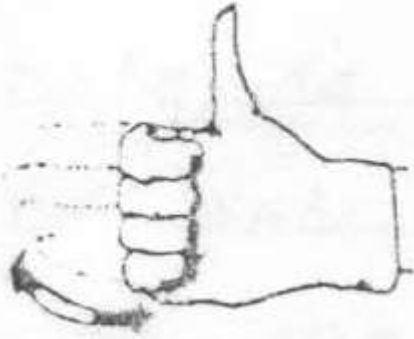
Load Up
Slowly

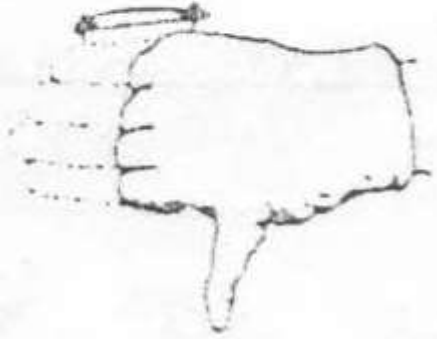



4.

	<p>Load Down Slowly</p>  <p>5.</p> <p>Boom Up</p> 			
	<p>6.</p>			

	<p>Boom Down</p> 		
7.	<p>Boom Up Slowly</p> 		
8.			

	<p>Boom Down Slowly</p> 			
9.	<p>Boom Up Load Down</p> 			
10.				

	<p>Boom Down Load Up</p>  <p>11.</p>			
	<p>Everything Slowly</p>  <p>12.</p>			

Use Whip
Line

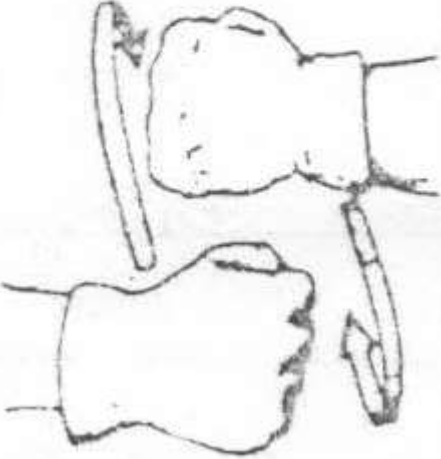



13.

Use Main
Line



14.

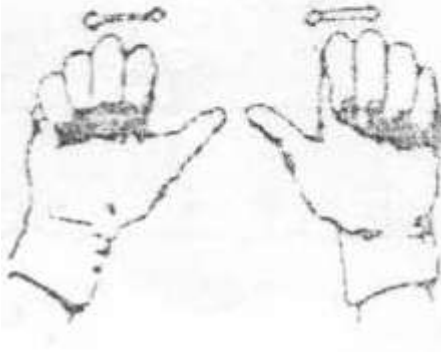
	<p>Travel Forward</p> 			
15.	<p>Turn Right</p> 			
16.				

Turn Left

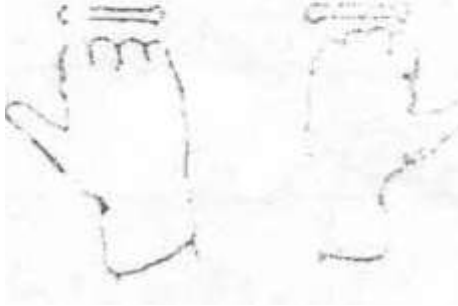



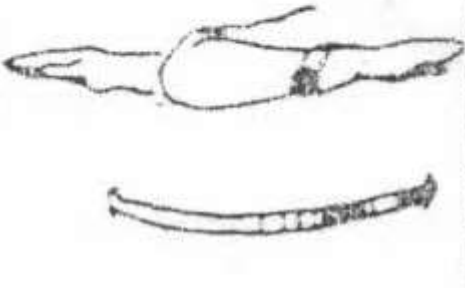

17.

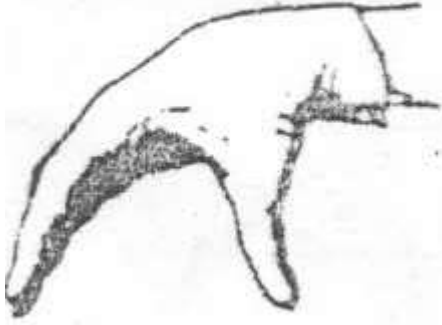

Shorten
Hydraulic
Boom



18.

	<p>Extend Hydraulic Boom</p>  <p>19.</p> <p>Swing Load</p> 		
	<p>20.</p>		


	<p>Stop</p>  <p>21.</p> <p>Close Clam</p>  <p>22.</p>			
--	---	--	--	--

	<p>Open Clam</p>  <p>23.</p> 		
<p>iii</p>	<p>Site operations:</p> <p>(1) Check the important limit and dimension of pressure vessel as per drawing with particular reference to</p> <ul style="list-style-type: none"> a) Length, width, height b) Height of nozzle c) Nozzle orientation both incoming and out going 	<p>6m</p>	<p>6m</p>



<p>(2) Check the physical dimension of the foundation layout where vessel is to be erected as per the drawing with respect to</p> <ul style="list-style-type: none">a) Reference Level(R.L)b) Orientation of Axis.c) Location of foundation holtd) Piping system around the nozzle. <p>(3) Select the suitable method for handling pressure vessel depending upon the following</p> <ul style="list-style-type: none">a) Weight of the Pressure vessel.b) Space available for the operation.c) Access to erection site.d) Time allowed for erectione) Cost limitation for erection. <p>(4) Selection suitable tolls like slings shackles, measuring tape, sprit level, welding set, spanner, water level etc. Which are to be used for different purposes</p> <p>(5) Slings the pressure vessel properly so that it is evenly handles</p> <p>(6) Hoist the pressure vessel by 6 inches and lower it slowly to confirm the proper balance of the pressure vessel.</p> <p>(7) Hoist the pressure vessel to the required height and lower it slowly to match the legs of pressure vessel with the foundation bolts in foundation pockets.</p> <p>(8) Position of pressure vessel and place packing plates below the base of the pressure vessel as shown in fig.</p> <p>(9) Now check the alignment and level of pressure gauge using water level gauges sprit level etc.</p> <p>(10) Any adjustment in the leveling can be done by adding or removing the packing plate,</p> <p>(11) After confirming that the pressure vessel is properly aligned and leveled grouting of the foundation or anchor bolts with rich mixture of concrete is done.</p>		
---	--	--



	<p>(12) After grouting the level is again checked so as to consider if any packing plate is to be added at the base of the pressure vessel.</p> <p>(13) If necessary a hydrotest of the pressure vessel is carried out to check for any leakage at a particular pressure of the fluid.</p>		
Q.6.	Attempt any TWO	2x8	16
a.	<p>Classification of Ropes:</p>  <p>Synthetic fibre rope:</p> <p>(1) Nylon Rope (Polyamids):</p> <p>This rope is 2 and ½ times stronger than grade 1 manila rope of equivalent size under loading. It will stretch to about ½ of its length before breaking. It gives a little warning of the situation when it is about to reach the maximum unit of its strength. It is the strongest of all rope that are in common use. Relative density is 1.4 gm/cm³ and it has melting point of 240° to 260° C</p> <p>The nylon rope is unaffected by frost or snow also it has high resistance to alkali, low resistance to acids. It can easily withstand reepling. It is generally used for lifting the loads for mountain climbing. For wing boats and industrial slings. The nylon rope has life 4 – 5 times that of the NFR.</p> <p>(2) Polyethylene:</p> <p>It is the most widely used synthetic material they are used to make high performance rope by twisting the fibre into strands and heating the strand until they became soft this ropes are used for lifting heavy load over greater height.</p> <p>(3) Terylene/Polyester:</p> <p>It is very close to nylon in strength when steady force is applied it is highly resistance to wear but however unlike nylon rope it stretches very little so it is not shock resistance. The most general application of this rope is in</p>	<p>4m for classification</p> <p>4m for any one exp</p>	8m



	<p>boating industry.</p> <p>(4) Polypropylene:</p> <p>This rope is most popular all-purpose rope for average consumer. It is lighter in weight than compare to any other synthetic fibre rope. The strength of this rope is almost similar the polyester rope unlike the rope it stresses to about only 0.5% of its original length under load. It's resistant to water but less resistant to chemicals as compared to any other synthetic fibre rope. They are only used in water sports.</p>		
b.	<p>i) Hemp Rope:</p> <p>It is a soft fibre rope obtained from Hemp plant also known as cannabis sativa which is about 6 to 8ft tall. Due to it's the value or ganja(Marijuana) it requires govement license for making if this rope for cultivation of the plant. The fibre is separated from the plant by crushing between the rollers and them the partially rolled product is heated separating the non-fibrous content</p> <p>It generally comes from Italy ad east European contries.It is soft than manila and sisal rope but darker than sisal rope. The Italian Hemp is generally regarded as best quality Hemp having strength almost equal to the best grade Manila rope.</p> <p>Indian Hemp rope is equally water resistant and is now greatly improving due to the state govement grading.</p> <p>Application of Hemp Ropes:</p> <ol style="list-style-type: none">1) It is used for making small ropes i.e.upto 0.5 inches in diameter.2) It is used as core of steel wire rope. <p>ii) Coir Rope:</p> <p>This rope is made from coconut fibre while are removed after the shell stock for a long time. It comes mainly from Indian and Sri Lanka.It is dark brown in colour.It is flexible but it is easily damaged. It stands up well to well to wear and it is also water resistant for some duration of time. Coir rope is half the weight and 1/6 the of the strength of Manila rope of equal sizes.</p> <p>Application of Coir ropes:</p> <ol style="list-style-type: none">1) Packaging is the only one biggest application of coir rope.	<p>4m for hemp rope</p> <p>4m for coir rope</p>	<p>8m</p>



c.	<p>Prevention of major industrial hazard or accident;</p> <ol style="list-style-type: none">1) The work management should control the major hazard installation by sound engineering and management practices.2) The good plant design, fab.and installation including the use of high standard component can avoid accidents to a certain extent. <p>They can be also avoided by;</p> <ol style="list-style-type: none">1) Regular plant maintenance2) Good plant operation3) Good management of safety onsite4) Regular inspection of installation with repair and replacement of components whenever necessary.	<p>4m for enlist</p> <p>4m for exp</p>	<p>8m</p>