



WINTER– 17 EXAMINATION

Subject Name: Construction Material

Model Answer

Subject Code: 17209

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 judgement 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.	Sub Q. N.	Answer	Marking Scheme
Q.1	1) Ans	Give any 2 applications of Irrigation Engineering. Irrigation engineering plays its role in following ways- i) For the development of water resources at the right place and at right time ii) Irrigation engg. Determines the capacity of reservoir for the intended use. iii) It ensures water supplies during the periods of less rainfall or during summer when water is not available in abundance. iv) For the construction and maintenance of dams, canals and regulatory works for supply of water whenever it is needed either to fields or to the public. v) Crop rotation can be done effectively. vi) From the knowledge of irrigation engineering, design and construction of different types of dams can be done. vii) For the development of new techniques and methods of using irrigation water in optimum way i.e. by sprinkler or drip irrigation. viii) It helps to study the flood control devices. ix) It helps to study the design of different structures such as spillways, weirs and canals.	01 mark each for any two points
Q.1	2) Ans	State different types of materials. Broad classification of materials are as follows- i) Natural construction materials- e.g. stone, Timber, Bituminous materials, Lime, Soil etc. ii) Artificial construction materials –e.g. Bricks, Tiles, Cement, Aggregate, Precast Concrete Products, Plywood, glass etc. iii) Special construction materials- e.g. Water Proofing and damp proofing materials,	01 mark each for any two

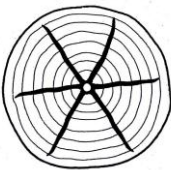
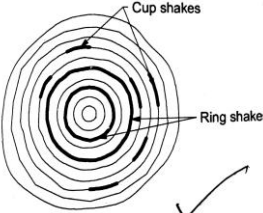
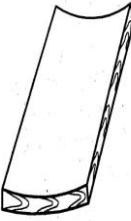



		Termite proofing materials, Thermal Insulating materials, Sound Insulating materials, Fibres, Adhesives, ceramic materials etc. iv) Finishing materials- e.g. Mortars (Cement/Lime), Plaster of Paris, Paints, Distempers, Varnishes, Cladding materials etc. v) Recycled , Agro and Industrial based materials- e.g. Rice Husk, Bagasse, Coir fibres, Fly ash, sawdust, Polymer, Rubber waster etc.	categories.
Q.1	3) Ans	Explain dressing of stone in short. Dressing of stone is carried in following steps- i) Sizing – In this process, irregular or unshaped quarry stones are reduced to the desired dimensions by removing extra portions and projections with the help of hammer and chisels. It is carried out at quarry or at construction site. ii) Shaping- In this process sharp projections and other extra irregularities from edges, corners and surfaces are properly removed by tools. iii) Planning – In this process stones are cleared off from all the irregularities from the surface by fine tooling. iv) Finishing- In this step stones are rubbed with a suitable abrasive material such as silicon carbide in the presence of water. v) Polishing- In this process grinding is done to the finished stones so as to make it smooth and good looking . It can be done manually or by machines with the help of abrasive material.	02 marks
Q.1	4) Ans	Define lime with chemical reaction. The moisture and carbon dioxide are removed from the limestone by the process of calcination and the product which is remained after removing the moisture and carbon dioxide is termed as lime. Lime is obtained from limestone by the chemical reaction as below- Lime Stone i.e. $\text{CaCO}_3 \longrightarrow \text{CaO}$ i.e. Lime + CO_2 i.e. Carbon dioxide	01 mark 01 mark
Q.1	5) Ans	What are the sources of silt? 1) Silt may occur as soil or as suspended sediment in a surface water body. 2) It may also exist as soil deposited at the bottom of water body. 3) Sometimes it may be available in a blowing wind in the form soil particle. 4) Disintegrated particles of rocks deposited on vegetation	½ mark for each point
Q.1	6) Ans	State the classification of burnt clay bricks. Burnt clay bricks are classified into the following four types i) First class bricks ii) Second class bricks iii) Third class brick iv) Overburnt or jhama bricks	½ mark for each class of bricks
Q.1	7) Ans	Name the chemical ingredients of cement. Following are the chemical ingredients of cements... i. Lime ii. Silica iii. Alumina iv. Iron oxide v. Magnesia vi. Sulphur trioxide	½ mark each for any four ingredients



		vii. Soda and potash viii)Gypsum (or calcium sulphate)	
Q.1	8) Ans	State the two properties of artificial sand. i. Any required uniform size which can be obtained from stone crusher which is desirable to make a good quality of concrete and mortars. ii. It has rough surface texture which is generally preferable for concrete and mortar and gives more compressive strength. iii. Specific gravity of artificial sand fall in between 2.6 to 2.8 iv. Density of artificial sand falls in between 17 to 25 kN/m ³ v. Water absorption in case of artificial sand is almost negligible. vi. Artificial sand has fewer tendencies to attract moisture. vii. It shows the minimum expansion and contraction under changing temperature. viii. Its bulking is less. ix. It does not have any organic impurities but have small amount of inorganic impurities.	01 mark each for any two properties.
Q.1	9) Ans	Enumerate different types of heat insulating materials (any four). i) Rock wool ii) Fibre board iii) Flexible blanket iv) Saw dust v) Cork board slabs vi) Gypsum boards vii) Foam glass viii) Foam plastic ix) Thermocol x) Asbestos cement boards	½ mark each for any four types.
Q.1	10) Ans	Define fibre. Fibre is a class of materials that are continuous filaments or are in discrete elongated pieces, similar to lengths of thread. This term sometimes also refer to a raw material that can be drawn into threads.	02 marks
Q.1	11) Ans	Write down the uses of adhesive. i) Used for shearing resistance of material ii) They are useful for binding thin materials. iii) Used in automatic package machines.	01 mark each for any two uses
Q.1	12) Ans	State different types of construction waste. i) Major components: Cement Concrete, bricks, Cement Plaster, Steel , Rubble, Stone, Timber etc. ii) Minor Components : Iron, plastic, pipes of GI , iron, Plastic etc. iii) Electrical Fixtures; Copper and Aluminium wiring, wooden baton, wire insulation. Panels, other materials are glazed tiles, glass panes.	½ mark each for each category.
Q.2	1) Ans	Explain role of Environmental Engineering in Civil Engg. Environmental engineering deals with the study of water supply, sanitary engineering and environmental pollution such as air, water, noise, land and thermal pollution. Under water supply engineering, raw water obtained from various sources like rivers, dams, lakes and well is treated by various treatment methods and then this	01 mark



		<p>potable or drinkable water is supplied to the people without causing any undesirable effect on human body. The treated water is supplied to the consumers by designing water distribution network.</p> <p>Under water sanitary engineering, whatever the waste water generated from the community is obtained and treated in such a manner which will not cause any kind of pollution in the surrounding. For this purpose various conventional as well as advanced sewage treatment methods are adopted.</p> <p>Due to ever increasing population all over the world, deforestation for more space on earth, industrialization and urbanization, lot of pollution problems such as air pollution, land pollution, thermal pollution, noise pollution are created. To control all this types of pollution various pollution control measures and methods are adopted. Various laws and criteria are framed to reduce the effect of it.</p>	<p>01 mark</p> <p>01 mark</p> <p>01 mark</p>
Q.2	2) Ans	<p>State the requirement of ideal Construction Materials.</p> <p>The ideal construction material should be selected on the basis of following criteria.</p> <ol style="list-style-type: none"> 1) Loading: The material should have sufficient strength to carry the prescribed loads. It should be able to sustain the load coming over it without failure 2) Serviceability: Serviceability refers to the conditions under which building is still considered useful. For that the material used should not produce large deflection, more vibrations, cracks etc. It should be light in weight, flexible and not more rigid. It should not wear out easily. Its surface should be smooth and should be easy for handling. 3) Appearance: The material to be used for construction should give aesthetically pleasing appearance. It should look attractive to look at it. 4) Economy: The construction material should be economical. The cost of aesthetically pleasing material should be low as possible. 5) Environmental Effect: The construction material should not produce pollution or affect human beings during their use. It should be environmental friendly. 	<p>01 mark each for any four requirements</p>
Q.2	3) Ans	<p>Draw a neat sketch of following defects in Timber. a) Heart Shake b) Ring Shake c) Cup</p> <p>a) Heart Shake</p>  <p>b) Ring Shake</p>  <p>c) Cup</p>  <p>d) Bow</p> 	<p>01 mark for each defect</p>
Q.2	4) Ans	<p>Write classification of Asphalt.</p> <p>The asphalt is classified into two categories</p> <ol style="list-style-type: none"> i) Natural Asphalt: When asphalt is found as natural deposits, it is known as natural asphalt. Depending upon the occurrence, natural asphalt may be broadly 	



		<p>divided in two classes:</p> <p>a) Lake Asphalt b) Rock Asphalt</p> <p>a) Lake Asphalt: It is obtained from lake at depth varying from 3 to 60 meters. It is a composite mineral containing about 40 to 70% of pure bitumen. It is refined by boiling in a tank. The water evaporates and impurities collected at the top are removed.</p> <p>b) Rock Asphalt: It is natural asphalt impregnated in limestone rocks. It contains about 4 to 20% pure bitumen by volume, the rest contains of calcareous materials.</p> <p>ii) Residual (Petroleum or artificial) asphalt: When asphalt prepared by distillation of crude petroleum of asphaltic base. The residual which settles at the bottom contains asphalt. Depending upon the availability, various types of asphalt are</p> <ol style="list-style-type: none"> 1) Natural asphalt 2) Refined asphalt 3) Rock asphalt 4) Mastic asphalt 5) Cut back asphalt 6) Liquid asphalt 7) Artificial asphalt 	<p>02 marks</p> <p>02 marks</p>
<p>Q.2</p> <p>5) Ans</p>		<p>Give applications of soil as a construction material.</p> <p>Soil is a very useful material in civil engineering. Its easy availability and low cost make it a very versatile and widely used material in the following way-</p> <ol style="list-style-type: none"> 1. Clayey soil is generally used in the formation of clay bricks and also used for various construction operations. 2. Pervious and impervious soil used as a main ingredient for earthen dam construction. 3. For many road work soil is used as binder material in between stone and ballast. 4. Soil is used for the construction of canals particularly as filling material. 5. In retaining wall soil is used as filling material. The type of soil used may vary depending upon its necessity and required parameters. 6. Apart from this soil can be used for other purposes i.e. for river protection work, soil cement mixture for sub grade and also used as a filter material. 	<p>01 mark each for any four application</p>
<p>Q.2</p> <p>6) Ans</p>		<p>State the various methods of quarrying, explain in short.</p> <p>Depending upon the nature of rock and purpose, any one of the following methods are used i.e.</p> <ol style="list-style-type: none"> a) Digging b) Heating c) Wedging d) Blasting <p>a) Digging: When the quarry consists of small and soft pieces of stones, then digging method is preferably used to remove small pieces or stones. For removing the stones, tools like pick-axe; hammers and crowbar etc. are mainly used.</p> <p>b) Heating : When the natural rock bed is horizontal and small in thickness then rocks are splitted up into small pieces by the process of heating.</p> <p>c) Wedging: When the rock consists of natural fissures, cracks; then wedging method is used to remove the stones from the hard rocks. When natural fissures are absent,</p>	<p>01 mark for each method.</p>



		<p>then artificial fissures are made by drilling holes. Rocks like marble, sandstone, laterite and sandstone are treated by the method of wedging. In this method, blunt steel wedge or steel point is driven into the fissure or cracks of rocks by means of hammer and then blocks of stones are shifted by crowbars.</p> <p>d) Blasting: When the rocks are much hard, compact and fissure less, then it is very difficult to remove the stones by the method of heating and wedging. That time, the method of blasting with the help of explosives is preferably employed so as to convert the rock into smaller pieces of stone. The process of blasting is carried out with following operation-</p> <ul style="list-style-type: none">i) Drilling holes- Holes are drilled up to the required depth.ii) Charging- The holes are cleaned properly and allowed to dry. Then it is charged with gunpowder or dynamite.iii) Tamping: The remaining portion of hole is filled with clay or ash and compacted with the help of tamping.iv) Firing: For the purpose of firing, a fuse is already inserted throughout the hole. The free end of fuse is finally fired either with a match or electricity.	
Q.3	1) Ans	<p>State the advantages of seasoning of Timber.</p> <p>Following are the advantages of seasoning of timber.</p> <ul style="list-style-type: none">1. To prevent shrinkage, splitting, checking and warping.2. To achieve greater stiffness and strength.3. To allow penetration of preservatives4. To obtain a surface that will accept paint, polish or glue.5. To protect against decay.	Any four 01 mark for each
Q.3	2) Ans	<p>Explain Field Slaking of lime.</p> <p>Field slaking as per the IS: 1635-1992.</p> <p>It is important that in tank slaking, lime should be added to water and not water to lime. As lime slacks with evolution of heat, water begins to boil. More lime and water may be added till the requisite quantity of lime has been slaked. After the apparent slaking is over, stirring should be continued for the some further to sure that the whole of the lime has been fully slaked.</p>	04 Marks
Q.3	3) Ans	<p>Explain various forms of bitumen.</p> <p>Following are the usual forms of bitumen:</p> <ul style="list-style-type: none">1. Bitumen emulsion: Bitumen emulsion is a liquid product in which bitumen is suspended in a finely divided condition in an aqueous medium and stabilized by suitable material. Normally cationic type emulsions are used in India. The bitumen content in the emulsion is around 60% and the remaining is water.2. Cut-back bitumen: In some situations preference is given to use liquid binders such as cutback bitumen. In cutback bitumen suitable solvent is used to lower the viscosity of the bitumen. From the environmental point of view also cutback bitumen is preferred.3. Bituminous primer: In bituminous primer the distillate is absorbed by the road surface on which it is spread. The absorption therefore depends on the porosity of the surface. Bitumen primers are useful on the stabilized surfaces and water bound macadam base courses.4. Modified bitumen: Certain additives or blend of additives called as bitumen modifiers can improve properties of Bitumen and bituminous mixes. Bitumen treated with these modifiers is known as modified bitumen.	Any four 01 mark for each



Q.3	4) Ans	<p>State the field test carried out on brick.</p> <p>Following are field test carried out for brick.</p> <ol style="list-style-type: none">1. In this test, the brick is checked by observation so that it must be well burnt, copper coloured or reddish in colour, free from cracks and with sharp edges.2. In this test, a scratch is made on brick surface with the help of a finger nail. If no impression is left on the surface, brick is treated as to be sufficiently hard.3. In this test, two bricks are struck with each other, then it should give a clear metallic ringing sound, it indicates brick is well burnt.4. In this test, the burnt clay bricks are dropped flat on hard ground from a height of about 1m, it should not crush into pieces, it indicate good strength of brick.5. In this test, the bricks are soaked for 24 hours, no white salts deposits should be seen after drying; indicates free lime in the bricks.	Any four 01 mark for each
Q.3	5) Ans	<p>List out the properties of glass.</p> <p>Following are properties of glass:</p> <ol style="list-style-type: none">1. Glass absorbs, refracts light.2. Glass transmits light.3. Glass is harder but extremely brittle.4. Glass is transparent and translucent.5. Glass can take up high polish.6. Ordinary chemical does not easily affect glass.7. Glass can be prepared in plenty and in beautiful colours and shades.8. Glass is an excellent electrical insulator in solid state.	Any four 01 mark for each
Q.3	6) Ans	<p>State the properties of solid concrete blocks.</p> <p>Following are the properties of solid concrete blocks:</p> <ol style="list-style-type: none">1. It is more cost effective as compared to other traditional walling system.2. It has high quality, high strength and uniform size and shape.3. Decentralize production is possible both in factory and on site production.4. Structural performance can be engineered as per application.5. It has high durability.6. It has thermal insulation property.7. It has low density.	Any four 01 mark for each
Q.4	1) Ans	<p>Explain various methods of moulding of bricks.</p> <p>There are three different ways of moulding.</p> <ol style="list-style-type: none">1. Ground moulding: This method is adopted when a large and level area of land is available for the purpose. The moulding of bricks may be either done on ground. For hand moulding of the bricks, wooden moulds or steel moulds are preferably used. The mould is either dipped in water or sand. Clay is introduced in the mould firmly. Then mould is lifted and slight jerk is given to it and inverted on ground to release the moulded bricks.2. Table Moulding: The moulder carries out the moulding of brick on a table. He does so while standing by the side of the table. He moulds bricks on boards known as stock boards. Stock boards are of the same size as the moulds and have a projection for the frog. Sand is sprinkled inside the mould and on the stock board. The mould is placed to fit the stock board and then filled with earth. Sufficient quantity of earth is dashed into the mould pressed hard and the surplus earth is removed. A Pallet is then placed on the mould. The mould containing the brick is then smartly lifted off the stock board and inverted so that the whole rests on the	04 Marks



		<p>pallet. The mould is then given a gentle blow and lifted leaving the brick on the pallet.</p> <p>3. Machine moulding: There are a variety of moulding machines and these machines are capable of manufacturing large number of bricks quickly. The bricks moulded in machine have better / sharp edges / smooth surface, stronger than hand moulded bricks etc.</p>	
Q.4	2) Ans	<p>Write two properties of particle board and veneers.</p> <p>Following are properties of particle board:</p> <ol style="list-style-type: none">1. No grain direction.2. Particle board is homogeneous and has the same degree of strength in different directions.3. The density of particle board varies between 650 and 750 kg/m³. <p>Following are properties veneers:</p> <ol style="list-style-type: none">1. The common range in the air drying density of veneer species is approximately 0.40 g/cm³.2. Colour is one of the most important appearance characteristics of decorative veneers or panels.3. Veneer cutting and arrangement give the maximum outlet for figure exploitation.	<p>Any two 01 mark for each</p> <p>Any two 01 mark for each</p>
Q.4	3) Ans	<p>Draw the flow diagram of manufacturing process of cement.</p> <pre>graph TD; A[Calcereous Material Lime Stone] --> B[Crushing]; B --> C[Fine Grinding in Ball Mill and Tube Mill]; C --> D[Storage Basin]; E[Argillaceous Material Clay] --> F[Crushing]; F --> G[Fine Grinding in Ball Mill and Tube Mill]; G --> H[Storage Basin]; D --> I[Mix in Correct Proportions]; H --> I; I --> J[Preheating @ 800° by exhaust gases]; J --> K[Fed to Rotary Kiln]; K --> L[Clinkers are formed]; L --> M[Clinker are ground in Ball Mill]; N[Addition of 2% to 3% of Gypsum] --> M; M --> O[Cement Silo]; O --> P[Dispatch to Packing Plant]; P --> Q[Distribution];</pre>	<p>04 Marks</p>
Q.4	4) Ans	<p>Explain different types of tiles with their suitability.</p> <p>Following are different types of tiles with their suitability:</p>	



		<ol style="list-style-type: none">Drain tile: These types of tiles are laid in water logged areas and allow the subsoil water to drain. They may be circular, semi-circular or segmental in shape.Floor or paving tiles: These types of tiles are popular in the name of ceramic tiles with various trade names. These tiles have a very attractive look and available in various shade of colour. They have very light weight as compare to mosaic tiles or marble or granite. These tiles are suitable in residential buildings.Roof tiles: These tiles are mostly used for covering pitched roof or slope roof. Various types of roof tiles are available in the market in name of Allahabad tiles, corrugated tiles, guna tiles, mangalore tiles, Flemish tiles, flat tiles, pan tiles, pot tiles etc.Encaustic tiles: Depending upon the addition of coloured pigment in clay, these tiles acquire the desire print or colour after manufacturing. They are famous in the name of galicha tiles.	01 mark for each
Q.4	5) Ans	<p>What are the uses of plywood?</p> <p>Following are the uses of plywood:</p> <ol style="list-style-type: none">To make light partition or external walls.To make formwork, or a mould for wet concrete.To make furniture, especially cupboards, kitchen cabinets, and office tables.As part of flooring system.To make light door and shutters.For packaging of goods.	Any four 01 mark for each
Q.4	6) Ans	<p>State the requirement of cement as a construction material.</p> <p>Following are requirement of cement as construction materials:</p> <ol style="list-style-type: none">It is required in mortar for plastering, masonry work, pointing, etc.It is required for making joints for drains and pipes.It is required for water tightness of structure.It is required in concrete for laying floors, roofs and constructing lintels, beams, stairs, pillars etc.It is required for precast pipes manufacturing, piles, fencing posts etc.It is required in the construction of important engineering structures such as bridges, culverts, dams, tunnels, lighthouses etc.	Any four 01 mark for each
Q.5	1) Ans	<p>Enlist any four types of fibres with their application.</p> <p>Types of fibers</p> <ol style="list-style-type: none">Steel FibreCarbon FiberGlass Fibers:Asbestos fiber <p>Application:-</p> <ol style="list-style-type: none">Steel Fiber: - Steel Fiber is wire of low carbon steel having high tensile strength and is elastic and ductile in nature. Steel fibers are used in pre-cast pipes, concrete blocks.Carbon Fiber: - Carbon fiber is extremely strong and light. Carbon fibers are generally composite material. Fiber reinforced polymer contains carbon fiber. Carbon fiber is generally used for strengthening of concrete, masonry steel, cast iron and timber structure.Glass Fibers: - They are softened and drawn mechanically into threads or glass wool that is finer than silk. They are generally used for construction of furniture,	02 Marks 02 marks



		bathroom fittings, lamp shades etc. 4. Asbestos fiber:- Asbestos Fiber are used in manufacturing insulating concrete blocks.	
Q.5	2) Ans	What are the uses of epoxy? Uses of epoxy: 1. Epoxy based materials are extensively used as coatings and adhesives. 2. Used for tiles fitting. 3. Used for glass work joinery. 4. Use for repairing leakages in pipes. 5. Used for joining precast units.	Any four 01 mark for each
Q.5	3) Ans	Explain the types of termites. There are two types of termites, namely 1) Dry wood termites, 2) Subterranean termites. Dry wood termites make their house in wood in the form of tubes or tunnels from which they can find their access and they damage the wooden article and therefore, insecticides should be widely used to overcome the termite attack. Subterranean termites live in soil because there is favorable condition like moisture and mainly responsible for damaging the buildings and its parts. They build nests in the form of colonies or mud wall tunnels or tubes.	02 marks for each
Q.5	4) Ans	What are the causes of dampness in building? <ul style="list-style-type: none">Moisture rising up the walls from ground : Due to capillary action, the water present in ground soil may rise above the ground level through the walls.Condensation : Condensation of atmospheric moisture can also be a source of dampness. Because this form of water gets deposited on different components and gradually find their way to penetrate into the building causing dampness.Rain bearing against external walls: Rain water falling on external walls, parapets also causes dampness.Miscellaneous causes: 1. Rain water can also penetrate through the roofs if the roof is of bad quality. 2. Inadequate roof slopes or defective junction between roof slab and parapet wall may cause dampness. 3. Presence of gutter near the building will store the rain water and subsequently this water will create dampness in the external walls. 4. Wet areas of buildings (such as kitchens, bath rooms) having substandard plumbing fitting can also be a source of dampness.	01 mark for each
Q.5	5) Ans	Give the suitability of different sound insulating materials. Suitability of Different Sound Insulating Material:- 1. Glass, Mineral wool mats, Slabs or Synthetic Binder are used as Sound Insulator as solid Inner Layer underneath floors. 2. Plastic Slab is made from plasticized polystyrene foamed plastic. They provide sound proofing of reinforced concrete floor. 3. Wire fibre boards: - They are used as sub floor to insulate impact noise. 4. Mineral Wood Boards: - They are subjected to thermal and moisture curing in special chamber. 5. Gypsum Plaster Boards: - They are used along with mineral wool and glass fibre for	Any four 01 mark for each



		facing walls and ceilings. 6. Wood Fibre and asbestos slab are used as strip lining in floors.	
Q.5	6) Ans	What are the uses of ceramic materials? Uses of ceramic material 1. They can be used for flooring. 2. They can be used for decorative purpose in the interior parts of building. 3. They are used in medical labs for making artificial teeth. 4. They are used in preparing artificial moulds.	04 marks
Q.6	1) Ans	Explain the constituent of paint in short. Paint generally is made up of the following constituents: 1) Base:- A base is a solid substance in a form of fine powder, forming the bulk of a paint. 2) Vehicle or carrier:- Vehicle are liquid substances which hold the different ingredients of a paints in liquid suspension. The carrier or vehicle makes it possible to spread the paint evenly on the surface. 3) Drier:- Driers are used to accelerate the process of drying and hardening, by extracting oxygen from the atmosphere and transferring it to the vehicle. 4) Coloring pigment:- Coloring pigments are added to the base to have different desired colors. 5) Solvent or thinner:- Solvent are added to the paint to make it thin so that it can be easily applied on surfaces. It also helps the paint in penetrating through the porous surface of the background.	04 marks
Q.6	2) Ans	Give two properties and two uses of 'Acoustic Plaster' . Properties of Acoustic plaster: I. Excellent sound proofing property. II. It should be tough, hard, durable and economical. III. It should be workable so as to have good adhesion with stone. IV. It should be capable to resist the weathering effect. Uses of Acoustic plaster: a. It is used for construction of sound proof building. b. Aesthetic purpose	02 marks 02marks
Q.6	3) Ans	List the four properties of 'POP' in building construction. Properties of POP 1) It is white powder 2) When POP is mixed with water it sets quickly within 5 to 15 minutes to a hard porous mass. 3) POP takes a sharp impression or mould because it fills the mould completely because of slight expansion while setting. 4) POP is easy to spread and level. 5) It is fire resistant highly. 6) It forms a thick surface to resist normal knocks after drying. 7) It expands very slightly on the setting. 8) It does not cause cracking of surfaces. It gives a decorative interior finish. It mixes up easily with water.	Any four 01 mark each
Q.6	4) Ans	State uses of bagasse in construction. Uses of Bagasse	



		<ol style="list-style-type: none">1. Bagasses is used for making boards, resembles like plywood or particle board. These boards are known as bagasse board, it has wide usage for making partitions, furniture's etc. which proves to be good substitute for plywood.2. Bagasse is also used in manufacturing of bricks.3. Bagasse is also used in making bio-fuel and papers4. Bagasses uses are wide and varied due to its widespread availability and low cost.	01 mark for each
Q.6	5) Ans	<p>What are the objectives of using Fly-ash in cement or concrete.</p> <p>Fly ash is used as a supplementary cementitious material (SCM) in the production of Portland cement concrete with following Objectives:</p> <ol style="list-style-type: none">1. To improves concrete's workability,2. To improves concrete's pumpability,3. To improves concrete's cohesiveness,4. To improves concrete's finish,5. To improves concrete's ultimate strength, and durability	Any four 01 mark each
Q.6	6) Ans	<p>State the uses of polymers.</p> <p>Uses of polymers</p> <ol style="list-style-type: none">1. Polymers are used for insulation and packing.2. Polymers are used for cladding panels, sinks, surfaces, coating.3. Polymers are used as glazing sealants.4. Polymers are used for making polymer concrete.	01 marks each