

## Marking Scheme of Model Test Paper

Class 9<sup>th</sup>

Subject:-Construction

Q no	Answer	Marks
1	<p><b>Characteristics of good building stones</b></p> <p><b>1. Appearance:</b> good building stone would have a uniform colour, would be free from clay holes, bands or colour spots.</p> <p><b>2. Strength:</b> sturdy building stones should be able to withstand compression as the stones used in building construction are generally subjected to compressive strength. Compressive strength is the capacity of material or structure to resist or withstand breaking under high pressure. Generally, compressive strength of building stone varies from 60 to 200 Newton per square mm.</p> <p><b>3. Structure:</b> a good building stone has uniformity of texture. It should be either closed grained or crystalline and free from cavities and cracks also.</p> <p><b>4. Hardness:</b> the hardness of certain stones may define their durability. The coefficient of hardness should be more than 14. It should be able to resist the abrasive forces caused due to wear and friction.</p> <p><b>5. Heaviness:</b> the stones of heavier varieties are more compact, less porous and have greater specific gravities.</p> <p><b>6. Resistance to fire:</b> stones should be able to resist high temperature and should be resistance to fire.</p> <p><b>7. Availability:</b> the stone should be easily and economically available.</p> <p style="text-align: center;">Or</p> <p>Stone is a natural material obtained from rocks. The stones which are used for construction of various structures are known as building stones. There are different types of rocks and stones The occurrence and characteristics of these stones vary. Some often used stone forms are granite, gneiss, marble, basalt, slate, sandstone, limestone, <i>kankar</i>, laterite, quartzite, chalk, compact limestone, serpentine, etc.</p>	5

2	<p>The understanding of plane geometry is pre-requisite for the proper use of geometric constructions. The students, during making geometric constructions develop skills in handling drawing tools (compasses and dividers, triangles, rulers, templates) and promote logical thinking. Engineering drawing consists of many such geometrical constructions. To record information on paper or any other surface, instruments and equipment are needed, since engineering drawing is a representation of the graphical language.</p> <p>building is considered as the three dimensional shape or form in the space, resting on the earth secured to the earth by foundation for stability. It consists of architectural space and structure for enclosing the space.</p> <p>Planning, designing, drawing, estimating, construction, occupation, maintenance and preservation are various stages related to the buildings. Building drawing is a result of planning and designing for a specific type of building — it is a graphic representation by means of the shape and size of the proposed construction by means of lines, dimensions, notes, schedules, statement of areas etc.</p> <p style="text-align: center;">Or</p> <p>Write the all steps making polygon having 10 equal sides with diagram</p>	5
3	<p><b>Shallow Foundation</b></p> <p>This is the most common type of foundation and can be laid using open excavation by allowing natural slopes on all sides. This type of foundation is practicable for a depth of about 1-1.5 m and is normally convenient above the water table. The base of the structure is enlarged or spread to provide individual support (Width is greater than its depth).</p> <p><b><i>Types of shallow foundations</i></b></p> <p>a) Wall footing    b) Isolated footing c) Combined footing    d) Inverted footing</p> <p><b>Deep Foundation</b></p> <p>These foundations carry loads from a structure through weak compressible soil or fills onto the stronger and less compressible soils or rocks at depth. These foundations are in general used as basements, buoyancy rafts, cylinders, shaft and piles. (Depth is greater than its width)</p> <p><b><i>Types of deep foundations are classified as</i></b></p> <p>a) Basements    b) Buoyancy rafts c) Well and caissons    d) Shaft foundations</p>	5

	<p>or</p> <p><b><i>Points to be observed during excavation work</i></b></p> <ul style="list-style-type: none"> <li>• Setting out of corner benchmarks</li> <li>• Survey for ground levels</li> <li>• Survey for top levels</li> <li>• Excavation to approved depth</li> <li>• Dressing of loose soil</li> <li>• Making up to cut off level</li> <li>• Constructing dewatering wells and interconnecting trenches</li> <li>• Marking boundaries of the building</li> <li>• Constructing protection bunds and drain</li> </ul> <p><b><i>Points to be observed during excavation</i></b></p> <p>Excavation of soil is carried out manually or by excavation machinery, such as the JCB excavator machine, etc. Before excavation, it is necessary to know the soil strata; it is advised that trial pits in the construction site are made to check actual soil and rock strata.</p> <p>The excavation and depth is decided according to the following guidelines on the site:</p> <ol style="list-style-type: none"> <li>1. For Isolated footing — the depth to be one and half times the width of the foundation</li> <li>2. For adjacent footings with clear spacing — less than twice the width (i.e.) one and half times the length</li> <li>3. 1.5m in general and 3.5 m in black cotton soils</li> <li>4. In construction site, open foundation pits for columns and trenches for coursed rubble (CR) Masonry was carried out. The maximum depth was upto 3m.</li> </ol>																	
4	<p><b>Uses of stones</b></p> <p>Stones are widely used in the form of —</p> <ol style="list-style-type: none"> <li>1. blocks in the construction of buildings, lintels, arches, walls, columns, abutments and piers of bridges, etc.</li> <li>2. stone ballast (broken stone) for railway track, road construction, preparation of cement concrete mixture for foundation in the form of coarse aggregates, flooring, artificial stones and reinforced cement concrete</li> </ol>	3																
5	<table border="0" style="width: 100%;"> <thead> <tr> <th style="text-align: left;">Description</th> <th style="text-align: left;">Units of</th> <th style="text-align: left;">Measurement</th> <th style="text-align: left;">Payment</th> </tr> <tr> <th style="text-align: left;">1</th> <th style="text-align: left;">2</th> <th style="text-align: left;">3</th> <th style="text-align: left;">3</th> </tr> </thead> <tbody> <tr> <td><b>Earth work</b></td> <td></td> <td></td> <td></td> </tr> <tr> <td>1. Earth work in excavation for foundation in all sorts of soil</td> <td></td> <td>cu.m.</td> <td>Per cu.m.</td> </tr> </tbody> </table>	Description	Units of	Measurement	Payment	1	2	3	3	<b>Earth work</b>				1. Earth work in excavation for foundation in all sorts of soil		cu.m.	Per cu.m.	3
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	<p>2. All types of filing in plinth and elsewhere cu.m. Per cu.m.</p> <p><b>Brickwork</b></p> <p>1. Brickwork in general for foundation, plinth, super structure etc. cu.m. Per cu.m.</p> <p>2. Brickwork for half brick walls and thinner walls sq.m. Per sq.m.</p> <p>3. Lengthwise courses, such as string course, drip, weather courses cornice, etc. Intra Per m.</p>	
6	<p><b>Precautions</b></p> <p>(i) The tools should be stored in order in a place or rack.</p> <p>(ii) The tools should not be subjected to continuous dampness, moisture, etc., otherwise the trowel, flat and mortar pan may be damaged by rust.</p> <p>(iii) During use and transportation, the tools should not be dropped, otherwise, teeth may get damaged.</p> <p>(iv) While working at height, precautions should be taken, so that either the tools or the material should not fall on anybody standing or moving below in that area.</p> <p>(v) After the work the tools need to be cleaned and washed with water, especially those handling mortar, concrete etc.</p>	3
7	<p><b>Procedure</b></p> <p>1. From the site plan, one line (A-A”) may be established and selected. This may be used as a base line for the entire work.</p> <p>2. Then at the centre, a line of wooden pegs shall be driven on the ground.</p> <p>3. Two wooden pegs are driven at an equal distance on either sides of the centre line peg equal to the width of foundation trench.</p> <p>4. Thread or line <i>dori</i> shall be tied with the rest of the pegs. Now lines are marked with the help of pick-axe.</p> <p>5. Line powder should be spread along these lines.</p> <p>6. Along centre line pegs, masonry pillar(MP1) (one brick × one brick) shall be constructed at a distance of approx. 2 metre from the centre line.</p> <p>7. These pillars are kept in height up to plinth level and plastered.</p> <p>8. Same process is followed for marking the four corners of centre line of foundation plan.</p>	3



11	<p><b>Types of Masonry Tools</b>  Following are the various types of tools used to carry out masonry work.</p> <p><b>(i) Plumb rule and bob:</b> is used to check the verticality of the wall, column, wooden frame i.e. door, window etc. It consists of a twometre long wooden piece whose top portion is attached to a plumb bob.</p> <p><b>(ii) Spirit level:</b> is used to check the horizontality of the floor, roof, door, window frame etc.</p> <p><b>(iii) Trowel:</b> is used to lift and spread mortar to form the joints and to cut the bricks</p> <p><b>iv) Square:</b> is right angle steel piece, which is used to check the right angle (perpendicularity) of the walls, columns etc.</p>	2
12	<p><b>Tools required</b></p> <ol style="list-style-type: none"> <li>1. Line <i>dori</i> or thread</li> <li>2. <i>Gamla</i> or iron pot</li> <li>3. Wooden or steel pegs</li> <li>4. Hammer</li> <li>5. Spade</li> <li>6. Trowel</li> <li>7. Plumb bob</li> <li>8. Pickaxe</li> <li>9. Mason square</li> </ol>	2
13	<p>we will construct a foundation in the trench. We will make a spread footing foundation to distribute the load of the wall over a larger area. Spread footing is applicable for load bearing structure. Mortar is used to fill the joints in brick masonry as it is the binding material. General a mixture of cement and sand are prepared in the ratio of 1:6.</p> <p><b>Tools required</b></p> <ol style="list-style-type: none"> <li>1. Mason square</li> <li>2. Brick axe</li> <li>3. Tape</li> <li>4. Spade</li> <li>5. Line dori</li> </ol>	2
14	<p><b>Idea</b>  The first step is to come up with a business idea. A business idea could be based on</p> <p>(a) Something you are interested in doing (For example, making Dosa)</p> <p>(b) A need you see in the market (For example, Tasty food next to the station)</p> <p><b>Getting money and material</b>  Once you have the idea, you can start on a small scale with some money which will help you in buying basic material.</p>	2

	<p>Understanding customer needs Once you start selling, you will find out what your customer likes and wants. You will also find out what your customer does not like during this stage.</p> <p>Improving Product/service You can use this knowledge of what your customer likes and does not like to improve your product. (For example, Prem's customers liked variety)</p> <p>or</p> <p>It means understanding who you are, what you like, what you do not like, what are your beliefs, what are your opinions, what is your background, what you do well and what you do not do well? It is important to know who you are, because only then can you measure your strengths and weaknesses</p>	
15	<p>The environment around us affects all aspects of our life; and all our day-to-day activities also affect the environment. Those who live in cities get their food supply from surrounding villages and in turn, are dependent on forests, grasslands, rivers, seashores, for resources, such as water, fuel wood, fodder, etc. We use resources from which food is made and we depend on the community of living plants and animals, which form a web of life. Everything around us forms our environment and our lives depend on the flora and fauna around us. Similarly, our school environment comprises the physical and the socio-cultural environment. The physical environment includes the school building and the classrooms, library, laboratories corridors, kitchen, toilets, garden and also the playground</p> <p>or</p> <p><b>Water conservation</b> Conservation and management of water are essential for the survival of mankind, plants and animals. This can be achieved by adopting the following methods:</p> <ol style="list-style-type: none"> <li>1. Growing vegetation in the catchment areas, which will hold water in the soil and allow it to percolate into deeper layers and contribute to formation of ground water.</li> <li>2. Constructing dams and reservoirs to regulate supply of water to the fields, as well as to enable generation of hydroelectricity.</li> <li>3. Sewage should be treated and only the clear water should be released into the rivers.</li> <li>4. Industrial wastes (effluents) should be treated to prevent chemical and thermal pollution of fresh water.</li> </ol>	

16	C	1
17	D	1
18	D	1
19	594×841	1
20	B	1
21	b	1
22	C	1
23	B	1
24	D	1
25	B	1
26	True	1
27	Write any two from following 1 Line <i>dori</i> or thread 2. <i>Gamla</i> or iron pot 3. Wooden or steel pegs 4. Hammer 5. Spade 6. Trowel 7. Plumb bob 8. Pickaxe 9. Mason square	1
28	lift, mortar	1
29	Stone	1
30	Blocks	1