

Byzantine architecture

- **Formation and development**

- 1) The early greek settlers from manga were led by some byzias, from whom the name byzantion was derived.
- 2) It was situated between black sea and Mediterranean sea and forms a link to Europe and asia by means of a narrow strip of water
- 3) Now it is named as 'istanbul'.
- 4) The use of lime concrete started in roman period was continued by the byzantines.
- 5) They manufactured bricks which they used for the construction of domes.
- 6) Marble was imported from other parts and use for ornamental work.
- 7) Flat roofs with small openings were adopted in places of hot weather and sheltered arcades surrounded the open courtyard.
- 8) These with the oriental dome as a symbol of faith became the chief features of this style.
- 9) The new city was formed on roman style with imperial places. Senate house, law courts etc.
- 10) The forums of constantile with its splendid columns were the main centre of the byzantine business world.
- 11) It was looked by the senate, while the hippodroms of old romans were used for horse and chariot races for the amusement.
- 12) Side by side churches were build.
- 13) The largest one is S. Sophia.
- 14) Constantinople became the centre of byzantine world, culturally Greek, juridically Roman, officially and passionately Christian.

Characteristic feathers

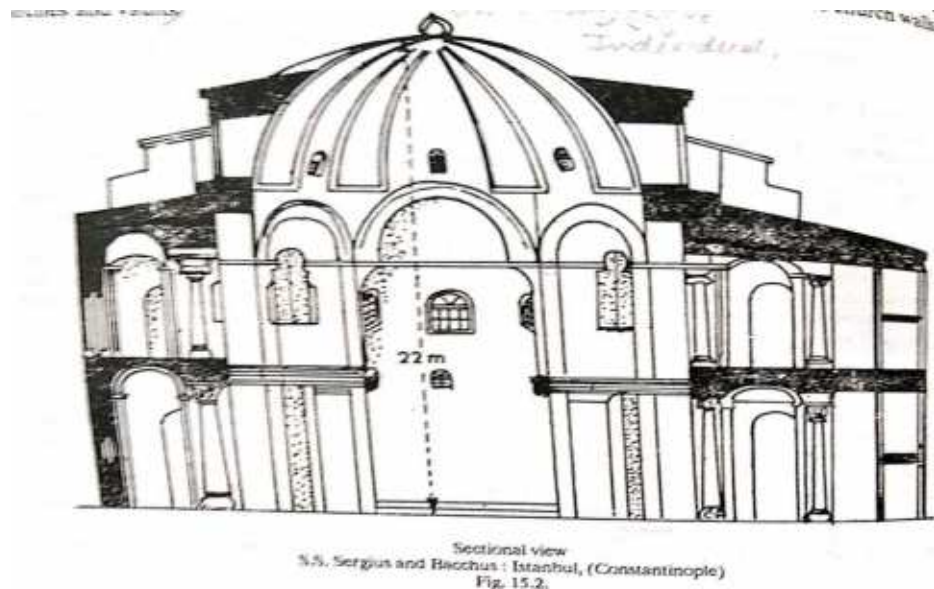
1. The byzantine architecture is characterized by the noval development of dome to cover square and polygonal plans of churches and tombs.
2. Domical roof became the chief motif of design in byzantine architecture.
3. The various types of domes used were:
 - i. Simple
 - ii. Compound
 - iii. Melon shaped
 - iv. Onion shaped
4. These domes were placed on square or polygonal plans by means of spherical pendentives.
5. Placing of small domes round the large central dome was very effective.
6. On account of their great height, eye eas directed upward, as if pointing to the sky or heaven while in early Christian style.

7. The domes were constructed without the centering with thin radiating bricks or light weight pumic stones to lessen the side o thrust on supporting walls.
8. The use of cement started in the roman period, was continued by the byzantine.
9. The brickwork in concrete was first completed and allowed to settle before covering the interior surface with marble slab
10. The external facade were decorated with various design patterns in brick work.
11. They found the bricks indispensable so they took great interest in the manufacture of bricks.
12. For brick work they needed concrete which they prepared from lime sand crushed tiles and bricks.
13. Byzantine used the columns decoratively as well as structurally to support the galleries and semi circular arches.
14. Mouldings were rare.
15. The interiors were radiant with beautiful pavement.
16. The walls were fully covered with marble mosaics and fresco decoration.
17. They devoid of sculpture, expressed fully in flat coloured glass mosaics, biblical scenes, group of saints, holy monogram of Christ over the church walls, arches and vaults.

Typical examples

S. S. Sergius and Bacchus, Istanbul(Constantinople)

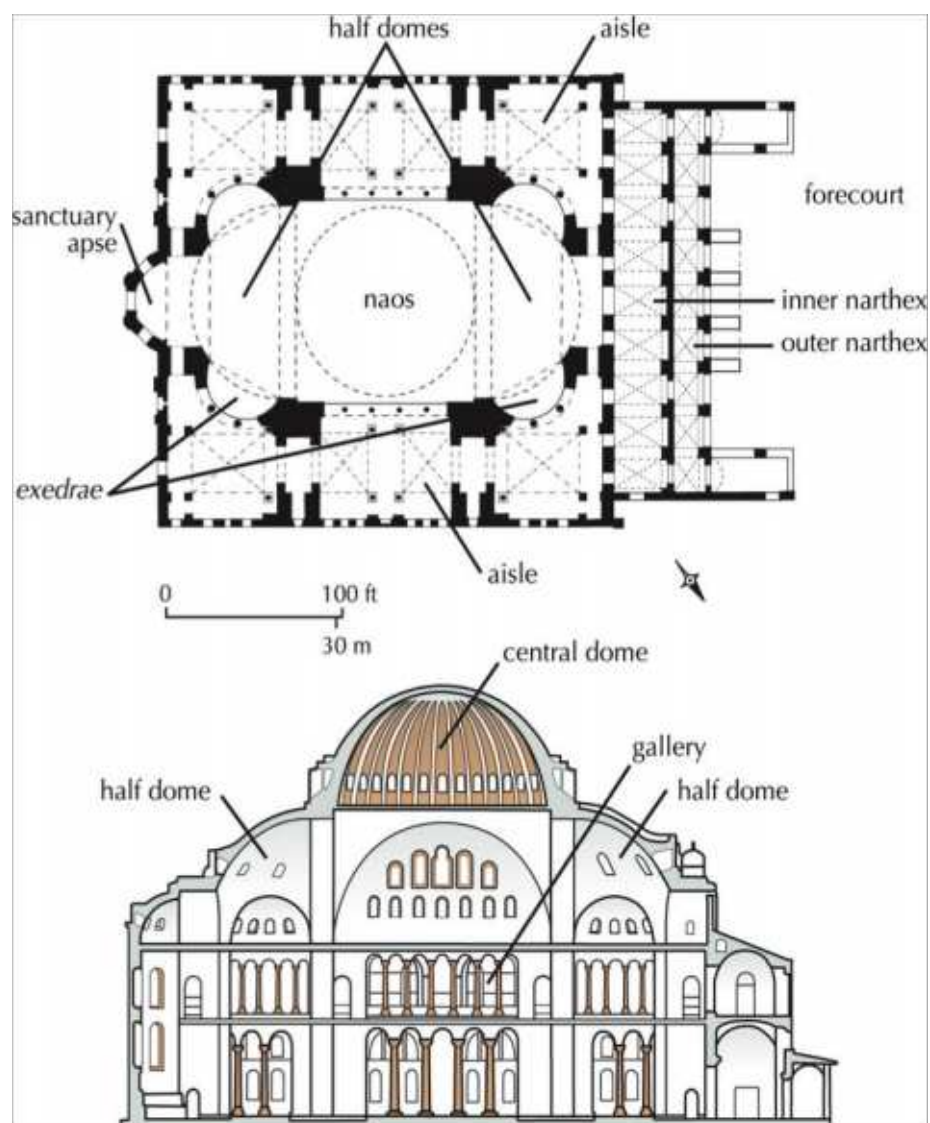
- i. It is build by Justinian.
- ii. The buildings stands on plan measuring 33m by 28m.
- iii. It has four colonnaded exedrae and the dome, supported on spherical pendentives is 15.8 m in diameter and 22 m high.



S.Sophia, Istanbul (Constantinople) (hagia. Sophia =divine wisdom)

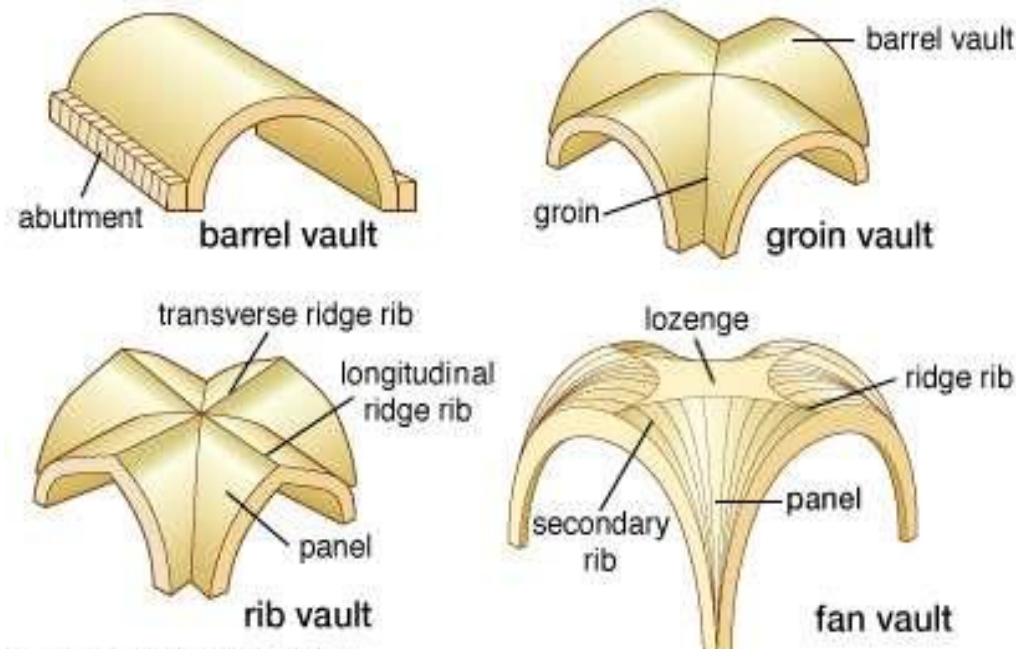
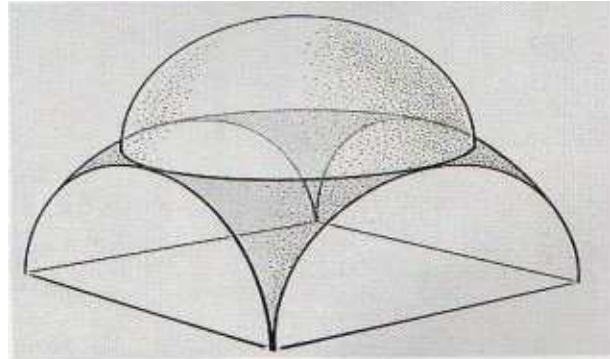
- i. It was constructed for Justinian by two genius architects Anthemius of Tralles and Isidorus of Miletus.
- ii. The church was designed in the form of Greek cross 91.5× 99m with the top of the dome at 54.8 m from the ground.

- iii. It has a central space of 32.6 m square with four massive stone piers 7.6 m × 18.3 m pierced by arches to form aisles and galleries.
- iv. The stone piers support four semi circular arches forming spherical pendentive, on which rests the dome 32.6 m in diameter and 54.8 m above the ground.
- v. The curved surface of the dome produces extraordinary effects of resonance.
- vi. On both ends are large hemi cycles covered with semi domes, forming an oval naves 68.9 m long 32.6 m wide.
- vii. The hemi cycles are flanked by exedra covered with semi domes, which acts as buttresses to the central dome.
- viii. The central dome 33 m cross which is larger than the tepidarium of the Thermae of Caracalla, appears like a canopy in the centre and hung by a golden chain from the sky.
- ix. The dome collapsed due to an earthquake in A.D. 558 and had to be rebuild.
- x. The marble columns 107 m in all support the groined vaults under the galleries.
- xi. The interiors are decorated with coloured mosaics which shine brilliantly under the light of the clere story formed by the row of 40 windows in the lower part of the dome.
- xii. It is also illuminated by thousands of candles during nights, which further help to dramatize the spiritual aspect of the interior.
- xiii. In 1453 A.D. Constantinople fell in the hands of the sultan of Turkey who converted it into a mosque, with the tall pinnacles that surround the central dome today.
- xiv. It is a now a museum.



Definitions

- 1) Pendentives: It is triangular curved surface constructed at the adjacent walls below the dome. It is mainly used in byzantine architecture.
- 2) Buttress: A buttress is an architectural structure built against or projecting from a wall which serves to support or reinforce the wall.



3) **Groined vaults**: A groin vault or groined vault is produced by the intersection at right angles of two barrel vaults. The word "groin" refers to the edge between the intersecting vaults. Sometimes the

arches of groin vaults are pointed instead of round

EARLY CHRISTIAN ARCHITECTURE

Formation and development

- i. Christianity initially took its root in jadaea an eastern part of roman empire and was carried to other parts of the world by St.peter, st. paul and other missionaries.
- ii. The Early Christian architecture is largely influenced by the existing remains of the roman art and was skillfully modified according to the suitability of geographical conditions of those countries like Asia Minor, Syria, egypt, italy and N. Africa etc.
- iii. The architecture was the outcome of religion and hence geological conditions had no direct effect on it.Either the old buildings were converted into churches or new churches were constructed out of existing remains.
- iv. The climate of Italy is varying, the north part being temperate, south being hot climatic conditions of Syria, Egypt N. Africa are different from one another.
- v. Christianity is founded by Jesus. He was born at Bethlehem near Jerusalem When he was thirty he started preaching about the kingdom of god and plunged About the kingdom of God and plunged himself for the services of mankind. Soon he become a revolutionary figure among the jewish religious leaders who had only contempt for the poor and sinner.
- vi. Bible is considered as holy book by the Christians. it consists of two parts.

Characteristic features of early christian architecture

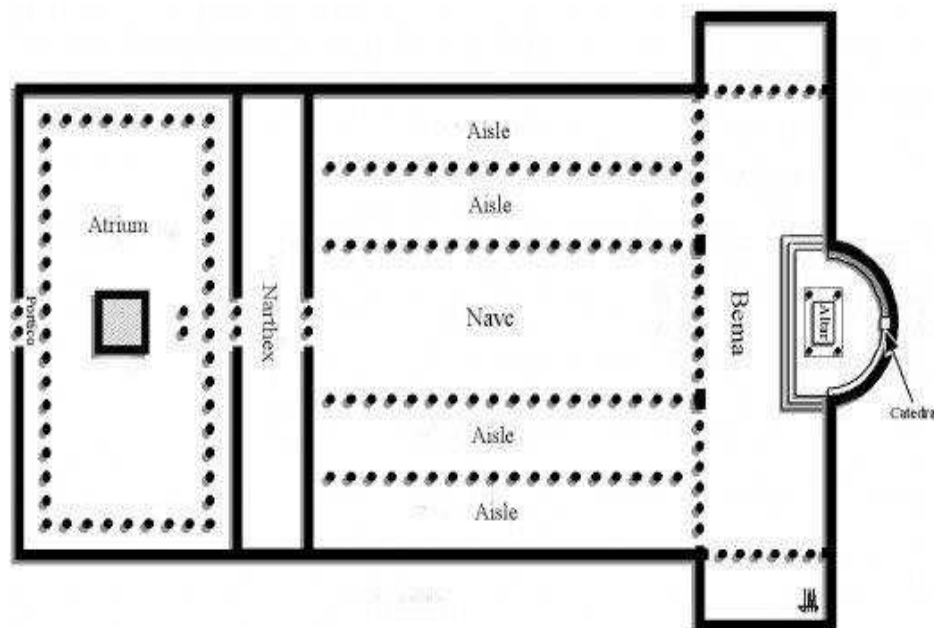
- i. The early Christians did make ample use of graeco roman architecture. There was no prosperity as was in roman period. They had no substantial precedents of their own to follow.
- ii. They made use of the remains of roman buildings for the construction of their new church.
- iii. The orders of temples and stoas whether Doric, ionic, Corinthian were collected and disposal them in symbolic plans.
- iv. The columns, either short or long, fluted or unfluted, were brought to uniform size and height by some devices for the use in same church.
- v. Columns were either closed spaced to carry entablature or widely spaced to carry semi circular arches.
- vi. The plan of church was simple in design, having two colonnades forming s long nave in the centre and two and four aisles on either side with a high altar at one end and covered with simple timber roof trusses.
- vii. The baptisteries and mausoleum chapels however were circular, octagonal in shape based Roman precedent, and also in the shape of a Greek cross.

- viii. The monumental churches succeeded brilliantly for the rapidly changing world. The basilican churches were rendered spacious, graceful, impressive and dignified by arranging the columns in rows.
- ix. Most important of all, the main entrance was provided in one shorter side.
- x. Eye was directed horizontally along the row of columns to the seat of gods placed on high altar. One can see that a continuous magical rhythm fills the whole of the church.
- xi. Mouldings were coarse-like in the Roman period. Skilled craftsmen were scarce. Incised relief mouldings, acanthus leaf mouldings were most common.
- xii. A vast cycle of pictures, emblem. Biblical scenes and processions of martyrs in mosaic began by Ostrogoths and finished under Justinian enriched Early Christian architecture.
- xiii. In all these, colour was the prime ingredient. Coloured mosaics representing Christ, the Virgin lined the apses of the semi-circular domes.
- xiv. Pictures showing Adam and Eve in the Garden of Heaven, Biblican scenes became usual features of decoration.
- xv. Their architecture represents their fanaticism, their passionale search for the mystery of the Real Presence.
- xvi. The constructional features and spatial development are so fitting and completely established that neither Gothic nor the present day churches have gone beyond it.

Typical examples:

- **Basilican churches:**

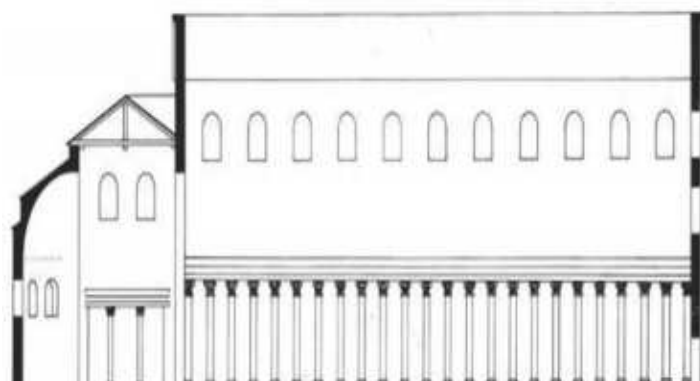
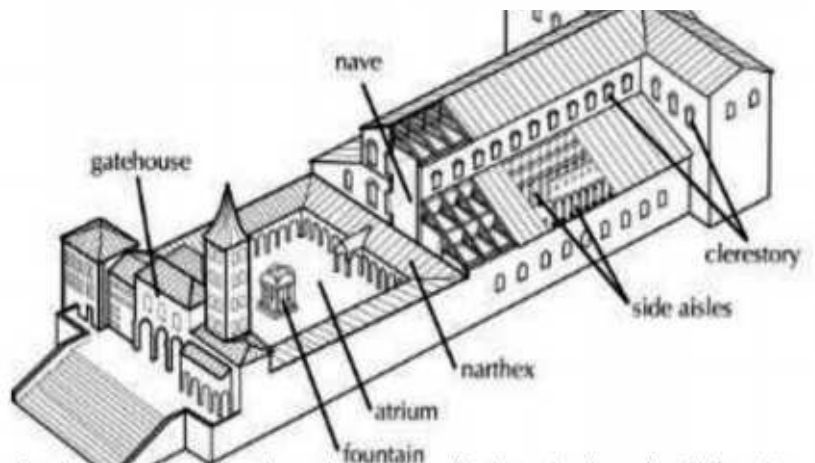
- i. The old basilicas of romans used a halls or justice were slightly modified into basilican churches.
- ii. However they have colonnades not only between 'nave' and aisles but also on narrow sides, like a greek temple turned outside in.



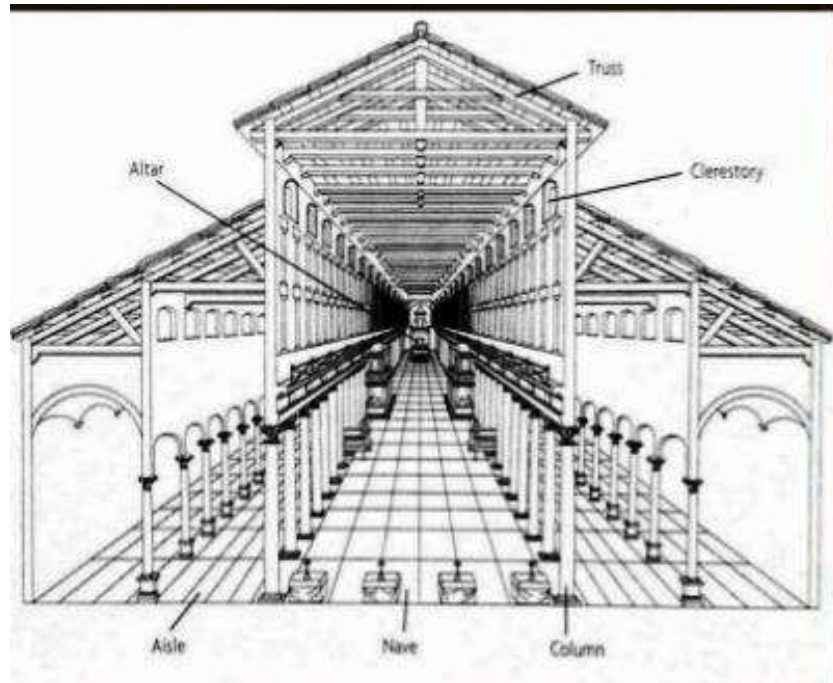
- iii. Even two apses were not uncommon, with transepts between nave and apse. But the apse at one end was cut off from the main body forming an atrium or open court in the front.
- iv. It might have come from 'scholae' or private hall in large houses used for worship by Christians.
- v. The nave was used as congregational hall.
- vi. The apse was occupied by bishop which was used by praetor in roman basilica and members of the church occupied the seats of roman accessors.
- vii. The altar in front which was used for sacrifices by romans was nor converted for Christian rites.
- viii. The basilican churches were usually build over places or confession of great saints to whom the churches were dedicated.

1. Basilican church of St.peter,Rome

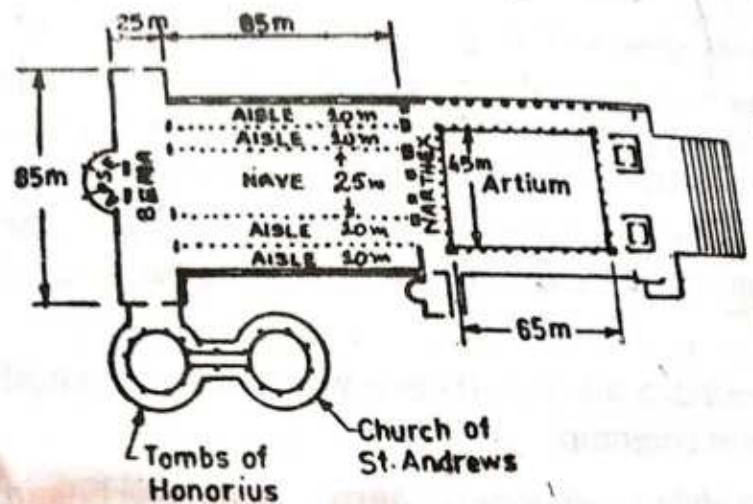
- i. It was built by Constantine in 300 AD.
- ii. It was build at the place of Nero circus.
- iii. Nero circus was used for horse and chariot racing.
- iv. The obelisk was of the circus also the centre of attraction of church.
- v. There was cementary of St. peter, Rome.
- vi. The cementary was in use for next 250 years until constantine decided to build his memorial church there in honour of St. peter.



- vii. It took about 30 years to complete.
- viii. The ground plan is in the form of Latin cross sign.
- ix. The atrium of open rectangular court formed an imposing approach.
- x. Next was 'narthex' between atrium and church.



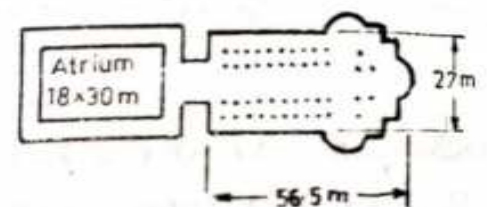
- xi.
- xii. The narthex opened to the great nave with double aisles ending in five arches, the central one was called the arch of triumph.
- xiii. At the end was bema of platform and apse with pope's seat.
- xiv. This narthex was usually on the west, and the altar was towards the east.
- xv. They used coloured mosaic tiles representing Christ, the virgin lined the apses of the semi circular domes.



Plan: The Basilican Church of S. Peter at Rome

2.The church of nativity, Bethleham (330 A.D)

- i. It was founded by Constantine at the birth place of Jesus Christ.
- ii. It consists of an atrium and a large sized nave, two aisles formed by two rows of monolithic Corinthian
- iii. Monolithic Corinthian columns about 6 m in height.



Plan: The Church of Nativity at Bethlehem

2. S.Maria Maggiore,Rome (432 A.D)

- i. The basilica of Maggiore is the most convincing single source of early Christian architecture.
- ii. It was built by pope sixtus III.
- iii. it was little subterranean building hardly 14 m in length. It is a single aisles hall with beautiful ionic columns in marble
- iv. it contains mosaics above the entablature showing sixtus III dealing with 'old testament'.
- v. At the apsidal end is the high altar build over confession covered by baldachino.

3. S Catherine's monastery(mid 6th century)

- i. It was build as a fortress shrine on mount Sinai.
- ii. Legend has it that mooses received the ten commandments on this mount Sinai.

4. Church of the holy sepulchre, Jerusalem

- i. It is erected over the reputed tomb of Christ
- ii. It was damaged by the Persians and Muslims but was rebuild by the crusaders.

ROMANESQUE ARCHITECTURE

Kalpur

(9th to 15th Century)

Formation and Development

1. Due to the collapse of Roman Empire, Romanesque architecture developed in Western Europe. This is the direct modification of Roman architecture. This style developed in Italy, France, Germany, Central Europe, Spain and Britain etc.
2. In the early stages, the Romanesque style had its building materials like stone, brick, marble or terra-cotta, monolithic columns and other remains from ruins of Roman buildings. Bricks, volcanic tufa, marble were available from Italy whereas good building stone, colored pumic stone, were got from France.
3. Climate seemed to be varying in Italy, France, England. Climate of north being dull, large window openings were provided to admit sufficient side light, whereas south being hot, small windows were kept to cut off the dazzling sunlight. Also due to less rainfall in the south part, roofs were flat, whereas in north high pitched roofs were provided to drain out rain water and the snow.
4. There was constant warfare which made the life of people unsettled. The craftsmanship was very coarse and poor. But as civilization improved, the towns also developed rapidly and achieved importance in the civic design.

CHARACTERISTIC FEATURES

1. Romanesque architecture is the direct modification of Roman architecture which grew in Italy, France, Germany, Central Europe, Spain and Britain.
2. In the early period, Romanesque style gathered the materials from ruins of Roman buildings. With proper understanding new art was founded on the old.
3. Later, Romanesque style was remarkable for the use of new constructive methods.
4. The new system was consisted of using comparatively small-sized dressed stones with thick mortar joints.
5. The Roman cross-vaults were replaced by ribs and panel vaulting, due to heavy and difficult construction.
6. Framework of ribs was first step of construction, over which thin panels were placed.
7. The plans of basilican churches were slightly modified in this period.
8. The transepts i.e. southern and northern parts were added thus making the church well defined cross on plan.
9. The breadth of transepts was equal to the nave, which in turn was usually twice the width of aisle.

10. The choir was enclosed by screen walls called cancelli or channel.
11. Towers which were square, octagonal or circular are the outstanding features of this style.
12. Walls were roughly built. Sometimes wall arcading was done with attached columns with rough capitals.
13. Arcades were common where columns or piers were used to support semi-circular openings or arches.
14. The columns were moulded with attic base.
15. The abacus was moulded with alternate fillets and hollows.
16. Ornamentations were in vegetal and animal forms.
17. Frescoes were more common than mosaics for interior decoration.
18. Stained glass was little used in Romanesque style.

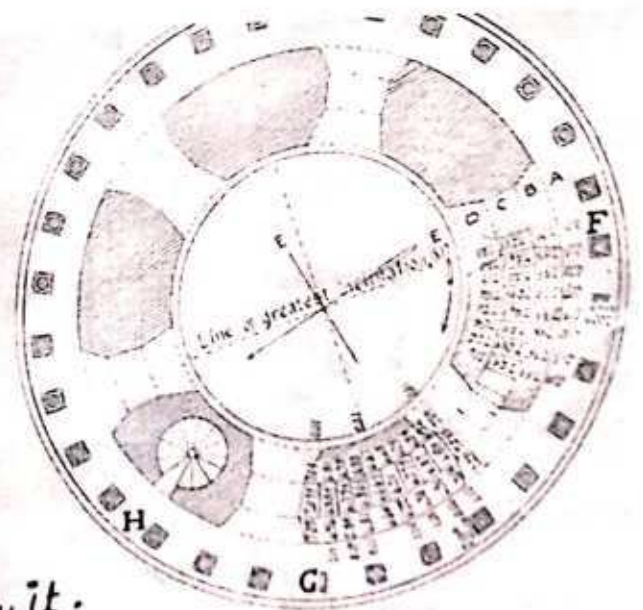
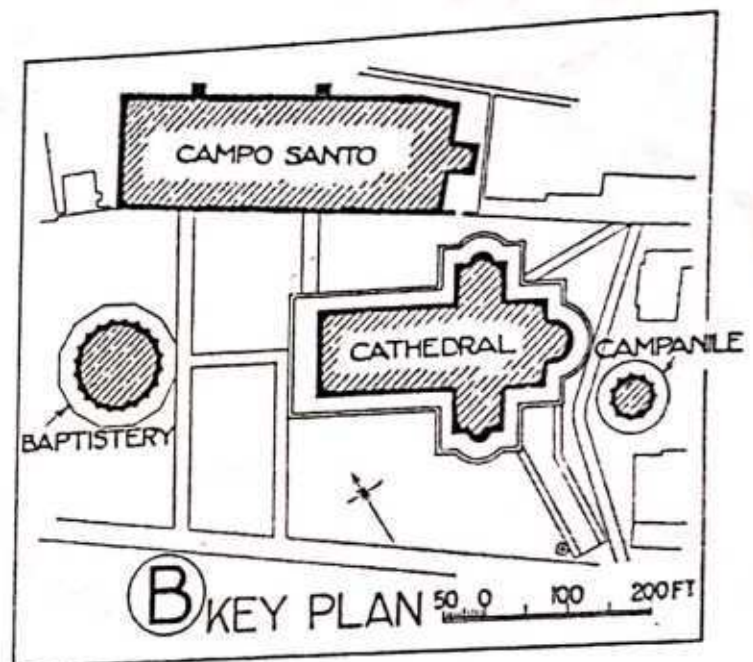
Typical examples

1) The campanile, Pisa(1174)

- i. It is situated at Italy.
- ii.
- iii. This is world famous leaning tower, 15.8m diameter, rising to a height of 57 m in eight storeys of encircling arcades.
- iv. Due to the settlement of of foundation, the upper part of tower has leaned as much as 4.2 m.
- v. The tower was begun in 1174 A.D.
- vi. By the architects Bonannus of Pisa.
- vii. Its belfry was constructed only after 1350.
- viii. The companies or bell towers are generally constructed alone.
- ix. Sometimes they are connected by cloisters with church.

(X) *There are total 300 steps in it. from first to last floor.*

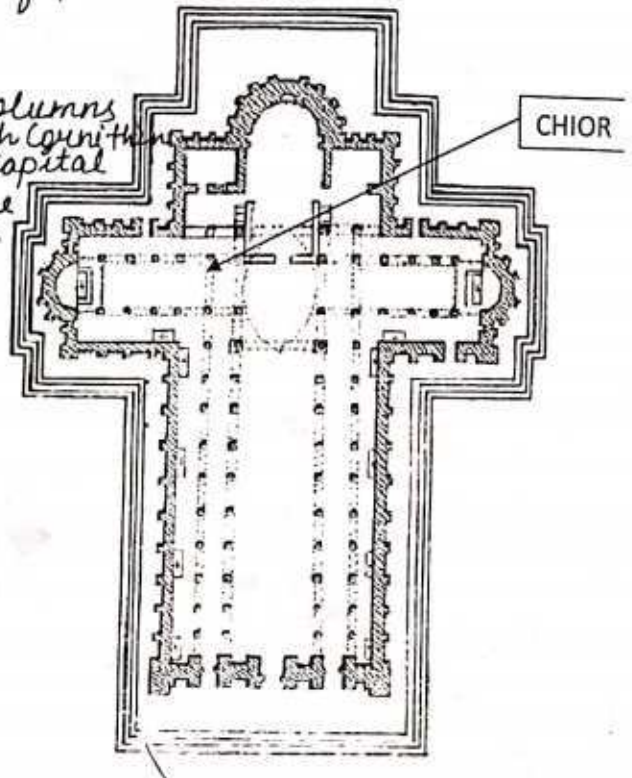
(xi) *leaned direction of Campanil Pisa is towards southeast*



- x. These towers show the power of religion and also served as watch towers.

2) Pisa cathedral (1063-92) (iv) Architect - *Busheto*.

- i. It is situated at Italy. (v) *Used of Granite & Stone*
- ii. Its plan is similar to Basilican church. (vi) *Use of Rough Style Columns with Corinthian Capital at the top.*
- iii. It has a long row of columns supporting arches, double aisles and central nave, transepts which gives the looks of grace, fine proportion and feeling of antiquity.



3) The Baptistry, Pisa (1155-1278)

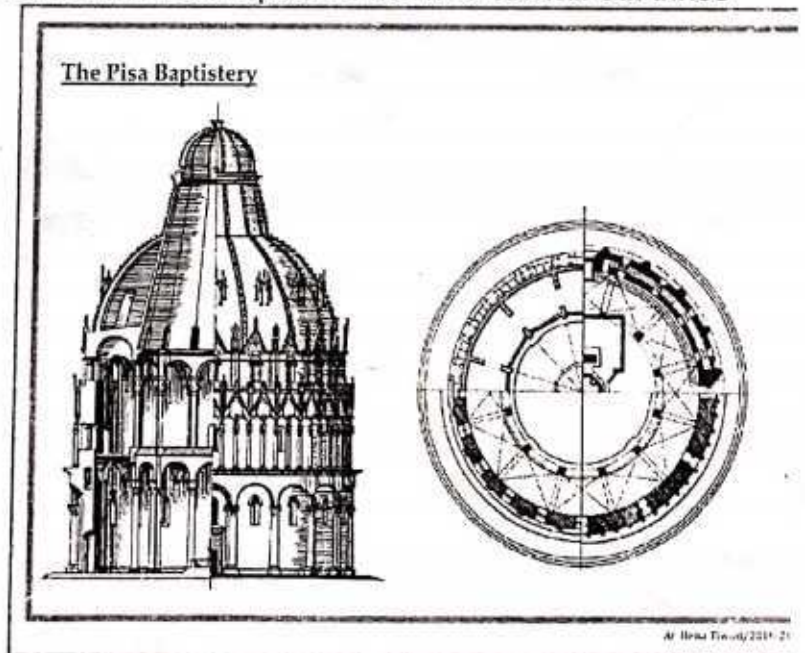
- i. It is situated at Italy.
- ii. The forms the most famous group of pisa buildings.
- iii. Its circular in plan, with a central nave, 18.3 m in diameter.
- iv. These are the special features of Italian Romanesque architecture. Where Baptismal rite was carried out thrice a year.

(v) *Total height*
 ✓) 55 m high
 34 m in diameter.
 (v) It is constructed of marble.
 (vi) At the top of entrance gate, there is a statue of St. Mary.

4) S. Ambrogio, Milan (1088-1128)

- i. It is situated at Italy.
- ii. It is designed on the plan of Lombard churches.
- iii. It consists of usual elements of a church such as the atrium, the rectangular court, forming the approach.
- iv. Next the narthex, between atrium and church, flanked by towers.
- v. The narthex opens to the vaulted nave and aisles at its ends.
- vi. The pulpit consists of series of arches and carved with animals and birds.

(vii) *Octagonal shape from extension*
 (viii) *stained windows on work with mosaics tiles*
 (ix) *There are two concentric dome which creates co effect inside the Baptistry.*



5) The Abbey church, cluny (1089-1131)

- i. It formed one of the famous monastic buildings in burgundy, now completely destroyed.
- ii. It was the largest church in france.
- iii. It contained nave , chior, double aisles, double transepts, five apsidal chapels etc.

6) The church of the apostles, cologne (1035-1220)

- i. The church contains a broad nave, aisles half its width, transepts and choirs.
- ii. The octagonal tower makes the building more impressive.

Many cathedrals were also build such as centerbury cathedral and Rochester cathedral.

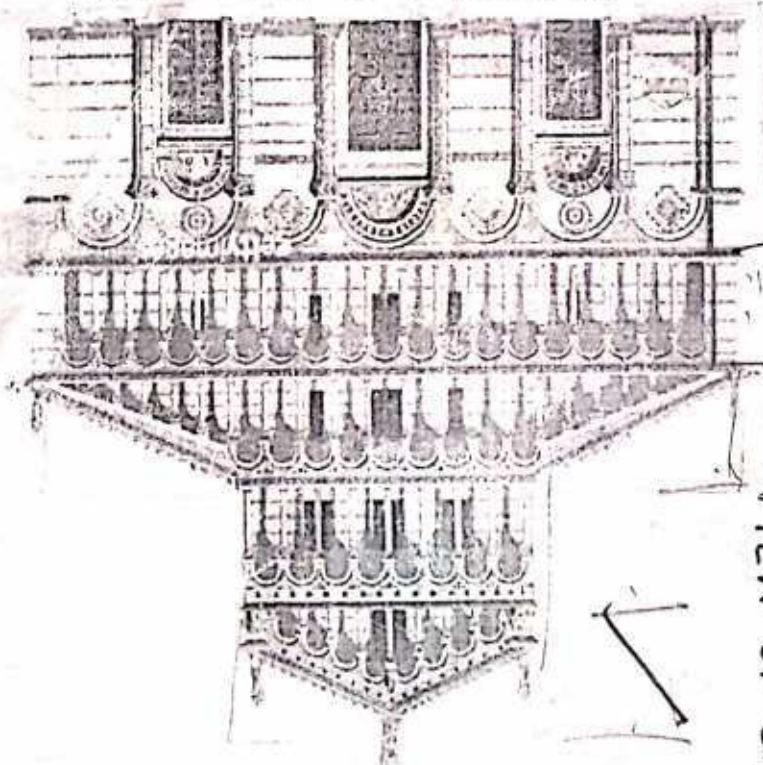
Definitions

Belfry: The part of a bell tower or steeple in which bells are housed.

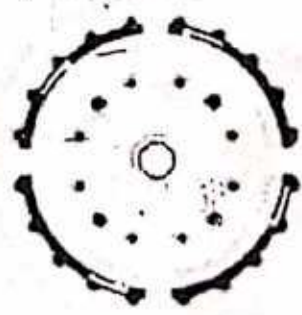
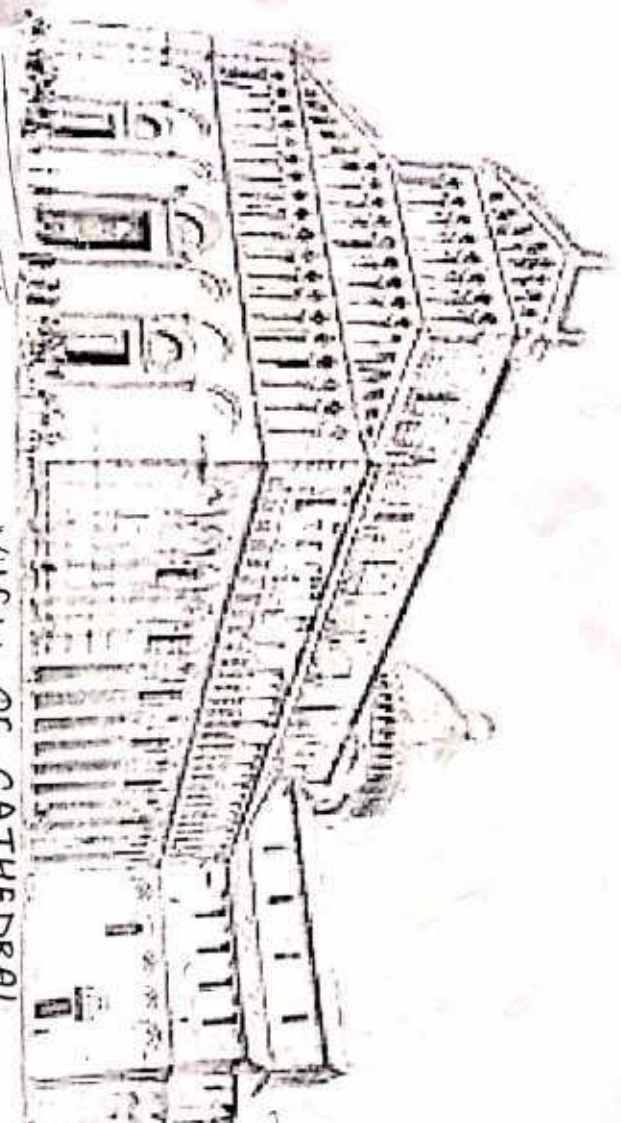
Choir: an organized group of singers, especially one that takes part in church services or performs in public.

Antiquity: the ancient past, specially the period of classical and other human civilization.

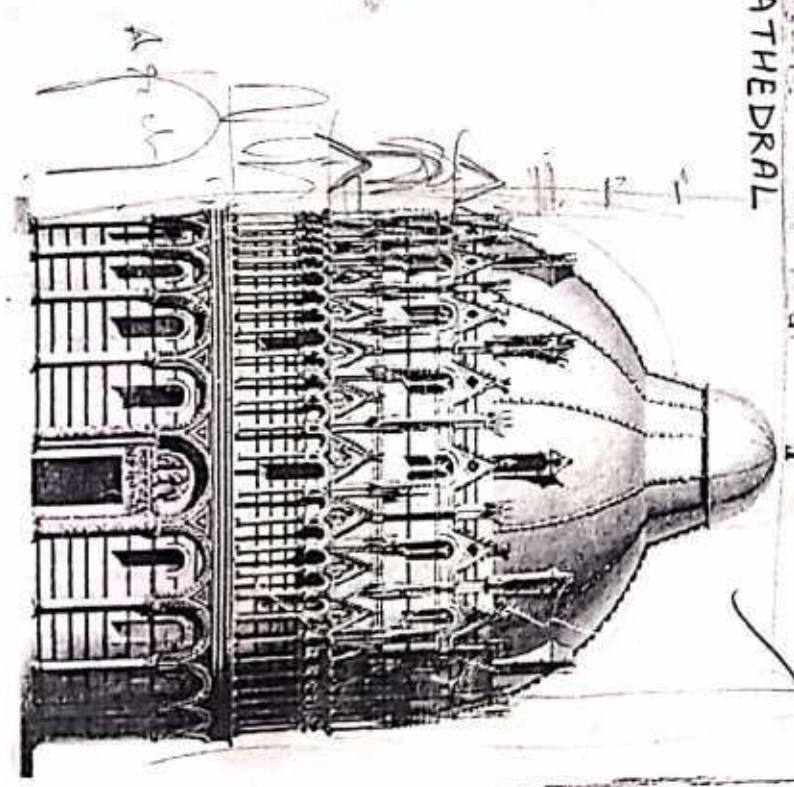
ELEVATION OF CATHEDRAL



VIEW OF CATHEDRAL



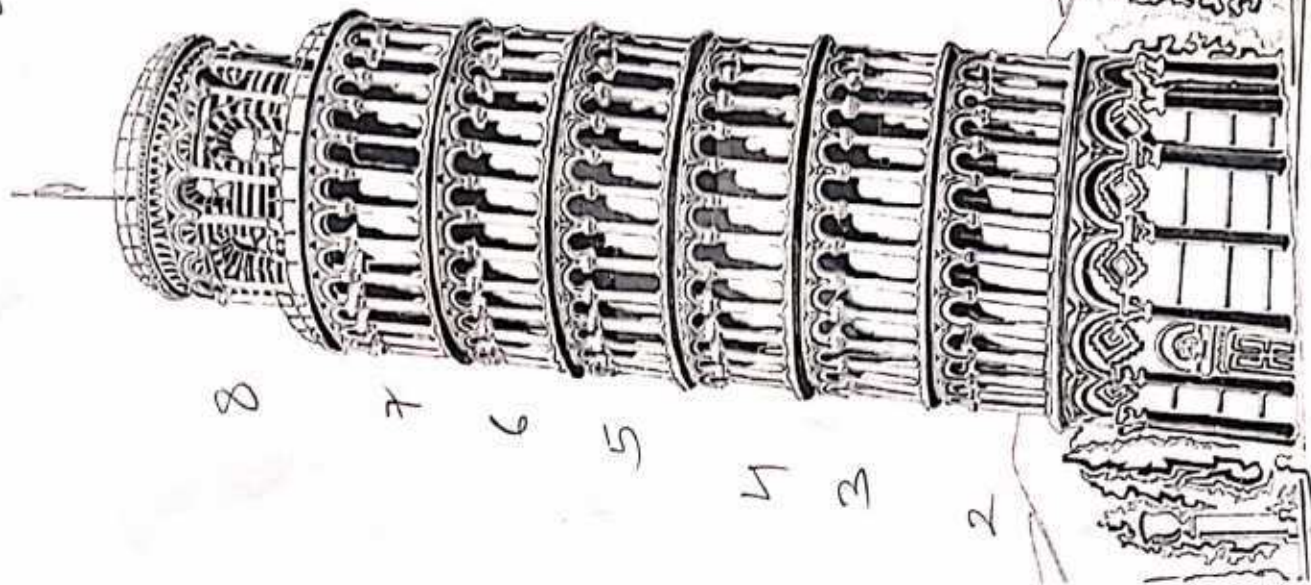
ELEVATION OF BRISTERY



COMPLEX VIEW



Salpnr



ELEVATION OF LINING TOWER OF PISA

