

**ROYAL CIVIL SERVICE COMMISSION
BHUTAN CIVIL SERVICE EXAMINATION (BCSE) 2015
EXAMINATION CATEGORY: TECHNICAL**

PAPER III: SUBJECT SPECIALIZATION PAPER for ARCHITECTURE

Date : 11 October 2015
Total Marks : 100
Examination Time : 150 minutes (2.5 hours)
Reading Time : 15 minutes (prior to examination time)

INSTRUCTIONS

1. Do not write anything during the first 15 minutes. This time is provided to check the number of pages of this Question Booklet, check for printing errors, read the instructions, and clarify doubts.
2. Write your Roll Number clearly in the space provided in the Answer Booklet. No other particulars that would indicate the identity of the candidate shall be written either in the Question or the Answer Booklet.
3. The questions are divided into **TWO** sections, **SECTION A** and **SECTION B**.
 - **SECTION A** consists of **TWO** parts:
PART I consists of 30 multiple choice questions and each question carries one (1) mark. Answer all 30 questions.
PART II consists of 4 short answer questions and each question carries five (5) marks. Answer all 4 questions.
 - **SECTION B** consists of 2 Case Study questions of fifty (50) marks each. Choose and answer only **ONE** question from this section.
4. Write all answers either in Blue or Black ink only. For drawings and sketches you may use pencils and other colours where applicable.
5. Write all answers in the Answer Booklet provided. You are not allowed to write anything in the Question Booklet. Any answer written in the Question Booklet shall not be marked.
6. Write answers neatly and legibly. Illegible writing shall not be marked.
7. This Question Booklet consists of **8** printed pages.

SECTION A

PART I - Multiple Choice Questions (30 Marks)

Choose the correct answer and write down the letter of the correct answer chosen in the Answer Booklet against the question number. E.g. 31 (c). Each question carries ONE mark. Any double writing, smudgy answers or writing more than one choice shall not be evaluated.

1. In traditional Bhutanese architecture, the term 'Thigtshed' refers to:
 - a) Entitlement.
 - b) Proportion.
 - c) Measuring tool used by the zowpon.
 - d) Drawing of the proposed building.

2. Which of the following combinations is not correct?
 - a) Kachen~zhu.
 - b) Boh~phana.
 - c) Mago~shamig.
 - d) Pem~chotseg.

3. In the roof of a Bhutanese house, which of the following is the correct order from top to bottom?
 - a) Shinglep, Tsim, Dangchung and Gungchung.
 - b) Shinglep, Dangchung, Tsim and Gungchung.
 - c) Shinglep, Gungchung, Tsim and Dangchung.
 - d) Shinglep, Tsim, Gungchung and Dangchung.

4. Which translation of the Bhutanese architectural elements is not correct?
 - a) Gochu ~ Window.
 - b) Dhung ~ Beam.
 - c) Kachen ~ Column.
 - d) Zhu ~ Bow.

5. Which of the following is not true about 'Keymar' in Bhutanese architecture?
 - a) It is generally painted in red colour.
 - b) It indicates that the structure is a sacred religious place.
 - c) It can be placed anywhere on the wall as long as it sacred religious structure.
 - d) It is generally framed by Boh on the upper and lower sides with a timber lintel band.

6. Identify the Dzong shown in the image.

- a) Daga Trashiyangtse Dzong.
- b) Trashigang Dzong.
- c) Lhuntse Dzong.
- d) Simtokha Dzong.



7. An architectural style generally characterized by simplification of form and absence of ornament is referred to as:

- a) International style.
- b) Modern architecture.
- c) Postmodern architecture.
- d) Classical architecture.

8. Which of the following architects is associated with the creation of the open floor plan?

- a) Le Corbusier.
- b) Walter Gropius.
- c) Eero Saarinen.
- d) F L Wright.

9. Which architect is famous for his design of the Farnsworth House, a minimalist house with only one interior room that was completely enclosed in glass?

- a) Philip Johnson.
- b) Ludwig Mies van der Rohe.
- c) Le Corbusier.
- d) Michael Graves.

10. Which of the following is not a work of Le Corbusier?

- a) Esprit Nouveau Pavilion in Paris.
- b) Chapel of Notre Dame du Haut in Ronchamp.
- c) Guggenheim in Bilbao.
- d) Villa Savoye near Paris.

11. Who said ‘Architecture should speak of its time and place, but yearn for timelessness’?

- a) Frank Gehry.
- b) Rem Koolhaas
- c) Tadao Ando.
- d) Buckminster Fuller.

12. St. Peter's Basilica in Rome is an example of:

- a) Gothic architecture.
- b) Baroque architecture.
- c) Classical architecture.
- d) Renaissance architecture.

13. Identify the structure shown in the image.

- a) Paestum.
- b) Colosseum.
- c) Parthenon.
- d) None of the above.



14. The correct order of the evolution of the different architectural styles from the earliest to the latest is:

- a) Gothic, Baroque, Renaissance and Bahaus.
- b) Baroque, Gothic, Renaissance and Bahaus.
- c) Renaissance, Baroque, Bahaus and Gothic.
- d) Gothic, Renaissance, Baroque and Bahaus.

15. Which of the following is not a part of the entablature?

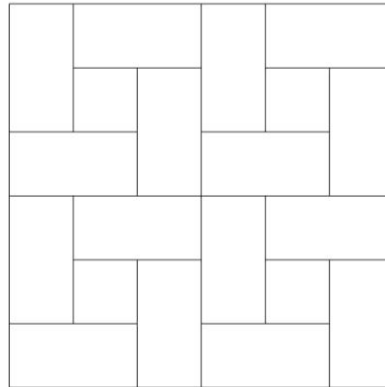
- a) Cornice.
- b) Frieze.
- c) Capital.
- d) Architrave.

16. In classical architecture if the ratio of upper to lower diameter of a column is constant, the degree of curvature will be:

- a) More pronounced in the longer column than in the shorter.
- b) More pronounced in the shorter column than in the longer.
- c) Independent of the length of the column.
- d) None of the above.

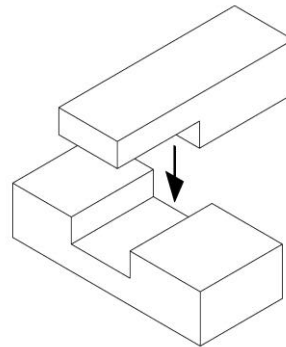
17. The brick paving pattern shown in the figure is:

- a) Herringbone.
- b) Stack bond.
- c) Spanish bond.
- d) Running bond.



18. The timber joint shown in the image is an example of:

- a) Mortise and tenon joint.
- b) Dovetail joint.
- c) Dowel joint.
- d) Lap joint.



19. In perspective drawing, the picture plane is set _____ to the line of sight.

- a) Parallel.
- b) At 90°.
- c) At 30°.
- d) At 15°.

20. The wooden divisions between panes of glass on windows are known as:

- a) Mullions.
- b) Moldings.
- c) Sash.
- d) Lintel.

21. An open, roofed porch, usually enclosed on the outside by a railing or balustrade and often wrapping around two or more or all of the sides of a building is called:

- a) Balcony.
- b) Veranda.
- c) Patio.
- d) Terrace.

22. Granite is an example of:
- Igneous rocks.
 - Sedimentary rocks.
 - Metamorphic rocks.
 - None of the above.
23. In painting a surface, the first coat applied is:
- Primer.
 - Undercoat.
 - Topcoat.
 - Base.
24. Tertiary colours are produced by adding:
- A primary colour to a primary colour.
 - A secondary colour to a secondary colour.
 - A primary colour to a secondary colour.
 - All of the above.
25. Failure to test and determine the bearing capacity of the soil will lead to:
- Conservative assumptions of the soil conditions.
 - Adoption of inappropriate/ unsafe design solutions.
 - Over-design of foundation structures.
 - All of the above.
26. In RCC, steel corresponds to which strength?
- Compressive.
 - Tensile.
 - Both compressive and tensile.
 - None of the above.
27. Which of the following conditions need to be fulfilled for soundproofing of constructions?
- Airtight construction to prevent sound transmission in air.
 - Heavyweight construction to reduce low frequency sound transmission.
 - Lightweight insulation to reduce high frequency sound transmission.
 - All of the above.
28. The unit used to measure the amount of light given off by a light source is:
- Luminance.
 - Luminaire.
 - Lumen.
 - Lux.

29. In house plumbing, the capacity of storage tanks depends on which of the following?
- Type of buildings such as residential, public or industrial.
 - Whether water supply is continuous or intermittent.
 - Frequency of replenishment of overhead tanks.
 - All of the above.
30. Which of the following is not true about the passive solar design?
- Technical measures which use power and fuel to operate.
 - Local climatic considerations.
 - Building orientation.
 - Natural ventilation.

PART II – Short Answer Type Questions (20 Marks)

Answer ALL the questions. Each question carries 5 marks. Mark for each sub-question is indicated in the brackets.

1. It is often said that building rules and guidelines limit the creativity and innovation in architectural design. Argue 'for' or 'against' this statement in the context of Bhutan. Use examples to illustrate your answer. (3 + 2)
2. List the main factors to be considered in green building design. Explain three of them briefly. (2 + 3)
3. List and explain the roles of three important actors in the design and construction of traditional Bhutanese houses. (1 + 4)
4. Name a historical, traditional or a contemporary building that you like the most and explain why you like it, highlighting the main design features with sketches. (2 + 3)

SECTION B: CASE STUDY QUESTIONS

(50 marks)

Instructions:

Select and answer only ONE question in this section. Copy the question number and write the answers in the Answer Booklet. Note that the mark for this section is 50% of the total marks.

Case 1

The traditional architecture of Bhutan is widely accepted to be derivative of and influenced by the culture of the people of Bhutan, topography of the land, geographic location, local building materials, skills of the local craftsmen, etc.

- a) List five different examples of Bhutanese architecture and describe how they contribute to giving a unique identity to a place. Use illustrations to support your answer. (5 + 5 + 5)
- b) Describe each of the examples above (a) in terms of siting, design considerations, use of materials, distinguishing architectural elements, cultural significance, etc. (25)
- c) In describing each of the examples above (b) use sketches to illustrate your points. (10)

Case 2

The Department of Culture has hired you as an architect to design a Dzong for one of the Dzongkhags. The Department has issued a design brief which states that the proposed Dzong has to provide (i) office spaces for 100 Dzongkhag Administration staff, two meeting halls and other ancillary spaces and (ii) prayer hall and residential quarters with ancillary spaces for 100 monks. The brief also states that the architect will advise and assist the Department to select an appropriate site for the proposed Dzong construction.

- a) Describe how you would approach this project and what factors would be considered for the selection of the site. (5 + 5)
- b) What traditional design considerations would still be relevant and what new elements need to be introduced and why? (5 + 5)
- c) Propose a design concept and describe why you arrived at it. Specify the main building materials to be used and the reason for doing so. (5 + 5 + 5)
- d) Provide schematic drawings (site layout, floor plans, elevations, sections and views) adequate to exhibit a sense of the functional layout of spaces, massing, proportion and aesthetics. Do not forget to indicate the north direction in your drawings. (5 x 3)
