



Name: Roll No.:

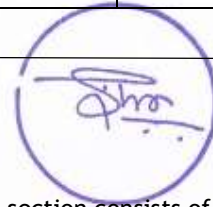
Branch: Signature of Invigilator:

Semester: IVth Date: 26/04/2022 (MORNING)

Subject with Code: AR252 BUILDING SERVICES - III (ELECTRICAL & LIGHTING)

Marks Obtained	Section A (30)	Section B (20)	Total Marks (50)

INSTRUCTION TO CANDIDATE



1. The booklet (question paper cum answer sheet) consists of two sections. First section consists of MCQs of 30 marks. Candidates may mark the correct answer in the space provided / may also write answers in the answer sheet provided. The Second section of question paper consists of subjective questions of 20 marks. The candidates may write the answers for these questions in the answer sheets provided with the question booklet.
2. The booklet will be distributed to the candidates before 05 minutes of the examination. Candidates should write their roll no. in each page of the booklet.
3. Place the Student ID card, Registration Slip and No Dues Clearance (if applicable) on your desk. All the entries on the cover page must be filled at the specified space.
4. Carrying or using of mobile phone / any electronic gadgets (except regular scientific calculator)/chits are strictly prohibited inside the examination hall as it comes under the category of unfair means.
5. No candidate should be allowed to enter the examination hall later than 10 minutes after the commencement of examination. Candidates are not allowed to go out of the examination hall/room during the first 30 minutes and last 10 minutes of the examination.
6. Write on both side of the leaf and use pens with same ink.
7. The medium of examination is English. Answer book written in language other than English is liable to be rejected.
8. All attached sheets such as graph papers, drawing sheets etc. should be properly folded to the size of the answer book and tagged with the answer book by the candidate at least 05 minutes before the end of examination.
9. The door of examination hall will be closed 10 minutes before the end of examination. Do not leave the examination hall until the invigilators instruct you to do so.
10. Always maintain the highest level of integrity. Remember you are a BITian.
11. Candidates need to submit the question paper cum answer sheets before leaving the examination hall.

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: B.ARCH.
BRANCH: ARCHITECTURE & PLANNING

SEMESTER: IV
SESSION: SP/22

SUBJECT: AR 252 BUILDING SERVICES - III (ELECTRICAL & LIGHTING)
TIME: 2 Hrs.

FULL MARKS: 50

INSTRUCTIONS:

1. The missing data, if any, may be assumed suitably.
2. Before attempting the question paper, be sure that you have got the correct question paper.
3. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Part A Total Marks 30

1. The colour of the light given out by a sodium vapor discharge lamp is [1]
- a. Pink
 - b. Bluish Green
 - c. Yellow
 - d. Blue
- Answer: _____
2. Solar energy can be directly converted to electrical energy by which of the [1]
- following devices?
- a. solar cooker
 - b. solar heater
 - c. solar cell
 - d. solar geyser
- Answer: _____
3. In a hydro power plant [1]
- a. potential energy possessed by stored water is converted into electricity
 - b. kinetic energy possessed by stored water is converted into potential energy
 - c. electricity is extracted from water
 - d. water is converted into steam to produce electricity
- Answer: _____
4. Mixture preferred for filling around the earth electrode for effective earthing is [1]
- a. Paper-salt mixture
 - b. Saw dust mixture
 - c. Coal-salt mixture
 - d. Lime-sand mixture
- Answer: _____
5. Fuel used in thermal power plants is [1]
- a. water
 - b. uranium
 - c. biomass
 - d. fossil fuels
- Answer: _____
6. Carbon arc lamps are commonly used in [1]
- a. domestic lighting

- b. street lighting
- c. cinema projectors
- d. photography.

Answer: _____

7 Which of the following wiring is preferred for workshop lighting? [1]

- a. Casing-capping wiring
- b. Batten wiring
- c. Concealed conduit wiring
- d. Surface conduit wiring

Answer: _____

8 In an electric line, a switch is connected to which of the following wire? [1]

- a. Earth
- b. Phase
- c. Neutral
- d. Not connected

Answer: _____

9 The unit of luminous flux is [1]

- a. steradian
- b. candela
- c. lumen
- d. lux.

Answer: _____

10 Which is the ultimate source of energy? [1]

- a. Water
- b. Sun
- c. Uranium
- d. Fossil fuels

Answer: _____

11 Light is produced in electric discharge lamps by [1]

- a. heating effect of current
- b. magnetic effect of current
- c. ionization in a gas or vapor
- d. carbon electrodes.

Answer: _____

12. What is an electrical schedule? [1]

1. A list or a plan of a building providing information of number of points in each room.
2. The list of all the electrical components required for a particular room.
3. The list of all the electrical components along with their prices.

- a. only 1
- b. only 2
- c. both 1 & 2
- d. none of these

Answer: _____

13. Which one of the following forms of energy leads to least environmental pollution in the process of its harnessing and utilisation? [1]
- a. Nuclear energy
 - b. Thermal energy
 - c. Solar energy
 - d. Geothermal energy
- Answer: _____
14. Choose the incorrect statement regarding wind power. [1]
- a. It is expected to harness wind power to minimum in open space.
 - b. The potential energy content of wind blowing at high altitudes is the source of wind power.
 - c. Wind hitting the blades of a windmill causes them to rotate. The rotation thus achieved can be utilised further.
 - d. One possible method of utilising the energy of rotational motion of the blades of a windmill is to run the turbine of an electric generator.
- Answer: _____
15. The most serious result of a major uncleared short-circuit fault could be [1]
- a. blowing off of fuse
 - b. fire
 - c. deterioration of insulation
 - d. heavy current in neutral
- Answer: _____
16. The level of illumination from a 100 W incandescent lamp will not increase by [1]
- a. Increasing the supply voltage
 - b. Increasing filament temperature
 - c. Increasing glass shell diameter
 - d. Increasing glass shell length
- Answer: _____
17. Wooden poles for supporting transmission lines are used for voltages up to [1]
- a. 440 V
 - b. 11 KV
 - c. 22 KV
 - d. 66 KV
- Answer: _____
18. In a sodium vapor lamp, the discharge is first started in the [1]
- a. neon gas
 - b. nitrogen gas
 - c. argon gas
 - d. krypton gas.
- Answer: _____
19. The purpose of earthing electric appliances is [1]
- a. To provide safety against shock
 - b. To ensure that the appliance saves current
 - c. To ensure that the appliance gets full voltage
 - d. None of these
- Answer: _____

20. Choose the correct statement. [1]
- a. Sun is considered as an inexhaustible source of energy
 - b. There is infinite storage of fossil fuel inside the Earth
 - c. Hydro and wind energy plants are non-polluting sources of energy
 - d. Waste from a nuclear power plant can be easily disposed off
- Answer: _____
21. Coal used in power plant is also known as [1]
- a. steam coal
 - b. charcoal
 - c. coke
 - d. soft coal.
- Answer: _____
22. The effect of electric shock on human body depends on: [1]
- 1. current
 - 2. voltage
 - 3. duration of contact
- a. only 1
 - b. only 2
 - c. only 3
 - d. all 1, 2 and 3
- Answer: _____
23. Heat from the filament of a lamp is transmitted to the surrounding- mainly through [1]
- a. conduction
 - b. convection
 - c. radiation.
- Answer: _____
24. The level of illumination on surface least depends on [1]
- a. candle power of the source
 - b. distance of the source
 - c. type of reflector used
 - d. ambient temperature.
- Answer: _____
25. In a distribution system, which of the following items shares the major cost? [1]
- a. Conductors
 - b. Earthing systems
 - c. Distribution transformer
 - d. Insulators
- Answer: _____
26. Two electric bulbs have tungsten filament of the same thickness. If one of them gives 60 W and the other gives 100 W, then [1]
- a. 60W and 100 W lamp filaments have equal length
 - b. 60 W lamp filament has shorter length
 - c. 100 W lamp filament has the longer length

d. 60 W lamp filament has the longer length

Answer: _____

27. Which of the following lamp gives nearly monochromatic light? [1]

a. Sodium vapor lamp

b. GLS lamp

c. Tube light

d. Mercury vapor lamp.

Answer: _____

28. The type of wiring that is highly suitable for a temporary shed is [1]

a. Cleat wiring

b. Wooden capping and casing wiring

c. Lead sheathed wiring

d. Conduit wiring

Answer: _____

29. In a 3-pin plug [1]

a. All the three pins are of the same size

b. Two pins are of the same size but third one is thicker

c. Two pins are of the same size but third one is thicker and longer

d. All the three pins are of different sizes

Answer: _____

30. Which insulation is most widely used for covering wires/cables used in internal wiring? [1]

a. Paper

b. Wood

c. Glass

d. PVC

Answer: _____

Part B Total Marks 20

1. Define 'Earthing'. Why it is needed in the buildings? 2

2. Explain briefly the typical arrangement of 'Pipe Earthing' using proper sketches. 3

3. What is Glare? List the various types of glares. 3

4. How is power Transmitted? Differentiate between Overhead lines and Underground cables. 3

5. Draw a sketch of Hydroelectric Power Plant 2

6. Discuss about the advantages of wire colour coding system? 2

7. Write short note on the following: 2x2.5=5

(i) Transformer (ii) Distribution Box