

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

**CLASS: B.ARCH
BRANCH: ARCHITECTURE**

**SEMESTER : V
SESSION : MO/2022**

SUBJECT: AR302 BUILDING SERVICES-III (MECH. & FIRE SAFETY)

TIME: 3:00 Hours

FULL MARKS: 50

INSTRUCTIONS:

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
 2. Attempt all questions.
 3. The missing data, if any, may be assumed suitably.
 4. Before attempting the question paper, be sure that you have got the correct question paper.
 5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
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- Q.1(a) Differentiate between sensible and latent heat gain. [2]
- Q.1(b) Draw the Psychrometric chart to show process of sensible heating and latent heating on the Psychrometric chart. [3]
- Q.1(c) Explain process of summer air conditioning with the help of neat sketch. [5]
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- Q.2(a) Differentiate between instantaneous heat gain and actual cooling load. [2]
- Q.2(b) Explain bypass factor in air conditioning system with the help of neat sketch. [3]
- Q.2(c) If there are 150 persons working in a hall of a workshop having a volume of 1000 cubic meters, what will be the ventilation intensity to achieve desirable minimum rate of fresh air flow of 25 cubic meters per person. [5]
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- Q.3(a) Discuss various types of ducting system. [2]
- Q.3(b) Explain various factor responsible for selection of a ducting system. [3]
- Q.3(c) Explain interrelation between the pressure inside the duct, its CFM value, and its sizing. [5]
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- Q.4(a) Explain the following terms for lift design: minimum rated load and minimum factor of safety [2]
- Q.4(b) Draw schematic plan of a lift machine room. [3]
- Q.4(c) Explain the process of lift design with the help of flowchart. [5]
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- Q.5(a) Discuss classification of fires and suggest the most suitable fire extinguishing agents for the Class C of fire. [5]
- Q.5(b) Discuss pressurization condition of the staircase and lift lobby for firefighting. Explain limitation of openings near stairwell with the help of neat sketches. [5]

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