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Reg. No. : | | | | | | | | | | | | |

Question Paper Code: R2726

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2025

First Semester

Electrical and Electronics Engineering

R21UME226 – BASIC CIVIL AND MECHANICAL ENGINEERING

(Regulations R2021)

Duration: Three hours | Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. Portland cement manufactured from pure white chalk and clay but free from iron-oxide, is known as CO1-U

   (a) Quick setting cement (b) Rapid hardening cement

   (c) White cement (d) Low heat Portland cement

2. Main ingredient in the cement composition is CO1-U

   (a) Silica (b) Lime (c) Clay (d) Alumina

3. A building can be mainly divided into how many components? CO1-U

   (a) 2 (b) 3 (c) 6 (d) 8

4. Floor in a building CO1-U

   (a) Separates levels (b) Is laid below plinth

   (c) Contains R.C.C. (d) as thickness of 10cm

5. The most abundantly available fossil fuel in India is _____. CO1-U

   (a) Coal (b) Natural Gas (c) Petroleum (d) Oil

6. Which of the following is a type of power plant? CO1-U

   (a) Raises the temperature of the furnace gases

   (b) Improves combustion rate

   (c) Recovers the heat from the flue gases leaving the economiser

   (d) all of the above

7. In a diesel engine, the fuel is injected by_____. CO1-U

(a) Spark (b) Injected fuel (c) Ignitor (d) Heat resulting from

8. A diesel engine has..... CO1-U

(a) One valve (b) Two valve (c) Three valve (d) Four

9. Which of the following refers to the term C.O.P. of refrigeration? CO1-U

(a) Cooling for Performance (b) Coefficient of Performance

(c) Capacity of Performance (d) Co-efficient of Plant

10. COP always _____. CO1-U

(a)Vacuum pump, (b) Condenser

(c)Vacuum condenser (d) None of the above

PART – B (5 x 2= 10 Marks)

11. What is surveying? CO1-U

12. What is Substructure? CO2-U

13. Compare Renewable energy sources and Non-renewable energy sources. CO3-U

14. List out the main components of an I.C. Engine. CO3-U

15. Define C.O.P. CO3-U

PART – C (5 x 16= 80 Marks)

16. (a) Differentiate between Prismatic compass and Surveyor compass. CO1 -U (16)

Or

(b) Explain with neat sketch of prismatic compass and other instruments in compass surveying. CO1 -U (16)

17. (a) Classify the various types of shallow foundations. CO2 -U (16)

Or

(b) Discuss the various types of flooring. CO2 -U (16)

18. (a) Explain the functions, advantages, and disadvantages of a hydroelectric power plant with a neat sketch. CO3-U (16)

Or

(b) Describe the working of a centrifugal pump with a neat sketch. CO3-U (16)

19.	(a)	Discuss the principle parts and functions of a Benson boiler with a neat sketch.	CO3 - U	(16)
		Or		
	(b)	Explain the components of water tube boilers and clarify its functions with neat sketch.	CO3 - U	(16)
20.	(a)	Using your knowledge of refrigeration practices, implement and demonstrate the best methods for storing various food items in refrigeration systems to maintain freshness, energy efficiency, and optimal cooling performance. Provide suitable examples to show how correct placement and handling improve system efficiency	CO4-App	(16)
		Or		
	(b)	Using your understanding of air-conditioning systems, implement and demonstrate the operation of different air-filtration methods and assess the working of an air-washer humidifier with the help of a neat labeled sketch. Explain how the filters and the air washer contribute to improving indoor air quality and humidity control.	CO4-App	(16)