Reg. No. :

Question Paper Code: 41271

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2016

Second Semester

Mechanical Engineering

14UME205 - BASIC CIVIL AND MECHANICAL ENGINEERING

(Common to CSE, EEE. ECE, EIE, ICE and IT)

(Regulation 2014)

Duration: Three hours   Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. The weight of the brick is

    (a) 3 kg (b) 3.5 kg (c) 4 kg (d) 4.5 kg

2. The lengthy face of the brick is known as

    (a) face   (b) king closer   (c) queen closer   (d) stretcher

3. Which of the following materials is most elastic

    (a) rubber   (b) plastic   (c) brass   (d) steel

4. Strain is defined as the ratio of

    (a) change in volume to original volume
    (b) change in length to original length
    (c) change in cross-sectional area to original cross-sectional area
    (d) any one of the above

5. In India largest thermal power station is located at

    (a) Kota   (b) Sarni   (c) Chandrapur   (d) Neyveli

6. The main source of production of biogas is

    (a) human waste   (b) wet cow dung

    (c) wet livestock waste   (d) all the above

7. Which of the following is not an internal combustion engine?

    (a) Gas engine   (b) Wankel engine

    (c) Jet engine   (d) Stirling engine

8. In four stroke engine which of the following is also known as power stroke

    (a) Suction stroke   (b) Compression stroke

    (c) Expansion stroke   (d) Exhaust stroke

9. A vapour absorption refrigerator uses _____ as a refrigerant.

    (a) Water   (b) Ammonia   (c) Freon   (d) Aqua-ammonia

10. A good refrigerant should have

    (a) High latent heat of vaporisation and low freezing point

    (b) High operating pressures and low freezing point

    (c) High specific volume and high latent heat of vaporization

    (d) Low C.O.P. and low freezing point

PART - B (5 x 2 = 10 Marks)

11. State the principles of surveying.

12. Define bearing capacity of soil.

13. What is known as scavenging?

14. What is the principle of centrifugal pump?

15. Mention any four refrigerants.

PART - C (5 x 16 = 80 Marks)

16. (a) The following perpendicular offsets were taken at 10 m intervals from a survey line to an irregular boundary line: 3.15 m, 4.30 m, 8.20 m, 6.85 m, 7.60 m, 4.20 m, 5.60 m and 4.30 m. Calculate the area enclosed between the survey line, irregular boundary line, first and last offsets by trapezoidal rule. (16)

Or

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(b) What are the different types of cement? Explain their properties and uses. (16)

17. (a) Describe with neat sketches

      (i) Any one of shallow foundation (8)

      (ii) Pile foundation (8)

Or

(b) Describe with neat sketch

      (i) Arch culvert (8)

      (ii) T-Beam and Slab bridge (8)

18. (a) Draw a neat layout of a typical steam power plant and explain the various circuits involved in it. (16)

Or

(b) With the help of suitable sketch, explain the working of a reciprocating pump. What are the advantages of centrifugal pumps over reciprocating pumps? (16)

19. (a) Explain the working of a two stroke petrol engine. What are the advantages and disadvantages of two stroke engines? (16)

Or

(b) Explain the principle of working of a four stroke diesel engine with suitable sketches. What are the merits and demerits of four stroke engines? (16)

20. (a) With the help of flow diagram explain the principle of working of a vapour compression refrigeration system. Compare vapour absorption refrigeration with vapour compression refrigeration. (16)

Or

(b) With a neat sketch, explain in detail the working of a window type room air conditioner. (16)

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