

Reg. No. :

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**Question Paper Code : 10373**

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2012.

Second Semester

Common to EEE, E & I, I&C, ECE, CSE, IT and Bio Medical Engineering Medical  
Electronics branches

GE 2152/ 185204/ ME 26/ 10111 CE 206/ 081510002/ GE 1151 A — BASIC CIVIL  
AND MECHANICAL ENGINEERING

(Regulation 2008)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is Back bearing?
2. How concrete is designated by grades?
3. Write any two types of pile foundation based on function.
4. What is a 'column' in a building?
5. Write any two purposes of a dam.
6. State two merits and two demerits of a Nuclear power plant.
7. Define slip in reciprocating pump operation.
8. What is the function of spark plug in a S.I. engine?
9. What is the purpose of a fusible plug in a boiler?
10. Name any two commonly used refrigerants in air conditioners.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Write short notes on the following:
  - (1) Chain survey and related accessories (4)
  - (2) Compass survey and related accessories (4)
- (ii) Using the data given in the following table, calculate the area between the chain line and the irregular boundary and the first and last offsets, using the Simpson's rule & trapezoidal rule. (8)

Distance, m	0	15	30	45	60	75	90
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Offset, m	0	2.8	3.6	6	4.5	3.8	0
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Or

- (b) (i) What are the sources of sand? State the properties of good sand. What are functions of sand in mortar? (8)
- (ii) What are the ingredients of concrete? What do you understand by 1:3:3 concrete mix? (4)
- (iii) State the advantages and disadvantages of concrete. (4)

12. (a) (i) State the requirements of good foundation for a building. (6)  
(ii) When do we use shallow foundations? With the help of sketches, explain briefly the following types of shallow foundations:  
(1) Wall footings (5)  
(2) Isolated column footings. (5)

Or

- (b) (i) What is a lintel in a building? Sketch and explain the following types of lintels: (8)  
(1) Stone lintel  
(2) Steel lintel  
(3) R.C.C. lintel.  
(ii) Derive the relation between Young's modulus (E) and the Bulk modulus [K] of a material. (8)
13. (a) (i) Draw the layout of a steam power plant and discuss the working principle. (8)  
(ii) Explain, briefly, the following circuits of the steam power plant. (8)  
(1) Coal and ash circuit  
(2) Air and gas circuit  
(3) Feed water and steam flow circuit  
(4) Cooling water circuit

Or

- (b) (i) Draw a neat block diagram of a nuclear power plant and indicate the various parts. (6)  
(ii) Explain, briefly, the functions of the components of nuclear power plant. (10)
14. (a) (i) Make a comparison of a petrol engine and diesel engine based on their operational features. (10)  
(ii) How will you classify internal combustion engines? State at least three types of classifications. (6)

Or

- (b) (i) Make a tabulated comparison of four-stroke and two-stroke engines on various aspects. (10)  
(ii) State the merits and demerits of water tube boilers. (6)
15. (a) Define the following terms pertaining to refrigeration system: (8 × 2 = 16)

- (i) Tonne (of refrigeration)  
(ii) Coefficient of performance, (COP)  
(iii) Capillary tube  
(iv) Cascade refrigeration system  
(v) Condenser  
(vi) Expansion valve (thermostatic)  
(vii) Cooling Load  
(viii) Accumulator.

Or

- (b) Sketch the layout of the window air conditioner and explain the working principle, stating clearly the functions of major components. (16)