No. of Printed Pages : 4
Roll No. .....

180212

1st year / Arch. Engg.
Subject : Applied Science & Mathematics

Time : 3 Hrs. M.M. : 60

SECTION-A

Note: Multiple Choice Questions. All Questions are compulsory. (6x1=6)

Q.1 The amount of heat required to change the heat content of 1 mole of material by exactly 1^0C is called _____.

a) Specific heat b) Heat capacity

c) Thermal stress d) None of these

Q.2 The force of attraction between molecules of same substance is called_____.

a) Cohesive force b) Adhesive force

c) Both A & B d) None of these

Q.3 S.I. Unit of radiant flux is _____.

a) Candela b) Lux

c) Watt d) None of these

Q.4 $\frac{d}{dx}(\log x) =$ _____.

a) -log x b) x

c) $\frac{1}{x}$ d) None of these

Q.5 The value of $\sin 45^0$ is

a) $\frac{1}{2}$ b) $\frac{1}{\sqrt{2}}$

c) 1 d) 0

Q.6 $\int \sec x \tan x \, dx$ = _____.

a) sex $x + C$ b) Tan $x + C$

c) -cot $x + c$ d) 0

Section-B

Note: Objective/Completion type questions. All questions are compulsory. (6x1=6)

Q.7 Solar cell is also called_____.

Q.8 Give the S.I. unit of specific heat.

Q.9 Give any one example of Greenhouse gases.

Q.10 Differentiate $y = x^3 + 1$ w.r.t.x.

Q.11 Integrate $\frac{1}{x}$ w.r.t.x.

Q.12 Fill in the black : sin (A-B) _____.

Section-C

Note: Short answer type Question. Attempt any eight questions out of Ten Questions. (8x4=32)

Q.13 An auditorium has volume of 3000 m^3 and the total surface absorption in 160 O.W.U. Calculate the reverberation time.

Q.14 Give any two methods to control humidity.

Q.15 Explain first and second law of thermodynamics.

Q.16 Explain principles of acoustic modeling.

Q.17 Give four applications of solar cell.

Q.18 Evaluate in $x \to 2$ $\frac{x^2-4}{x-2}$

Q.19 Differentiate $y = \frac{x^2-2}{x+1}$ w.r.t.x.

Q.20 Evaluate $\sin 40^0 \cos 20^0 + \cos 40^0 \sin 20^0$.

Q.21 Prove that $\tan 3A \tan 2A \tan A = \tan 3A - \tan 2A - \tan A$.

Q.22 Find the area under the curve $y = x^3$, when $0 \leq x \leq 1$.

Section-D

Note: Long answer questions. Attempt any two question out of three Questions. (2x8=16)

Q.23 Evaluate $\int_0^7 \frac{1}{1+x} \, dx$ by Trapezoidal rule taking 7 intervals.

Q.24 (a) Explain principle of refrigeration.

(b) Explain illumination and light efficiency.

Q25 (a) Write a short note on electrical nature of matter.

(b) Define : solar energy, acoustics of buildings, thermal stress & adhesive force.