53 (HU 101) COSK

2013

(May)

COMMUNICATION SKILLS

Paper : HU 101

Full Marks : 100

Pass Marks : 30

Time : Three hours

The figures in the margin indicate full marks for the questions.

*Answer **any five** questions.*

1. Read the following passage carefully and answer the given questions accordingly :

   Arid regions in the southwestern United States have become increasingly inviting playgrounds for the growing number of recreation seekers who own vehicles such as motorcycles or powered trail bikes and indulge in hill-climbing contests or in carving new trails in the desert. But recent scientific studies show that these off-road vehicles can cause damage to desert landscapes that has long-range effects on the area's water-conserving

characteristics and on the entire ecology, both plant and animal. Research by scientist in the western Mojave desert in California revealed that the compaction of the sandy arid soil resulting from the passage of just one motor cycle markedly reduced the infiltration ability of the soil and created a stream of rain run-off water that eroded the hillside surface. In addition, the researchers discovered that the soil compaction caused by the off-road vechicles often killed native plant species and resulted in the invasion of different plant species within a few years. The native perennial species required many more years before they showed signs of returning. The scientists calculated that roughly a century would be required for the infiltration capacity of the Mojave Soil to be restored after being compacted by vehicles.

(i) What is the main topic of the passage ? 2

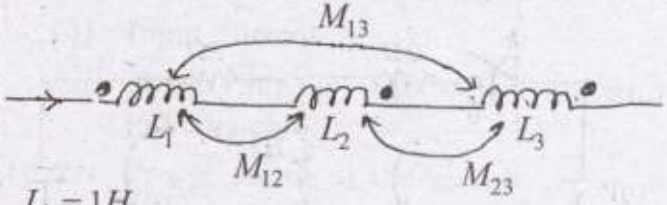
(a) problems caused by recreational vehicles.

(b) types of off-road vehicles.

(c) plants of the southwestern desert.

(d) the increasing number of recreation seekers.

(b) Find the total inductance of the three series connected coupled coils as shown in *Fig.* (2.*b*) 5



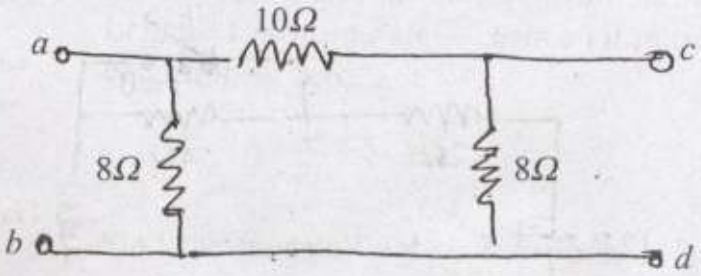
$L_1 = 1H$

$L_2 = 2H$, $M_{12} = 0 \cdot 5H$, $M_{13} = 0 \cdot 5H$

$L_3 = 5H$ $M_{23} = 1H$

Fig.(2.*b*)

(c) Convert of following Δ to Y. 5



3. *(a)* Consider the *Fig.-3(a)*. Find $i_1(t)$ and $i_2(t)$. The initial voltage across the capacitor is $2V$ and the initial current through the inductor and capacitor is zero. 6

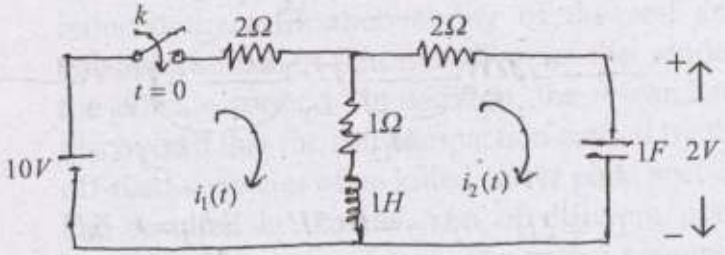


Fig.-3(a)

(b) The dc voltage is applied to the circuit keeping the switch k open so that steady state is reached. Determine the complete response for the circuit after closing the switch k. 6

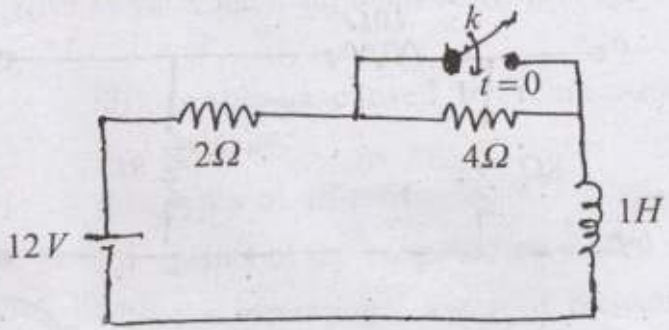


Fig.3(b)

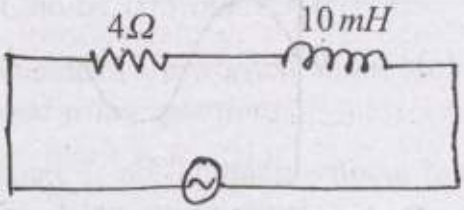
(c) A 4Ω resister is connected to a $10\,mH$ inductor across a $100V$, $50Hz$ voltage source, find

(i) Impedance of the circuit

(ii) Input current

(iii) Drop across the resistor and inductance

(iv) Power factor of the circuit. 8



4. (a) Solve the differential equation using Laplace transformation. Assume all initial condition is zero.

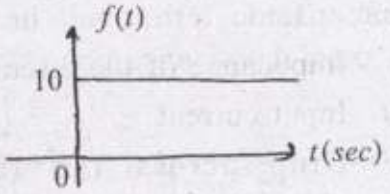
$$\frac{d^2x}{dt^2}+3\frac{dx}{dt}+5x=6$$ 5

(b) Find the inverse Laplace transform of

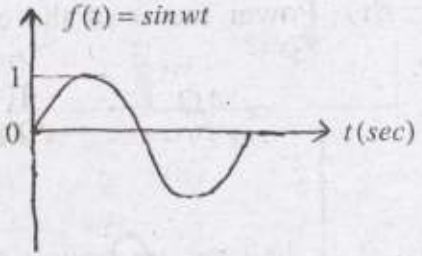
$$F(S)=\frac{S+3}{S(S+1)(S+2)}$$ 5

(c) Find the Laplace transform of the following : 10

(i)



(ii)



5. (a) Deduce the relationship between resonant frequency, Bandwidth and Quality factor for a resonant circuit. 10

(b) An $R-L-C$ series circuit with a resistance of 10Ω, inductance of $0{\cdot}2H$ and a capacitance of $40\,\mu F$ is supplied with a $100V$ supply at variable frequency. Find the following w.r.t. series resonant circuit.

(i) the frequency at which resonance takes place.

(ii) the current at resonance

(iii) Power factor

(iv) half power points

(v) Phasor diagram 10

(iii) chaos

(iv) vulnerable

(v) authentic.

5. Answer as directed : 10×2=20

i. The kidnapped man shouted for help.
(Convert into direct speech)

ii. He assured her, "I will marry you."
(Convert into indirect speech)

iii. Scientists are worried about bird flu, ...
(add a tag question)

iv. There is no lightning without thunder.
(Turn into affirmative)

v. If only I could see my mother!
(Turn into assertive)

vi. Man is a great piece of art.
(Turn into exclamatory)

vii. We must eat to live.
(Turn into complex)

viii. We have a lots of work to do now.
(Turn into compound)

ix. The old man died in his native village.
(Turn into complex)

x. This is Milton's pen.
(Turn into complex)

6. *(a)* Write a report on the annual function held in your institute in **500** words. 10

(b) The District Collector is concerned about the rapid increase in the number of road accidents in Pilani. The Chairman, Municipal Corporation, Pilani, has been asked to submit a report investigating the causes and suggesting measures to improve the situation. Prepare an outline for the above report. 10

7. *(a)* As the purchase officer of a company, write a complaint letter to Uniflex Ltd. New Delhi, pointing out the damage which was discovered after checking the consignment containing compact discs sent to you by the supplier. Invent the necessary details. 10

(b) Playing the role of Senior Sales Manager, draft a suitable reply to this claim letter. [*Refer to Q. No. 7(a)*] 10
