

SEMESTER END EXAMINATION, DECEMBER-2019
Course Name : B.Tech. Semester : I
Paper Name : Engineering Mechanics Paper Code : TES-103

Time : 3 Hrs.+20 minutes extra per hour for V.I. & examinees with writer. Max. Marks—70
समय : 3 घण्टे+20 मिनट प्रति घंटे अतिरिक्त-दृष्टिगोचरित एवं सह लेखक परीक्षार्थियों के लिए। अधिक अंक—70

Instructions :

- The question paper consists of three sections namely A, B & C. All sections are compulsory.
- Section A – Each question carries 2 marks. All questions are compulsory.
- Section B – Answer any 4 out of 6 given questions in maximum 100 (hundred) words. Each question carries 7 marks.
- Section C – Answer any 2 out of 3 given questions in maximum 500 (five hundred) words. Each question carries 16 marks.

निर्देश :

- प्रश्न पत्र में तीन खण्ड आ, ब व स हैं। सभी खण्ड अनिवार्य हैं।
- खण्ड-आ में प्रत्येक प्रश्न दो अंक का है। सभी प्रश्न अनिवार्य हैं।
- खण्ड-ब में छः प्रश्नों में से किन्हीं चार प्रश्नों के उत्तर अधिकतम 100 (सौ) शब्दों में दें। प्रत्येक प्रश्न 7 अंक का है।
- खण्ड-स में तीन प्रश्नों में से किन्हीं दो प्रश्नों के उत्तर अधिकतम 500 (पाँच सौ) शब्दों में दें। प्रत्येक प्रश्न 16 अंक का है।

Section – A (खण्ड-आ)
Multiple Choice Questions (बहुविकल्पीय प्रश्न)

1. Answer all the following questions. $5 \times 2 = 10$
निम्नलिखित सभी प्रश्न अनिवार्य हैं।

- i) A body is resting on a plane inclined at angel 30° to horizontal.
What force would be required to slide down, if the coefficient of friction between body and plane is 0.3?
(a) 1 Kg (b) Zero
(c) 5 Kg (d) None of these
- ii) What is the maximum bending moment in case of simply supported beam carrying uniformly varying load ‘ $w\text{KN/m}$ ’ at one end and zero at other end over whole span length ‘ l ’?
(a) $wl^2/12$ (b) $wl^2/8$
(c) $wl^2/6$ (d) $wl^2/9\sqrt{3}$

iii) Centroid of Trapezium lies in Y axis Y_c where 'H' is height of trapezium and 'a' and 'b' are two sides of trapezium ($a > b$),

$$(a) \frac{a+2b}{a+b} H/3$$

$$(b) \frac{2a+b}{a+b} H/3$$

$$(c) \frac{a+2b}{2a+b} H/3$$

$$(d) \frac{a+b}{a+2b} H/3$$

iv) If two bodies, one light and other heavy, have equal kinetic energy, which one has a greater momentum?

(a) The heavy body

(b) The light body
(c) Both have equal momentum
(d) Unpredictable

- v) The bending moment for a certain portion of the beam is constant. For that portion, shear force would be,
- (a) Constant
 - (b) Increasing
 - (c) Decreasing
 - (d) Zero

Section - B (खण्ड-B)

Short Answer Questions (लघुउत्तरीय प्रश्न)

2. Answer any four of the following questions in maximum 100 words.

निम्नलिखित में से किन्हीं चार प्रश्नों के उत्तर अधिकतम 100 शब्दों में हैं।

- i) How are the forces classified? Name the different force system.
Two identical roller each of weight 500 N are supported by an inclined plane as shown in fig 1. Find the reaction induced at the point of support.
- ii) A simple figure 2. moment of the Find circle
- iii) A square of the Find circle
- iv) Explain through of 3 velocity
- v) A ball the light rope weight plane (a) (b)

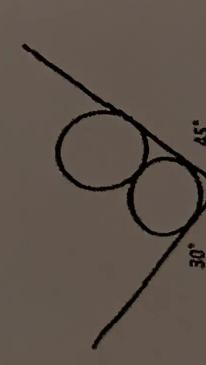


Fig. 1

- ii) A simply supported beam of 9 m span is loaded as shown in fig. 2. Calculate the support reactions, maximum bending moment and position of maximum bending moment.

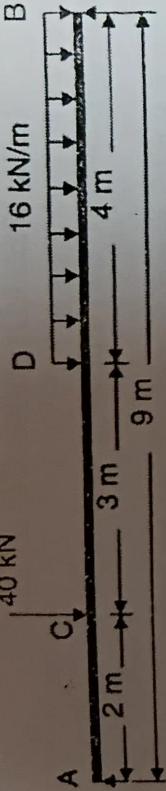


Fig. 2

- iii) A square hole is punched out of a circular lamina, the diagonal of the square being the radius of the circle, as shown in fig. 3. Find the position of the centroid of the remainder, if the radius of the circle is 'r'.

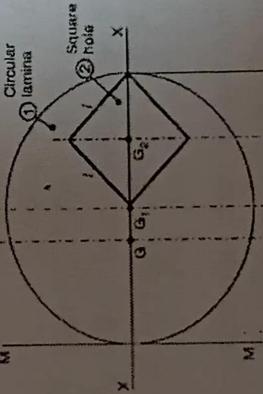


Fig. 3

- iv) Explain Newton's 2nd law for rectilinear motion. Two stone are thrown vertically upward one from the ground with a velocity of 30m/sec and another from a point 40 meter above with a velocity 10 m/sec. When and where they will be meet?

- v) A body weighing 8 N rests on a rough inclined plane at 15° to the horizontal. It is pulled up the plane from rest, by means of a light flexible rope running parallel to the plane. The portion of rope, beyond the pulley hangs vertically down and carries a weight of 60 N at the end. If the coefficient of friction for the plane and the body is 0.22. Find,
- (a) The tension in rope,
 - (b) The acceleration in m/sec^2 , with the body moves up the plane.

[3]

- vi) Derive expression for moment of Inertia of triangle about the centroidal axis, about the base and about an axis passing through the vertex.

Section - C (खण्ड-स)
Long Answer Questions (दीर्घ उत्तरीय प्रश्न)

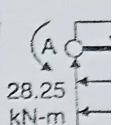
3. Answer any two of the following questions in maximum 500 words.
 निम्नलिखित में से किन्हीं दो प्रश्नों के उत्तर अधिकतम 500 शब्दों में दें।

i) (a) Show that in case of belt friction the ratio of tension in tight side and slack side is $T_1/T_2 = e^{\mu\theta}$, where T_1 is tension in tight side, T_2 is tension in slack side, θ is angle of lap of the belt over the pulley and μ is coefficient of friction between belt and pulley.

In a belt drive the speed of the belt is 12 m/sec. The drive transmits 19.2 kW of power. Determine the tension in tight side and slack side of the belt if the coefficient of friction is 0.25 and the angle of lap on smaller pulley is 220° .

(b) ABCD is a square each side being 500 mm and E is the midpoint of AB. Forces of 3.18, 3.63, 5.44, 2.27, 4.10 and 2.72 N act on a body along the line and direction of AB, EC, BC, BD, CA and DE respectively. Find the magnitude, direction and position with respect to ABCD of the force required to keep the body in equilibrium.

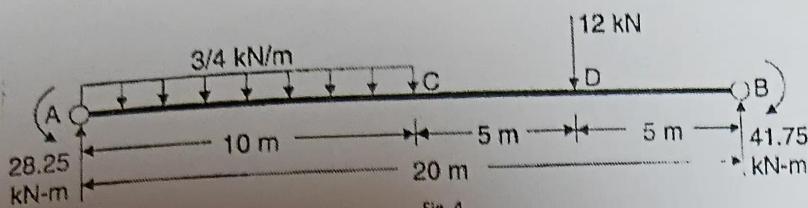
ii) (a) A beam of 20 m span is hinged at each end. It carries a UDL of $\frac{3}{4}$ kN / m on the left hand half of the beam together with a 12 kN point load at 15 m from left hand end. In addition to this it is subjected to couple of 28.25 kN - m in anti - clock wise direction at left hand support and 41.75 kN - m at the right hand support. Find the reactions at the ends and draw the shear force and bending moment diagram at each point as shown in fig4.



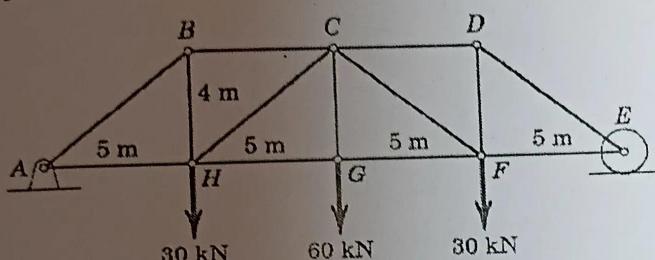
(b)

iii) (a)

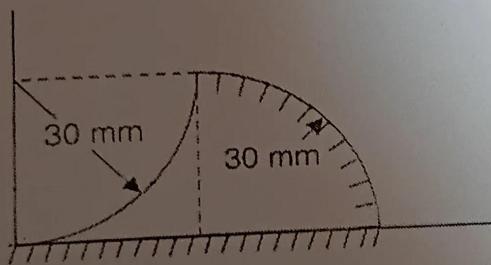
(b)



- (b) Determine the magnitude and nature of forces in each member of the loaded truss as shown in fig.5, by method of joint.



- iii) (a) Explain the term 'Moment of Inertia'. Write down 'Theorem of perpendicular axes'. Determine the moment of inertia of the shaded area as shown in fig.6, about the horizontal axis passing through the centroid.



- (b) Explain the Law of conservation of energy. Write down the energy equation for equilibrium. What is the stability of equilibrium?
-

SEMESTER END EXAMINATION, DECEMBER-2019

Course Name : B. Tech.

Paper Name : Professional Communication

Semester: I
Paper Code : THS-101

Time : 3 Hrs.+20 minutes extra per hour for V.I. & examinees with writer. Max. Marks—70
समय : 3 घण्टे+20 मिनट प्रति घंटे अतिरिक्त—दूसरीप्रश्नायें के लिए। अधिक—70

Instructions :

- The question paper consists of three sections namely A, B & C. All sections are compulsory.
- Section A – Each question carries 2 marks. All questions are compulsory.
- Section B – Answer any 4 out of 6 given questions in maximum 100 (hundred) words. Each question carries 07 marks.
- Section C – Answer any 2 out of 3 given questions in maximum 500 (five hundred) words. Each question carries 16 marks.

निर्देश :

- प्रश्न पत्र में तीन खण्ड अ, ब व स हैं। सभी खण्ड अनिवार्य हैं।
- खण्ड—अ में प्रत्येक प्रश्न दो अंक का है। सभी प्रश्न अनिवार्य हैं।
- खण्ड—ब में छः प्रश्नों में से किन्हीं चार प्रश्नों के उत्तर अधिकतम 100 (सौ) शब्दों में दे। प्रत्येक प्रश्न 07 अंक का है।
- खण्ड—स में तीन प्रश्नों में से किन्हीं दो प्रश्नों के उत्तर अधिकतम 500 (पाँच सौ) शब्दों में दे। प्रत्येक प्रश्न 16 अंक का है।

Section – A (खण्ड—अ) **Multiple Choice Questions (बहुविकल्पीय प्रश्न)**

1. Answer all the following questions.

निम्नलिखित सभी प्रश्न अनिवार्य हैं।

- i) The word ‘Communication’ is derived from the Latin word.....**
- (a) Communis
 - (b) Community
 - (c) Coordinate
 - (d) Commune
- ii) Feedback is sent to the.....**
- (a) Channel
 - (b) Sender
 - (c) Decoder
 - (d) Receiver
- iii) The synonym of the word bear is**
- (a) Curse
 - (b) Tolerate
 - (c) Sterile
 - (d) Pull

[1]

Set-B

- iv) The antonym of the word accept is.....
(a) Admit
(c) Love
- v) Proxemics means.....
(a) Gymnastics
(c) Space language
- (b) Metaphysics
(d) None of the above

Section - B (खण्ड-ब)

Short Answer Questions (लघुउत्तरीय प्रश्न)

2. Answer any four of the following questions in maximum 100 words.
निम्नलिखित में से किन्हीं चार प्रश्नों के उत्तर अधिकतम 100 शब्दों में हैं।
- i) Explain the term word formation prefix and suffix with the help of appropriate examples.

- ii) What is a sentence structure ? Give the different types of sentence structures.
- iii) Give a detailed description of the techniques of writing precisely.
- iv) What is meant by the Art of condensation ? Explain the features of a good precis .
- v) Define Communication. Enumerate any three barriers that can hamper effective communication.
- vi) Explain what is vertical and horizontal flow of communication.

Section - C (खण्ड-स)

Long Answer Questions (दीर्घ उत्तरीय प्रश्न)

3. Answer any two of the following questions in maximum 500 words.
 $2 \times 16 = 32$

[2]

Set-B

निम्नलिखित में से किन्हीं दो प्रश्नों के उत्तर अधिकतम 500 शब्दों में दे।

- i) Draft a resume for the post of an accounts officer in a reputed firm.

- ii) Write a job application in response to the following advertisement :
applications are invited for the post of an accountant. the candidate should be an M.com and should have at least five years experience in costing budgeting and compilation of accounts.
Apply within 15 days to the managing Director, Health well food Products limited, 43, Josh Marg, Mumbai.

- iii) (a) What is body language ? Explain
(b) Differentiate between active and passive listening. How can a person become an active listener?

d)

••••

'9
ester : I
ME-101
rk-70
jk-70
—

SEMESTER END EXAMINATION, DECEMBER-2019

Course Name : B.Tech.

Paper Name : Engineering Mechanics

Semester : I

Paper Code : ME-161

**Time : 3 Hrs+20 minutes extra per hour for V.I. & examinees with writer. Max. Marks – 70
समय : 3 घण्टे+20 मिनट प्रति घंटे अतिरिक्त-दृष्टिबाधित एवं सह लेखक परीक्षार्थियों के लिए।
अंक-70**

Instructions :

- The question paper consists of three sections namely A, B & C. All sections are compulsory.
- Section A – Each question carries 2 marks. All questions are compulsory.
- Section B – Answer any 4 out of 6 given questions in maximum 100 (hundred) words. Each question carries 7 marks.
- Section C – Answer any 2 out of 3 given questions in maximum 500 (five hundred) words. Each question carries 16 marks.

निर्देश :

- प्रश्न पत्र में तीन खण्ड अ, ब व स हैं। सभी खण्ड अनिवार्य हैं।
- खण्ड-अ में प्रत्येक प्रश्न दो अंक का है। सभी प्रश्न अनिवार्य हैं।
- खण्ड-ब में छः प्रश्नों में से किन्हीं चार प्रश्नों के उत्तर अधिकतम 100 (सौ) शब्दों में दें। प्रत्येक प्रश्न 7 अंक का है।
- खण्ड-स में तीन प्रश्नों में से किन्हीं दो प्रश्नों के उत्तर अधिकतम 500 (पाँच सौ) शब्दों में दें। प्रत्येक प्रश्न 16 अंक का है।

Section – A (खण्ड-अ)

Multiple Choice Questions (बहुविकल्पीय प्रश्न)

$5 \times 2 = 10$

**i) Answer all the following questions.
निम्नलिखित सभी प्रश्न अनिवार्य हैं।**

ii) The condition of equilibrium for non-concurrent coplanar force system are-

- (a) $\Sigma F_x=0, \Sigma F_y=0$ (b) $\Sigma F_x=0, \Sigma F_y=0, \Sigma F_z=0$
(c) $\Sigma F_x=0, \Sigma F_y=0, \Sigma M_z=0$ (d) N.O.T.

iii) Force of friction is independent of-

- (a) Coefficient of friction
(b) Normal reaction
(c) Roughness/smoothness of surface of contact
(d) Area of contact

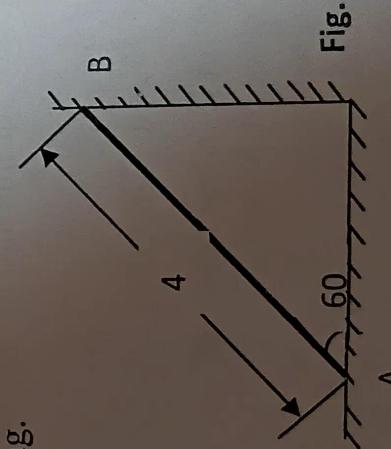
- iii) Centroid of a semicircular plate of diameter d from its diametral axis lies at a distance -
 (a) $d/3$ (b) d/π
 (c) $d/3\pi$ (d) $2d/3\pi$

- iv) Bending moment diagram for a cantilever subjected to uniformly distributed load is having the shape of -
 (a) Rectangle (b) Triangle
 (c) Parabola (d) Elliptic

- v) Volumetric strain of a body is zero (body is incompressible), if its poisson's ratio is -
 (a) 0.25 (b) 0.40
 (c) 0.5 (d) 1.0

Section – B (खण्ड-B)
Short Answer Questions (लघुउत्तरीय प्रश्न)

2. Answer any four of the following questions in maximum 100 words.
 निम्नलिखित में से किन्हीं चार प्रश्नों के उत्तर अधिकतम 100 शब्दों में दे।
- i) A ladder AB of length 4 m, weighting 200 N is placed against a vertical wall as shown in fig. The coefficient of friction between wall and ladder is 0.2 and that between floor and ladder is 0.3. In addition to self weight, the ladder has to support a man weighting 600 N at a distance of 3 m from A. Calculate the minimum horizontal force to be applied at A to prevent slipping.
- 4×7=28
- v)
- vi)



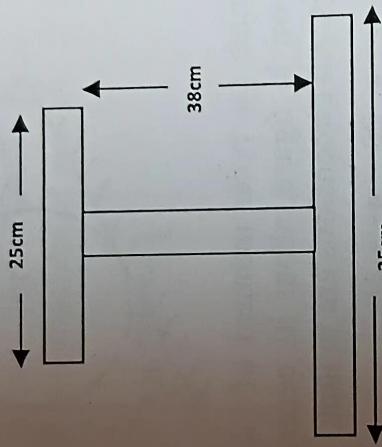
3. Ans
wor
निम्न

Set-B

[2]

- ii) Define truss and what are the differences among perfect, deficient and redundant trusses? Also list the assumptions made in the analysis of pin jointed truss. When the method of section is preferred over method of joints?
- iii) Derive the relationship between tension on tight side and slack side in a rope.

- iv) Determine the centroid of the structural steel section as shown in figure, Given that the thickness of each rectangle is 1cm.



- v) A body moves along a straight line and its acceleration varies with time is given by $a = 2-3t$. Five second after start of the observations, its velocity is found to be 20 m/sec. Ten second after start of the observation, the body is at 85 m from the origin. Find – (i) its acceleration, velocity and distance from the origin. (ii) The time in which the velocity becomes zero and the corresponding distance from origin.

- vi) Define pure torsion. List the assumptions made in torsion theory and Derive the torsion equation.

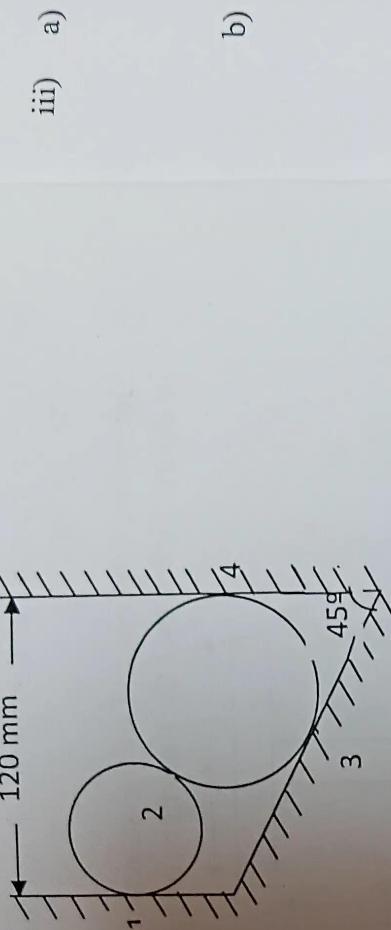
Section – C (खण्ड–स)
Long Answer Questions (दीर्घ उत्तरीय प्रश्न)

3. Answer any two of the following questions in maximum 500 words.
निम्नलिखित में से किन्हीं दो प्रश्नों के उत्तर अधिकातम 500 शब्दों में दे।
 $2 \times 16 = 32$

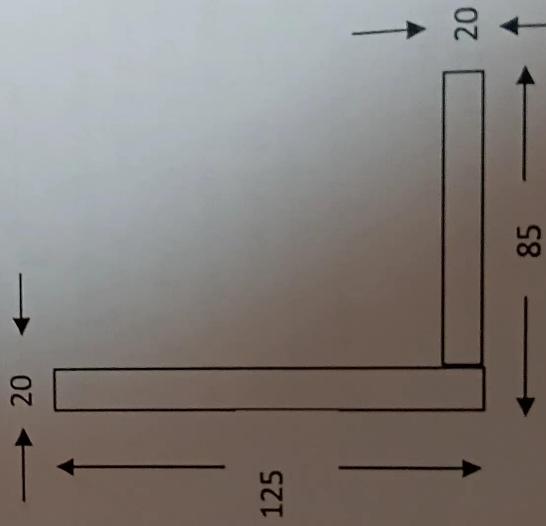
Set-B

[3]

- i) a) Two cylinders of diameters 100 mm and 50 mm, weighting 200 N and 50 N, respectively are placed in a trough as shown in fig. Neglecting friction, find the reactions at contact surfaces 1, 2, 3 and 4.



- b) Determine the polar moment of inertia of the L-section as shown in figure, about its centroidal axis parallel to the legs. All dimensions are in mm.



- ii) a) A car of 2 ton mass powered by an engine of 40 KW capacity, starts from rest and attains maximum speed in 30 seconds. If the frictional resistance to motion is 0.75 KN/ton, find the maximum speed it can attain. If after attaining the maximum speed, the engine is switched off, find the distance it would travel before coming to rest.

[4]

Set-B

- b) Classify the system of forces? State and prove the Varignon's theorem.
- iii) a) A simply supported beam AB is carrying a linearly varying load of intensity zero at A to a load of intensity ' w ' at B. Draw shear force and bending moment diagrams. Locate the position and find the magnitude of maximum bending moment.
- b) State and prove the Parallel axis theorem and Perpendicular axis theorem of moment of inertia of plane figure.
-

[5]

- iv) Phase rule is:
 (a) $F = C - P + 2$
 (b) $F = C - P$
 (c) $F = C - P + 1$
 (d) None of these
- v) Bond order of CO
 (a) 1
 (b) 2
 (c) 3
 (d) 0

Section – B (खण्ड–ब)

Short Answer Questions (लघुतरीय प्रश्न)

2. Answer any four of the following questions in maximum 100 words.
 निम्नलिखित में से किसी चार प्रश्नों के उत्तर अधिकतम 100 शब्दों में है।
 $4 \times 7 = 28$

- What is imperfection in solid? Explain Stoichiometric and non-stoichiometric imperfection.
- Explain Vulcanization of natural rubber. Give the preparation and application of Buna-S and Buna -N.
- Define the term Corrosion. Discuss in brief the electrochemical theory of Corrosion.
- Describe the reverse Osmosis process for the softening of hard water.
- Discuss in brief the classification and application of liquid crystals.
- Explain construction and working of galvanic cell. Calculate emf of the cell
 $\text{Ag} | \text{AgNO}_3(0.001\text{M}) | \text{AgNO}_3(0.1\text{M}) | \text{Ag}$

Section – C (खण्ड-C)
Long Answer Questions (दीर्घ उत्तरीय प्रश्न)

3. Answer any two of the following questions in maximum 500 words.
 $2 \times 16 = 32$

निम्नलिखित में से किन्हीं दो प्रश्नों के उत्तर अधिकतम 500 शब्दों में हैं।

- i) With the help of MO diagram arrange the following molecular/ion in order to their increasing bond length O_2 , O_2^-
- ii) Explain the manufacturing of Portland cement also write the reaction involved in the setting of cement.
- iii) Explain phase rule and give application of phase rule for three phase one component system (water system).
••••

SEMESTER END EXAMINATION, DECEMBER-2019

Course Name : B. Tech.
Paper Name : Basic Electrical Engineering
Time : 3 Hrs.+20 minutes extra per hour for V.I. & examinees with writer.

Semester : III
Semester Code : EEE-101

SEMESTER END EXAMINATION, DECEMBER-2019

Course Name : B. Tech.
Paper Name : Basic Electrical Engineering
Paper Code : IES-102
Time : 3 Hrs.+20 minutes extra per hour for V.I. & examinees with writer.
Max. Marks - 70
अधिकारी के लिए 70
अधिकारी के लिए 70

Conductor

Instructions :

- The question paper consists of three sections namely A, B & C. All sections are compulsory.
- Section A – Each question carries 2 marks. All questions are compulsory.
- Section B – Answer any 4 out of 6 given questions in maximum 100 (hundred) words. Each question carries 07 marks.
- Section C – Answer any 2 out of 3 given questions in maximum 500 (five hundred) words. Each question carries 16 marks.

निर्देश :

- प्रश्न पत्र में तीन खण्ड अ, ब व स हैं। सभी खण्ड अनिवार्य हैं।
- खण्ड-अ में प्रत्येक प्रश्न दो अंक का है। सभी प्रश्न अनिवार्य हैं।
- खण्ड-ब में प्रश्नों में से किसी चार प्रश्नों के उत्तर अधिकतम 100 (सौ) शब्दों में दें। प्रत्येक प्रश्न 07 अंक का है।
- खण्ड-स में तीन प्रश्नों में से किसी दो प्रश्नों के उत्तर अधिकतम 500 (पाँच सौ) शब्दों में दें। प्रत्येक प्रश्न 16 अंक का है।

निम्नलिखित सभी प्रश्न अनिवार्य हैं।

Section – A (खण्ड-अ)
Multiple Choice Questions (बहुविकल्पीय प्रश्न)

$5 \times 2 = 10$

1. Answer all the following questions.

निम्नलिखित सभी प्रश्न अनिवार्य हैं।

- The power factor of pure indicative circuit is
 - Zero
 - Leading
 - Lagging
 - Unity
- Synchronous speed of a 3-phase, 4 pole, 60Hz induction motor is
 - 1800 rpm
 - 1440 rpm
 - 2880 rpm
 - 1500 rpm

[1]

- iii) Moving Iron instrument reads value.
 (a) Peak (b) rms
 (c) Average (d) Peak to peak
- iv) Transformer's rating are generally in :
 (a) KW (b) MW
 (c) KVA (d) KVAR
- v) Internal resistance of ideal voltage source is
 (a) One (b) Zero
 (c) Infinite (d) None

Section – B (छाण्ड-ब)

Short Answer Questions (लघुउत्तरीय प्रश्न)

2. Answer any four of the following questions in maximum 100 words.
 निम्नलिखित में से किन्हीं चार प्रश्नों के उत्तर अधिकतम 100 शब्दों में दें।

- i) Find current through 8Ω resistance, using thevenin's theorem in figure 1.

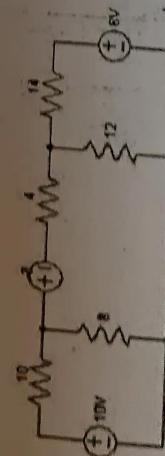


Figure 1

- ii) A coil of $R=8\Omega$ and $L=0.12H$ is connected in series with a condenser having $C=140\mu F$ across $23V, 50Hz$, single phase ac supply. Determine:

- (a) Current through C
 (b) Power factor
 (c) Voltage across C

[2]

Section – C (छाण्ड-स)

Long Answer Questions (दैर्घ्य उत्तरीय प्रश्न)

3. Answer any two of the following questions in maximum 500 words.
 निम्नलिखित में से किन्हीं दो प्रश्नों के उत्तर अधिकतम 500 शब्दों में दें।

- i) Derive the relation between line current and phase current for a delta connected system. A star connected load has a resistance of 8Ω and inductive reactance of 6Ω per phase it is fed from 3 phase $400V, 50Hz$ ac supply. Determine line current, power factor, active and reactive power.
- ii) Using double revolving field theory, explain why single phase induction motors are not self-starting. Discuss the various starting methods with the help of appropriate diagrams.

[3]

SEMESTER END EXAMINATION, DECEMBER-2019

Course Name : B. Tech.
Paper Name : Engineering Chemistry

Semester: I
Paper Code : AS-101

Time : 3 Hrs.+20 minutes extra per hour for V.I. & examinees with writer. Max. Marks- 70
समय : 3 घण्टे+20 मिनट प्रति धंडे अतिरिक्त-दृष्टिभाषित एवं सह लेखक परीक्षार्थियों के लिए। अधिक-70

Instructions :

- The question paper consists of three sections namely A, B & C. All sections are compulsory.
- Section A – Each question carries 2 marks. All questions are compulsory.
- Section B – Answer any 4 out of 6 given questions in maximum 100 (hundred) words. Each question carries 07 marks.
- Section C – Answer any 2 out of 3 given questions in maximum 500 (five hundred) words. Each question carries 16 marks.

निर्देश :

- एक पत्र में तीन खण्ड अ. ब व स हैं। सभी खण्ड अनिवार्य हैं।
- खण्ड-अ में प्रत्येक प्रश्न दो अंक का है। सभी प्रश्न अनिवार्य हैं।
- खण्ड-ब में छः प्रश्नों में से किन्हीं चार प्रश्नों के उत्तर अधिकतम 100 (सौ) शब्दों में हैं। प्रत्येक प्रश्न 07 अंक का है।
- खण्ड-स में तीन प्रश्नों में से किन्हीं दो प्रश्नों के उत्तर अधिकतम 500 (पाँच सौ) शब्दों में हैं। प्रत्येक प्रश्न 16 अंक का है।

Section – A (खण्ड-अ) **Multiple Choice Questions (बहुविकल्पीय प्रश्न)**

**1. Answer all the following questions.
निम्नलिखित सभी प्रश्न अनिवार्य हैं।**

- i) For a stable molecule**
- (a) $N_a > N_b$ (b) $N_a = N_b$
(c) $N_b > N_a$ (d) None of these
- ii) Proteins are**
- (a) Synthetic Polymer (b) Natural Polymer
(c) Fibres (d) None of these
- iii) Plaster of Paris is**
- (a) $CaSO_4 \cdot 7H_2O$ (b) $CaSO_4$,
(c) $CaSO_4 \cdot 2H_2O$ (d) $CaSO_4 \cdot 1/2H_2O$

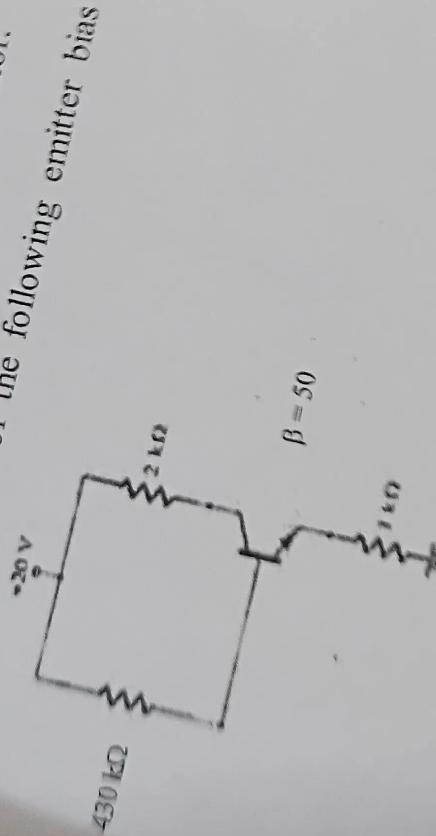
[1]

Set-B

SEM

Course Name
Paper Name

Zener diode? Draw its symbol, characteristics and the operating point of the following emitter regulator.



Six Answer Questions (धीर उत्तर प्रश्न)

Two of the following questions in maximum 500

to the working of a npn transistor, If $\beta = 16$, $I_E = 32$ mA

Q. Explain the concept of dc load line and

the basic construction and transistor action of a JFET, write on the following:
1) Any parameter

.....

SEMESTER END EXAMINATION, DECEMBER-2019

Course Name : B. Tech.

**Paper Name : Fundamental of Electronics
Engineering**

Semester: I

Paper Code : TES-105

**Time : 3 Hrs.+20 minutes extra per hour for V.I. & examinees with writer. Max. Marks- 70
समय : 3 घण्टे+20 मिनट प्रति घंटे अतिरिक्त-दृष्टिवादित एवं सह लेखक परीक्षार्थियों के लिए। अधिक 10 अंक-70**

Instructions :

- The question paper consists of three sections namely A, B & C. All sections are compulsory.
- Section A – Each question carries 2 marks. All questions are compulsory.
- Section B – Answer any 4 out of 6 given questions in maximum 100 (hundred) words. Each question carries 07 marks.
- Section C – Answer any 2 out of 3 given questions in maximum 500 (five hundred) words. Each question carries 16 marks.

निर्देश :

- प्रश्न पत्र में तीन खण्ड आ, ब व स हैं। सभी खण्ड अनिवार्य हैं।
- खण्ड-आ में प्रत्येक प्रश्न दो अंक का है। सभी प्रश्न अनिवार्य हैं।
- खण्ड-ब में छः प्रश्नों में से किन्हीं चार प्रश्नों के उत्तर अधिकतम 100 (सौ) शब्दों में दें। प्रत्येक प्रश्न 07 अंक का है।
- खण्ड-स में तीन प्रश्नों में से किन्हीं दो प्रश्नों के उत्तर अधिकतम 500 (पाँच सौ) शब्दों में दें। प्रत्येक प्रश्न 16 अंक का है।

Section – A (खण्ड-आ)

Multiple Choice Questions (बहविकल्पीय प्रश्न)

5×2=10

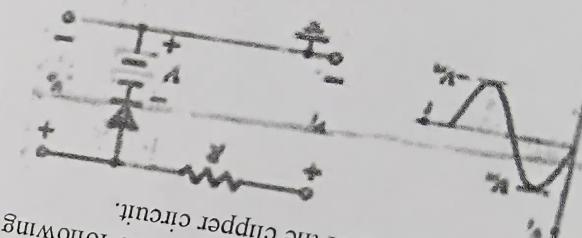
1. Answer all the following questions.

निम्नलिखित सभी प्रश्न अनिवार्य हैं।

- Which of the following is not a group IV material?
(a) C (b) Si (c) Ge (d) As
- The forbidden energy gap in a Si semiconductor material is?
(a) 1.1eV (b) 0.3eV (c) 0.67eV (d) None of these

[1]

[2]



- iv) The input waveform is shown in the following figure find the output waveform of the clipper circuit.

- iii) Explain the working of a pn junction diode? Draw its VI characteristics.

- ii) Distinguish between conductors, semiconductors and insulators on the basis of energy band gap.

- i) Explain the working of a npn transistor. How a transistor is used as an amplifier? Explain the concept of dc load line and operating point.

- ii) Explain the basic construction and transfer characteristics of a FET, concept of pinch off on the drain and transistor action of a FET, write short note on the following:
- (a) Ideal op-amp parameters
 - (b) Logic gates

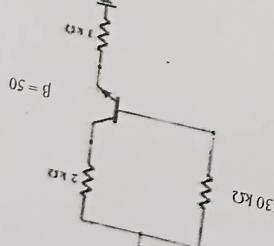
[3]

- v) What is a Zener diode? Draw its symbol, characteristics and circuit. Determine the operating point of the following regulator.
- vi) Explain how a zener diode can be used as a voltage regulator.
- vii) What is a Zener diode? Draw its symbol, characteristics and circuit.
- viii) Which configuration is best suitable for proper amplification of small signals?
- ix) The tripler factor of a full wave rectifier is
- (a) 1.21
 - (b) 2.21
 - (c) 1.48
 - (d) None of these

- x) Short Answer - B (any 3)
- xi) Short Answer - C (any 3)
- xii) Short Answer - D (any 3)

2. Answer any four of the following questions (any three)
- i) Words. ~~What is a pn junction diode?~~ ~~What is a pn junction diode?~~ ~~What is a pn junction diode?~~ ~~What is a pn junction diode?~~
- ii) Distinguish between conductors, semiconductors and insulators on the basis of energy band gap.
- iii) Explain the working of a npn transistor. How a transistor is used as an amplifier? Explain the concept of dc load line and insulating operating point.

- iv) Explain the working of a pn junction diode? Draw its VI characteristics.



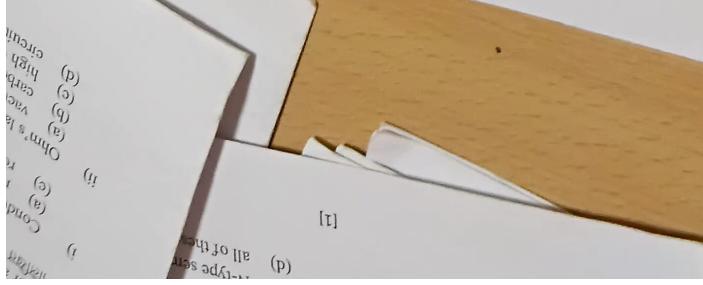
3. Answer any two of the following questions (any two)

- i) Explain the working of a npn transistor. How a transistor is used as an amplifier? Explain the concept of dc load line and insulating operating point.

- ii) Explain the basic construction and transfer characteristics of a FET, concept of pinch off on the drain and transistor action of a FET, write short note on the following:
- (a) Ideal op-amp parameters
 - (b) Logic gates

- iii) Write short note on the drain and transfer characteristics of a FET, concept of pinch off on the drain and transistor action of a FET, write short note on the following:
- (a) Ideal op-amp parameters
 - (b) Logic gates

[1]



SEMESTER E

Course Name : B.Tech
Paper Name : Basic Elect

Time : 3 Hrs +20 minutes Ques per h
अवधि : ३ घण्टे +२० मिनट्स उत्तर प्रति घण्टे

- Instructions :**
- The question paper consists of 5 questions.
 - Compulsory question
 - Section A - P₁, P₂, P₃

- iii) Write short note on:
- (a) Auto-transformer
 - (b) B-H curve
 - (c) Types and need of hysteresis loop
-

- iii) The ratio of voltage and electric current in a closed circuit :
 (a) remains constant
 (b) varies
 (c) increases
 (d) falls

- iv) Which of the following is not correct ?

(a) $P=V/R^2$ (b) $P=VI$
 (c) $I=\sqrt{(P/R)}$ (d) $V=\sqrt{(P/R)}$

- v) A D.C. generator works on the principle of :

(a) Lenz's law
 (b) Ohm's law
 (c) Faraday's law of electromagnetic induction
 (d) none of the above

- vi) An RLC series circuit has resonance frequency of 1000Hz, its power factor reduces to 0.707 at a frequency of 1050Hz. Calculate its quality factor.

Section - C (छांडे-स)

Long Answer Questions (दीर्घ उत्तरीय प्रश्न)

1. Answer any two of the following questions in maximum 500 words.
 निम्नलिखित में से किसी दो प्रश्नों के उत्तर अधिकतम 500 शब्दों में दें।

- i) Describe the construction details of transformer and also explain the principle of operation.
- ii) a) State and explain Superposition & Maximum power Transfer Theorem.
 b) State and explain Kirchoff's Voltage & Kirchoff's current law.
- iii) Find the RMS value, Average value, form factor and peak factor of sinusoidal ac supply.
 4x7=28
 निम्नलिखित में से किसी चार प्रश्नों के उत्तर अधिकतम 100 शब्दों में दें।
- i) Derive the emf equation of Transformer.
- ii) Draw the phasor diagram of and equivalent circuit of single phase transformer.
- iii) Explain the working principle of a 3 phase induction motor.
- iv) Explain the working principle of PMMC instruments.
- v) A parallel RLC circuit has an adjustable capacitor for charging the resonant frequency from 540 to 1610kHz. The maximum value of Q_o is to be 50. If $R=35\Omega$, specify L , C_{\max} and C_{\min} .

[3]

[4]

[2]