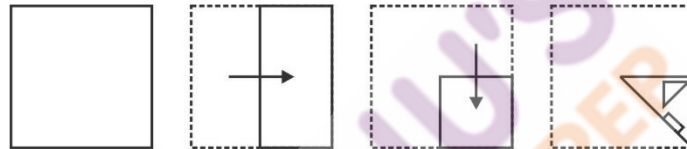


Section: Mental Ability

1. Select the option that is related to the third term on the same basis as the second term is related to the first term.

Lawyer : Court : : Doctor : ?

- (a) Diagnosis (b) Medicine
(c) Hospital (d) Practice
2. Faraz went from point M to N. First, he went 3 km to the East; then, turned right and went 2 km. From there, he turned left and walked for 5 km. Finally, he turned right and walked km to reach point N. What is the shortest distance between point M and point N?
- (a) 8.25 km (b) 10 km
(c) 11.5 km (d) 12 km
3. A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened.



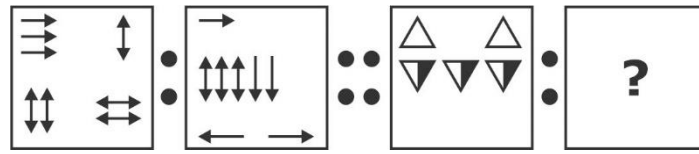
4. इस प्रश्न में, दो कथन दिए गए हैं - एक को क्रमशः अभिकथन (A) और दूसरे को कारण (R) कहा गया है। यह मानते हुए कि अभिकथन में दी गई सभी जानकारी सत्य है, इसके साथ दोनों कारणों का विश्लेषण करें और निर्धारित करें कि उनमें से कौन सा है / सही हैं और क्या R, A का सही विवरण है।

अभिकथन: भारत एक लोकतांत्रिक देश है।

कारण: भारत में सरकार लोगों द्वारा चुने गए प्रतिनिधियों द्वारा चलाई जाती है।

- (a) A गलत है लेकिन R सत्य है।
(b) A और R दोनों सत्य हैं और R, A की सही व्याख्या है।
(c) A सत्य है लेकिन R असत्य है।
(d) A और R दोनों सत्य हैं लेकिन R, A की सही व्याख्या नहीं है।

5. Select the option that is related to the third figure on the same basis as the second figure is related to the first figure.



- (a)
- (b)
- (c)
- (d)

6. Which of the following answer figure completes the series of the question figure?



- (a)
- (b)
- (c)
- (d)

7. Which option will fill in the blanks and complete the series correctly?

KSH22, MVI26, PZK31, ____

- (a) TDO36
- (b) TNE38
- (c) TFO37
- (d) TEN11

8. In this question, two statements have been given followed by two conclusions numbered I and II. Assuming that all information in the statement is true, analyse the two conclusions together and determine whether any of them logically and definitely follow(s) from the information given in the statement.

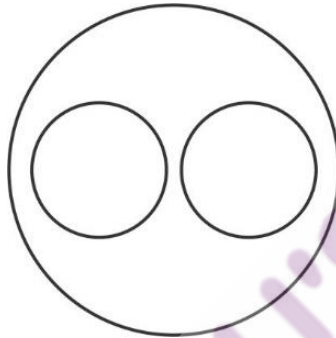
Statements:

i. All potatoes are tomatoes.

Conclusions:

i. Some tomatoes are potatoes.

- ii. All onions are potatoes.
(a) Only conclusion I follows (b) Neither I nor II follows
(c) Both I and II follow (d) Only conclusion II follows
- 9. Which option will replace the blanks and complete the given series correctly?
BD, FH, JL, NP, ___
(a) RS (b) RT
(c) ST (d) SU
- 10. The Venn diagram given in the question represents the relationship between the items given in which of the following options?



- (a) fathers, blood relations and daughters
- (b) flowers, honey and bees
- (c) apples, brinjals and vegetables
- (d) human beings, doctors and women
- 11. Preeti is Harish's only daughter. Lakhan is Birendra's only son. Lakhan's sister Neeti is married to Manas. Preeti has only one brother, Manas. How is Manas related to Birendra?
(a) Brother-in-law (b) Son-in-law
(c) Father-in-law (d) Son
- 12. Out of the given options, three are similar in a certain manner. However, one option is NOT like the other three. Select the option which is different from the rest.
(a) Ahmedabad (b) Shimla
(c) Dehradun (d) Raipur
- 13. W, X, Y and Z are sitting around a square-shaped table. W is sitting to X's immediate right. Y is sitting to Z's immediate left. Which of the following statements is false?
(a) X is to the left of Z (b) Z is between X and Y
(c) W is between X and Y (d) Z is facing W
- 14. Mahesh travelled 2 km to the West from his home; then, turned right and went 2 km. From there, he turned left and travelled for 2 km. Finally, he turned right and walked 2 km to reach his office. To which direction is Mahesh's office located with respect to his home?
(a) South-west (b) South east
(c) North east (d) North west

15. J, K, M and N are sitting on a bench facing the same direction. J is sitting next to K but not next to M. N, who is sitting at the extreme right, is not sitting next to either K or M. Which of the following statements is not true?

- (a) M is sitting to the right of K
- (b) K is sitting next to M
- (c) M is at one end
- (d) J is between K and N

16. In a code language, monkey is called lion, lion is called tiger, tiger is called elephant, and elephant is called bison. Then, as per the words used in that code language, which one of the following will have black and yellow stripes over its body?

- (a) Bison
- (b) Lion
- (c) Tiger
- (d) Elephant

17. Which number will replace the blanks and complete the given series correctly?

9, 18, 25, 30, 33, __

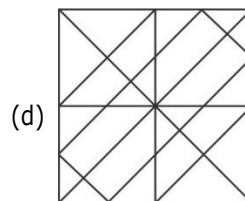
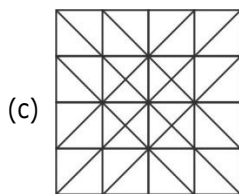
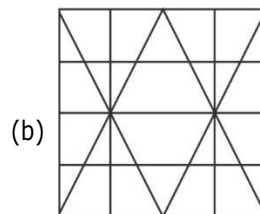
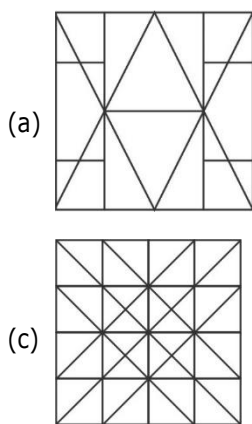
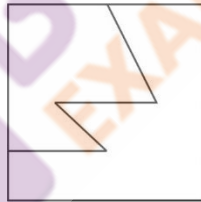
- (a) 37
- (b) 36
- (c) 34
- (d) 35

18. Which number will replace the blanks and complete the given series correctly?

96, 98, 90, 94, 82, 88, _____, 80, 60

- (a) 76
- (b) 70
- (c) 72
- (d) 92

19. From the given answer figures, select the one in which the question figure is hidden/embedded.



20. Select the option that is related to the third term on the same basis as the second term is related to the first term.

Soldier : Fight : : Scientist : ?

- (a) Tools
- (b) Research
- (c) Laboratory
- (d) Technology

Section: General Awareness

1. Which of the following tax was introduced by the 87th Amendment of Constitution?
(a) Income Tax (b) Wealth Tax
(c) Goods and Services Tax (d) Service Tax
2. ILO stands for _____.
(a) Indian Labour Organisation (b) International Labour Organisation
(c) Industrial Labour Organisation (d) Institutional Labour Organisation
3. Octopus belongs to _____ phylum.
(a) Hemichordata (b) Echinodermata
(c) Arthropoda (d) Mollusca
4. _____ drew a clear line of distinction between the Crown and the Company.
(a) Pitt's India Act (b) Charter Act
(c) Morley Minto Act (d) Rowlatt Act
5. Which among the following is not a tributary of Brahmaputra river?
(a) Teesta (b) Siang
(c) Tons (d) Manas
6. _____ is India's highest peacetime military decoration.
(a) Kirti Chakra (b) Param Vir Chakra
(c) Ashoka Chakra (d) Shaurya Chakra
7. Nanda Devi is the highest peak of _____.
(a) Kerala (b) Uttarakhand
(c) Odisha (d) Tripura
8. Who is the hero of the story in Pandavani style of folk music?
(a) Arjuna (b) Bhima
(c) Nakula (d) Sahadeva
9. _____ authorized the Government to imprison any person without trial and conviction in a court of law.
(a) Rowlatt Act (b) Pitt's India Act
(c) Morley Minto Act (d) Charter Act
10. Linus Pauling won the Nobel Prize for Chemistry in 1954 and for _____ in 1962.
(a) Physics (b) Literature
(c) Peace (d) Medicine
11. Until 1999, the Union Budget was announced at 5 pm on the last working day of _____ ?
(a) February (b) April
(c) March (d) January
12. _____ are imposed on items like cigarettes and alcohol.
(a) Sales taxes (b) Luxury taxes
(c) Sin taxes (d) Custom Duty

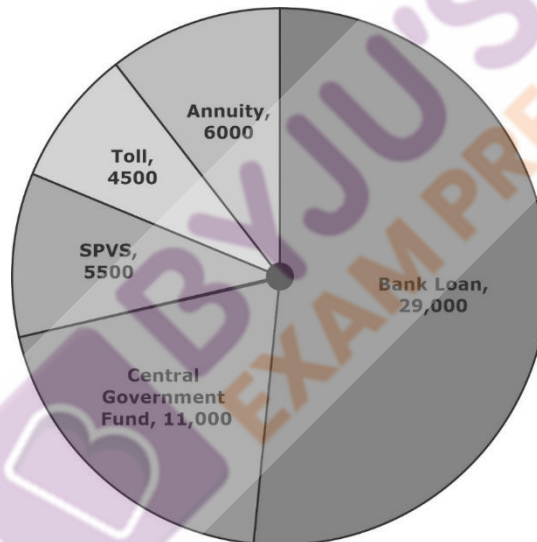
- 13. With which amendment, Privy Purse was abolished?
(a) 32nd (b) 20th
(c) 40th (d) 26th
- 14. Apurvi Chandela became the world number one in women's _____ Air Rifle category.
(a) 25 m (b) 10 m
(c) 50 m (d) 30 m
- 15. Pitt's India Act was passed in _____.
(a) 1794 (b) 1820
(c) 1780 (d) 1784
- 16. The chemical name of lime is _____.
(a) Calcium Oxide
(b) Sodium Bicarbonate
(c) Calcium carbonate
(d) Silicon Dioxide
- 17. Koyna Dam is one of the largest dams located in _____?
(a) Maharashtra (b) Gujarat
(c) Madhya Pradesh (d) Punjab
- 18. The Khelo India Youth Games 2019 were declared open in _____.
(a) Mumbai (b) Pune
(c) Chennai (d) Kolkata
- 19. What is the SI unit of thermodynamic temperature?
(a) Kelvin (b) Hertz
(c) Ampere (d) Candela
- 20. Which among the following dance form is not associated with Assam?
(a) Bhortal Dance (b) Jhumur
(c) Bihu Dance (d) Bardo Chham

Section: Arithmetic Ability

- 1. The average of 4 terms is 40 and the 2nd term is $\frac{1}{4}$ of the remaining terms. What will be the 2nd number?
(a) 32 (b) 36
(c) 48 (d) 40
- 2. Amit gets 84% marks in examination. If these are 420 marks. Find the maximum marks.
(a) 490 (b) 500
(c) 520 (d) 460
- 3. Find the HCF of 110, 220, 880.
(a) 220 (b) 110
(c) 660 (d) 330

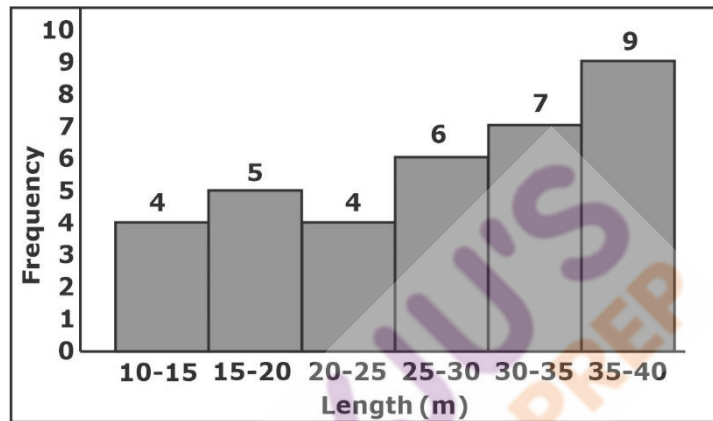
4. यदि किसी धन की सतह का कुल क्षेत्रफल 4704 sq cm है तो उसके पाक्ष्व सतह क्षेत्र को ज्ञात करें।
 (a) 3469 sq cm (b) 3263 sq cm
 (c) 3136 sq cm (d) 3348 sq cm
5. The sum of squares of two given numbers a and b is 164,000. Their LCM and HCF are 2660 and 20 respectively. Find the sum of $\{ (a/b) + (b/a) \}$.
 (a) 3.2708 (b) 2.0827
 (c) 3.0827 (d) 2.2708
6. The cost of 360 pens is Rs. 7920. Find the cost of 140 pens.
 (a) Rs. 3008 (b) Rs. 3084
 (c) Rs. 3800 (d) Rs. 3080
7. The following pie-chart shows the sources of funds to build an expressway. If toll collection is outsourced to an agent. How much will the agent need to collect as toll if his commission is 10% of the toll collection?

Source of funds

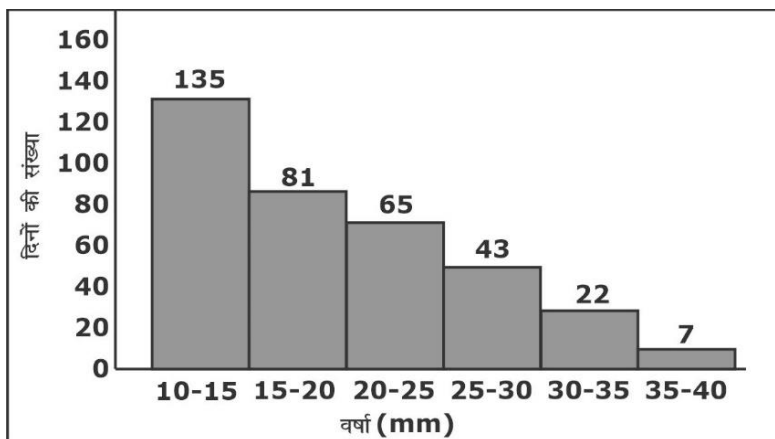


- (a) Rs. 4590 crores (b) Rs. 5500 crores
 (c) Rs. 4500 crores (d) Rs. 5000 crores
8. A person borrows Rs. 12,000 for 2 years at 2% p.a. simple interest. He immediately lends it to another person at $17\frac{1}{4}$ p.a. for 2 years. Find his gain in the transaction per year.
 (a) Rs. 360 (b) Rs. 270
 (c) Rs. 210 (d) Rs. 320
9. The cost price of 15 articles is the same as the selling price of A articles. If profit is 25%. Find the value of A.
 (a) 16 (b) 12
 (c) 10 (d) 8
10. The speed of a train is 120 kmph. What is the distance covered by it in 15 minutes?
 (a) 20 km (b) 30 km
 (c) 40 km (d) 10 km

11. The compounded ratio of (1:3), (6:5) and (7:10) is:
 (a) 7/30 (b) 7/23
 (c) 7/25 (d) 7/22
12. Evaluate: $(13 \times 8 - \sqrt{81} \times 6 + 1) \div (\sqrt{49} + 72 - 18 \times 2 + 19)$
 (a) 57/63 (b) 63/57
 (c) 62/51 (d) 51/62
13. A class carried out an experiment to measure the lengths of different classroom. The results of the experiment are shown in the histogram. The length of each classroom was measured to the nearest meter. How many classrooms were less than 25 meter in length?



- (a) 13 (b) 9
 (c) 5 (d) 10
14. Calculate the volume of sphere with diameter 42 cm.
 (a) 48007 cu cm (b) 42963 cu cm
 (c) 38808 cu cm (d) 28660 cu cm
15. जिम ने वर्ष में प्रत्येक दिन (365 दिन) अपने बगीचे में एक ही स्थान पर mm में दैनिक वर्षा को मापा। उसने अपने परिणाम को निकटतम मिलिमीटर में दर्ज किया। आयतचित्र उनके अभिलेखन के परिणामों को दर्शाता है। लगभग कितने दिनों में बारिश 10 उउ से कम थी?



- (a) 216 (b) 208
(c) 236 (d) 186
16. How long does a train 153 meters long running at the rate of 90 kmph take to cross a bridge 622 meters in length?
(a) 31 second (b) 29 second
(c) 28 second (d) 30 second
17. किस अनुपात में पदों का अंतर 24 है और जो $\frac{3}{7}$ के बराबर हैं?
(a) 20:44 (b) 22:46
(c) 24:48 (d) 18:42
18. The price of 12 chairs is equal to that of 3 tables. The price of 16 chairs and 5 tables together is Rs. 22,320, then find total price of 8 chairs and 2 tables.
(a) Rs. 8810 (b) Rs. 9920
(c) Rs. 9910 (d) Rs. 8820
19. Ajay saves 42% of his monthly salary. If he spends Rs. 34,800, then find his savings?
(a) Rs. 26,800 (b) Rs. 23,600
(c) Rs. 24,500 (d) Rs. 25,200
20. 63 persons can repair a car in 18 days, working 6 hours a day. In how many days will 48 persons, working 7 hours a day, complete the work.
(a) 20 $\frac{1}{4}$ days (b) 28 $\frac{5}{2}$ days
(c) 22 $\frac{3}{4}$ days (d) 19 $\frac{9}{3}$ days

Section: General English

1. Select the option that best expresses the meaning of the idiom or phrase given below.
'Throw a wrench in the works'
(a) to do something badly or cheaply
(b) to describe exactly what is causing a situation or problem
(c) when a task/something is very easy
(d) to create an obstacle that makes things more difficult
2. Select the word segment that substitutes (replaces) the bracketed word segment correctly and completes the sentence meaningfully. Select the option 'no correction reQ.quired' if the sentence is correct as given.
In simple words 'Welfare' (mean a state of well being and happy.)
(a) mean a state of well beings and happiness
(b) means a state of well being and happiness
(c) mean a states of well being and happy.
(d) No correction required

3. Select the most appropriate word that fills in the blank correctly and completes the sentence meaningfully.
40% of the country _____ support the new law.
(a) isnt (b) do
(c) doesn't (d) is
4. Some parts of a sentence have been jumbled up, and labelled P, Q, R and S. Select the option that gives the correct sequence in which these parts can be rearranged to form a meaningful and grammatically correct sentence.
P: my very photogenic mother died
Q: in a freak accident on a picnic because of lightning
R: I don't remember much about her
S: except her beautiful red dress
(a) RQPS (b) RSQP
(c) PRSQ (d) PQRS
5. Select the word that is closest in meaning (SYNONYM) to the word given below.
ADMONISH
(a) Comply (b) Reprimand
(c) Ravish (d) Abusive
6. Select the word that is spelled correctly.
(a) Twotonic (b) Tewtonic
(c) Tootonic (d) Teutonic
7. Some parts of a sentence have been jumbled up, and labelled P, Q, R and S. Select the option that gives the correct sequence in which these parts can be rearranged to form a meaningful and grammatically correct sentence.
P: claws to grip and kill their prey.
Q: They have long, sharp teeth and
R: Tigers are big cats.
S: They live in grasslands and forests.
(a) RSQP (b) PSRQ
(c) RPQS (d) PQRS
8. Select the word that is opposite in meaning (ANTONYM) to the word given below.
FICKLE
(a) Urbanised (b) Certain
(c) Character (d) Neglect
9. The sentence below has been divided into three parts. Select the part of the sentence that has an error. If the sentence has no error, select the option 'No Error'.
Rinku kiss her nieces / goodbye for the / very last time.
(a) goodbye for the (b) No Error
(c) very last time. (d) Rinku kiss her nieces

10. Select the most appropriate word that fills in the blank correctly and completes the sentence meaningfully.
The police _____ arrested three suspects
(a) have (b) are
(c) is (d) has
11. Select the option that best expresses the meaning of the idiom or phrase given below.
'Pot calling the kettle black'
(a) To be wise or cunning
(b) To be right and wrong at the same time
(c) To be from a specific neighbourhood or area
(d) To criticize someone for something you're guilty of
12. The sentence below has been divided into three parts. Select the part of the sentence that has an error. If the sentence has no error, select the option 'No Error'.
Neither / of the boys / have returned.
(a) No Error (b) have returned.
(c) Neither (d) of the boys
13. Select the word that is spelled correctly.
(a) Kaves (b) Caalfes
(c) Calfes (d) Calves
14. Select the most appropriate 'one word ' for the expressions given below.
To desire strongly or persistently
(a) Xenophobia (b) Yearn
(c) Zealot (d) Zenith
15. Select the word segment that substitutes (replaces) the bracketed word segment correctly and completes the sentence meaningfully. Select the option 'no correction required' if the sentence is correct as given.
To them zoos are(more then animal prisons maintaining) for human amusement.
(a) more the animal prisons maintaining
(b) No correction required
(c) more than animal prisons maintaining
(d) more than animal prisons maintained

Comprehension (Q16 - 20):

Read the passage below and answer the questions that follow.

The Giraffe (Giraffa) is an African even-toed ungulate mammal, the tallest living terrestrial animal and the largest ruminant. It is traditionally considered to be one species, Giraffa camelopardalis, with nine subspecies. The giraffe is the tallest animal in the world, attaining a height of 5.5m, its incredibly long neck accounting for much of its height. The long neck has resulted in a complex blood circulatory system, which is not yet fully understood by zoologists.

Adult males generally reach a height of about 5 metres and females about 4,5 metres. Big males can weigh a massive 1200 kilograms while females usually weigh some 800 to 900 kilograms. Their skin colour is tan with light brown patches on females and dark brown patches on males. Both males and females have short horns covered in skin.

Because of their very long necks, Giraffes are able to feed on the foliage of trees that is not accessible to other herbivores. The long prehensile tongue is used to pull pods and leaves into the mouth which are then stripped from the stems with the spatulate incisor teeth.

Giraffes are fairly social animals and get together in herds from time to time. However, there is no group bonding. Youngsters stay with a few adult females and the males are nomadic and move between groups of females. Because Giraffes do not have a fixed breeding season, males are always wandering in search of receptive females. The male's fight for dominance, and for the right to mate with females, is fascinating to watch. They use their long muscular necks to strike at an opponent's body and wrestle by twining their necks around each other. The loser is pushed off balance and the encounters very rarely lead to serious injury.

Receptive cows are continuously courted by adult bulls. They have a gestation period of 457 days whereafter a single calf is born. At birth a calf weighs about 100 Kg and they are weaned between six to eight months, but only about 52 per cent of the calves ever reach maturity, since the young are preyed upon by Lions, Hyenas and Leopards. Giraffes are generally quiet animals that go about their business with an air of serenity. Occasionally, when disturbed, they will snort and, when attacked by predators, they bellow.

- 16. A baby giraffe weighs about _____ kg
 - (a) 100
 - (b) 800
 - (c) 500
 - (d) 1200
- 17. the gestation period for giraffes is _____ days.
 - (a) seven hundred and forty five
 - (b) four hundred and fifty seven
 - (c) one hundred and eighty
 - (d) Five hundred and fifty seven
- 18. Which of these are sounds are produced by the giraffe when disturbed
 - (a) bellow
 - (b) growl
 - (c) snort
 - (d) chuckle
- 19. There are how many sub species of giraffes?
 - (a) four
 - (b) eight
 - (c) one
 - (d) nine
- 20. The male giraffes fight for dominance using which of these body parts?
 - (a) legs
 - (b) tongue
 - (c) neck
 - (d) horns

Section: General Hindi

1. निम्नलिखित प्रश्न में, चार विकल्पों में से, उस सही विकल्प का चयन करें जो वाक्यांशों के लिए एक शब्द का विकल्प हो
जो भविष्य में आने वाला हो-
- (a) दूरदर्शी (b) अतिथि
(c) आगामी (d) प्रत्यक्ष
2. निम्नलिखित प्रश्न में, चार विकल्पों में से, दिए गए शब्द के समान अर्थ वाले विकल्प को चुनिए।
कोयल
- (a) सरोज (b) मरीचि
(c) कर (d) श्यामा
3. निम्नलिखित प्रश्न में, चार विकल्पों में से, उस विकल्प का चयन करें जो विराम चिह्न युक्त वाक्य का सही विकल्प हो।
- (a) वह जहाँ जाता है, बैठ जाता है।
(b) वह जहाँ जाता है बैठ जाता है।
(c) वह जहाँ जाता है- बैठ जाता है।
4. निम्नलिखित प्रश्न में, चार विकल्पों में से, उस विकल्प का चयन करें जो कोष्ठक में दिए गए शब्द के अनुसार विशेषण के भेद वाला विकल्प हो।
मेरा पड़ोसी बहुत ही (ईमानदार) व्यक्ति है।
- (a) सार्वनामिक (b) गुणवाचक
(c) निश्चित संख्यावाचक (d) निश्चित परिमाण वाचक
5. निम्नलिखित प्रश्न में, चार विकल्पों में से, उस विकल्प का चयन करें जो दिए गए शब्द से बनी भाववाचक संज्ञा का सही विकल्प हो।
धमकाना
- (a) धमक (b) धौंस
(c) धमकी (d) धमकना
6. निम्नलिखित प्रश्न में, चार विकल्पों में से, उस विकल्प का चयन करें जो दिए गए शब्द के लिए बहुवचन शब्द का सबसे अच्छा विकल्प है।
अध्यापक
- (a) अध्यापकियाँ (b) अध्यापकें
(c) अध्यापकवृंद (d) अध्यापकों

7. निम्नलिखित प्रश्न में, चार विकल्पों में से, उस विकल्प का चयन करें जो दिए गए शब्द का सही स्त्रीलिंग शब्द का विकल्प है
भवदीय
(a) भवदीया (b) भावादिया
(c) भवदियी (d) भवदिया
8. निम्नलिखित प्रश्न में, चार विकल्पों में से, उस सही विकल्प का चयन करें जो प्रत्यय से बना शब्द है।
(a) चिरंजीवी (b) उत्थान
(c) मरियल (d) स्वदेश
9. निम्नलिखित प्रश्न में, चार विकल्पों में से, उस विकल्प का चयन करें जो दिए गए वाक्य के काल का सही विकल्प हो रोहन अपना भाषण दे रहा होगा।
(a) संदिग्ध वर्तमान काल (b) अपूर्ण वर्तमान काल
(c) अपूर्ण भूतकाल (d) सामान्य वर्तमान काल
10. निम्नलिखित प्रश्न में, चार विकल्पों में से, उस विकल्प का चयन करें जो दिए गए वाक्यांश के लिए सही लोकोक्ति वाला विकल्प है।
अपनी-अपनी खाल में सब मस्त
(a) अपनी परिस्थिति से संतुष्ट रहना (b) आराम से रहना
(c) नकाब में रहना (d) अपने काम से काम रखना
11. निम्नलिखित प्रश्न में, चार विकल्पों में से, उस विकल्प का चयन करें जो दिए गए शब्द का सही विपरीत अर्थ वाले विकल्प को चुनिए।
उज्ज्वल
(a) उत्कर्ष (b) उजाला
(c) धूमिल (d) कोमल
12. निम्नलिखित प्रश्न में, चार विकल्पों में से, उस विकल्प का चयन करें जो उपसर्ग से बना है।
(a) पढ़ैया (b) अवमानना
(c) देखा (d) पाचक
13. निम्नलिखित प्रश्न में, चार विकल्पों में से, उस विकल्प का चयन करें जो दिए गए शब्द का सही श्रुतिसमभिन्नार्थक शब्द का विकल्प है।
धान्य
(a) चावल (b) कोई भी अनाज
(c) तृप्त (d) धन

14. निम्नलिखित प्रश्न में, चार विकल्पों में से, उस विकल्प का चयन करें जो दिए गए मुहावरे के लिए सही अर्थ वाला विकल्प है।

अक्कल पर पत्थर पड़ना

(a) ज्यादा बाधा-चढ़ाकर बोलना

(b) मुसीबत आना

(c) चोट लगना

(d) बुद्धि से काम न लेना

15. निम्नलिखित प्रश्न में, चार विकल्पों में से, उस विकल्प का चयन करें जो कोष्ठक में दिए गए शब्द के अनुसार मध्यम पुरुष वाचक सर्वनाम का सबसे अच्छा विकल्प है।

(a) (मैं) आज कहीं भी नहीं जाऊँगा।

(b) (उसने) मेरा सामान छुआ क्यों?

(c) (उन्होंने) पहले से ही इस बारे में बात कर लिया था।

(d) कृपया (आप) अपने विचारों को सबके समक्ष प्रस्तुत कीजिए।

Comprehension (Q16-20):

निम्नलिखित गद्यांश को पढ़ें और दिए गए प्रश्न का उत्तर दें।

प्राचीन काल से परीक्षा की रीति चली आ रही है और न जाने कब तक चलती रहेगी। परंतु ये परीक्षाएं क्या इतनी आवश्यक है कि कोमल बचपन को ही कुचल दिया जाए? क्या केवल तीन घंटे के आधार पर ज्ञान का परीक्षण कारण सही है? प्रत्येक व्यक्ति इसके लिए भिन्न-भिन्न उत्तर देगा। कुछ का मानना है कि परीक्षा के आधार पर ही यह परख हो सकती है कि विद्यार्थी ने विषय को कितना समझा है और कुछ का मानना है कि परीक्षाओं की आवश्यकता ही नहीं है। यह केवल एक बोझ है। परीक्षा के दिनों में छात्रों के चेहरे पर भय के भाव, बेचैनी और उनमें तरह-तरह की बीमारियाँ देखने को मिलती हैं। उनकी नींद उड़ जाती है, भूख-प्यास सब खत्म हो जाते हैं। आजकल तो बच्चों के साथ-साथ माता-पिता भी तनावग्रस्त हो जाते हैं। काश! ये परीक्षाएं न होतीं, तो जीवन कितना सरल और सुखी होता।

16. इस अनुच्छेद का उपयुक्त शीर्षक दीजिए?

(a) सरल विद्यार्थी जीवन

(b) उफ़! ये परीक्षाएँ

(c) परीक्षाओं का मज़ा

(d) परीक्षा का समय

17. परीक्षाओं ने किसे कुचल कर रख दिया है?

(a) शिक्षा नीति

(b) विद्यार्थी को

(c) कोमल बचपन

(d) प्राचीन व्यवस्था

18. परीक्षा के दिनों में छात्रों के चेहरे पर क्या दिखाई देते हैं?
- (a) भय (b) आनंद
(c) खुशी (d) मज़ा
19. प्राचीन काल से किसकी रीति चली आ रही है?
- (a) तनाव (b) विद्यार्थी
(c) परीक्षा (d) शिक्षा
20. इनमें से कौन सा 'तनावग्रस्त' का विलोम शब्द है?
- (a) परेशान (b) चिंतित
(c) आनंदित (d) तनाव से पीड़ित

Section: Discipline1

1. A compound mechanism will have which of the following number of links:
- (a) 4 (b) 5
(c) 3 (d) 2
2. A steam engine develops 600 kW at 180 r.p.m. The coefficient of fluctuation of energy is found to be 0.5 and the fluctuation of speed is required to be kept within $\pm 1\%$ of the mean speed. The maximum fluctuation of the energy during operation is given by:
- (a) 150 kN-m (b) 50 kN-m
(c) 100 kN-m (d) 120 kN-m
3. The inside radius of the contact surfaces in a plate clutch is 60 mm and outside radius is 120 mm. If the axial force in plate clutch is 5 kN with uniform wear condition, then the average pressure in the plate clutch is:
- (a) 18140 N/m² (b) 13124 N/m²
(c) 10140 N/m² (d) 14744 N/m²
4. A mechanism consists of four links and two lower pairs without any higher pairs then the total degrees of freedom in the mechanism is:
- (a) 6 (b) 2
(c) 3 (d) 5
5. The effect of creep in belt drive is:
- (a) Reduce the velocity of driver pulley (b) Increase the velocity of driven pulley
(c) Reduce the velocity of driven pulley (d) Increase the velocity of driver pulley
6. The mass of the belt per unit length in belt drive of pulleys is 10 kg/m. The maximum tension in a belt is 3000 N. The velocity of the belt for maximum power transmission:
- (a) 10 m/s (b) 5 m/s
(c) 15 m/s (d) 20 m/s

7. If the tension in tight side and slack side of the belt is 3000 N and 1500 N, respectively. The effective driving force at the circumference of the driven pulley is given by:
- (a) 2000 N (b) 1000 N
(c) 4500 N (d) 1500 N
8. If the young's modulus for Steel plate is 200 GPa and it develops a strain of 2 after expansion under a tensile load. The stress induced in the Steel plate is:
- (a) 50×10^3 MPa (b) 400×10^3 MPa
(c) 150×10^3 MPa (d) 100×10^3 MPa
9. The function of flywheel is to:
- (a) Reduce the fluctuation of speed (b) Increase the fluctuation of speed
(c) Maintain the constant speed (d) Reduce the speed of crankshaft
10. The number of discs on the driving shaft and driven shafts are 3 and 4, respectively. Determine the number of pairs of contact surfaces for friction clutch.
- (a) 8 (b) 6
(c) 5 (d) 7
11. The cranks in quick return motion rotates through angle 180 degree in clockwise direction for cutting stroke. Then the ratio of time of cutting stroke to time of return stroke is:
- (a) 1.5 (b) 0.5
(c) 0.8 (d) 1
12. If the length of a copper plate is 10 mm and this length is increased to 15 mm after an expansion under the tensile load of 50 N. The engineering strain developed in the plate is:
- (a) 0.2 (b) 2
(c) 0.5 (d) 5
13. If the distance between the centers of two pulleys in a belt drive is 0.5 m and the diameter for the larger and smaller pulleys are 1 m and 0.5 m, respectively. The two pulleys in belt drive is connected by an open belt then the angle of contact at the smaller pulley is given by:
- (a) 30° (b) 120°
(c) 180° (d) 60°
14. The tensile load applied in axial direction on a rectangular plate is 100 N. If the area of rectangular plate is 4 mm^2 . The stress develop in the plate will be:
- (a) 2.5 MPa (b) 15 MPa
(c) 25 MPa (d) 50 MPa
15. Which of the following mechanism provides the controlling force in Watt governor?
- (a) Both Action of gravity and Arrangement of springs
(b) Action of gravity
(c) None of the given options
(d) Arrangement of springs

- 16. If the module of a gear is 10, then the circular pitch of the gear is:
(a) 31.4 (b) 62.8
(c) 314 (d) 3.14
- 17. The surface contact between two elements of a pair is known as:
(a) Lower pair (b) None of the above
(c) Both higher and lower pair (d) Higher pair
- 18. The velocity of a belt in belt drive mechanism is 5 m/s. The tension in tight side of belt is 2000 N while the tension in slack side of belt is 1000 N. The power transmitted in the belt drive is:
(a) 5 kW (b) 1 kW
(c) 2 kW (d) 1.5 kW
- 19. The external and internal radii of the frictional faces in clutch are 100 mm and 60 mm, respectively. Determine the mean radius of friction face assuming the uniform pressure condition.
(a) 1. 60 mm (b) 70 mm
(c) 82 mm (d) 78 mm
- 20. The diameter of driver and follower are 30 and 60 cm, respectively. The velocity ratio of a belt drive is given by:
(a) 2.5 (b) 0.5
(c) 2 (d) 1.5

Section: Discipline 2

- 1. Which of the following law states that intensity of pressure at a point in a static fluid is equal in all directions?
(a) Pascal's law (b) Newton's law
(c) Mohr's law (d) Faraday's law
- 2. A square plane surface is 4 m wide and 4 m deep. It lies in vertical plane in water and its upper edge is horizontal and coincides with water surface. Estimate the total pressure on the plane surface.
(a) 500 kN (b) 214 kN
(c) 200 kN (d) 314 kN
- 3. Bernoulli's equation is obtained by integrating which of the following equation of motion:
(a) Navier-stokes equation (b) Reynold's equation of motion
(c) Euler's equation of motion (d) Newton's law of viscosity
- 4. The pressure head and kinetic head of water flowing through a pipe of diameter 60 cm are 50 m and 4 m, respectively. Determine the total head of the water at a cross-section which is 6 m above the datum line.
(a) 56 m (b) 54 m

- (c) 60 m (d) 48 m
5. An oil of viscosity 0.5 N s/m^2 and relative density 0.6 is flowing through a circular pipe of diameter 40 cm and of length 500 m. The average velocity of the oil is 2 m/s. Determine the pressure drop in a length of 500 m.
- (a) 200 kN/m^2 (b) 100 kN/m^2
(c) 250 kN/m^2 (d) 150 kN/m^2
6. A liquid of specific gravity 0.68 is flowing through a venturimeter having inlet diameter 50 cm and throat diameter 30 cm. The liquid-mercury differential manometer shows a reading of 20 cm. The specific gravity of mercury is 13.6. Find the difference of the pressure head.
- (a) 3.8 m of liquid (b) 2 m of liquid
(c) 5 m of liquid (d) 5.8 m of liquid
7. The hydraulic machines which converts the mechanical energy into hydraulic energy are known as:
- (a) Stator (b) Turbine
(c) Motor (d) Pump
8. The space of 20 mm between the two parallel vertical plate is filled with an oil of viscosity 2 N s/m^2 . Determine the shear stress in oil if one plate is displaced with a velocity of 1 m/s:
- (a) 100 N/m^2 (b) 50 N/m^2
(c) 150 N/m^2 (d) 200 N/m^2
9. The rate of increase of pressure in a vertical downward direction is equal to which of the following properties of a liquid?
- (a) Density (b) Specific gravity
(c) Specific volume (d) Specific weight
10. A liquid is compressed in a cylinder from a volume of 0.02 m^3 at 200 N/m^2 pressure to a volume of 0.01 m^3 at 400 N/m^2 pressure. The bulk modulus of elasticity of the liquid is:
- (a) 500 N/m^2 (b) 1000 N/m^2
(c) 400 N/m^2 (d) 600 N/m^2
11. If the density of a liquid is 50 kg/m^3 , then specific volume of liquid is:
- (a) $0.02 \text{ m}^3/\text{kg}$ (b) $0.05 \text{ m}^3/\text{kg}$
(c) $400 \text{ m}^3/\text{kg}$ (d) $500 \text{ m}^3/\text{kg}$
12. Which of the following instruments is used to measure both alternate current and as well as direct current power?
- (a) Ohmmeter
(b) Induction wattmeter
(c) Dynamometer wattmeter
(d) Megger

13. Which of the following criteria is correct for the bearing to operate under hydrodynamic conditions?
- (a) The bearing characteristics number must be greater than bearing modulus
 - (b) No criteria are required
 - (c) The bearing characteristics number must be less than bearing modulus
 - (d) None of the given options are correct
14. A Pelton wheel is having a mean bucket diameter of 4 m and is running at 1500 r.p.m. The discharge through nozzle is $0.2 \text{ m}^3/\text{s}$ and net head on the Pelton wheel is 500 m. Determine the power available at the nozzle:
- (a) 1051 kW
 - (b) 981 kW
 - (c) 551 kW
 - (d) 850 kW
15. The rate of shear strain for a liquid is 10 s^{-1} and the coefficient of viscosity of the liquid is 0.5 N s/m^2 . Determine the shear stress develop in the liquid:
- (a) 20 N/m^2
 - (b) 15 N/m^2
 - (c) 10 N/m^2
 - (d) 5 N/m^2
16. When the fluid is at rest then which of the following is correct:
- (a) Surface tension is zero
 - (b) Specific gravity is zero
 - (c) Total pressure is zero
 - (d) Shear stress is zero
17. An oil of viscosity 0.5 N s/m^2 and relative density 0.6 is flowing through a circular pipe of diameter 60 cm and of length 500 m. The average velocity of the oil is 2 m/s. Determine the Reynolds number.
- (a) 1440
 - (b) 1350
 - (c) 1260
 - (d) 1800
18. The type of fluid flow in which the velocity at any given time does not change with respect to space is known as:
- (a) Uniform flow
 - (b) Non-uniform flow
 - (c) Steady flow
 - (d) Newtonian flow
19. The speed of journal in a journal bearing is 1500 r.p.m. The absolute viscosity of the lubricant is 0.02 kg/m-s and the bearing pressure on the projected bearing area is 1 N/mm^2 . Determine the bearing characteristics number.
- (a) 30
 - (b) 25
 - (c) 15
 - (d) 20
20. Two litre of a liquid weighs 10 N then specific weight of the liquid is:
- (a) 3500 N/m^3
 - (b) 6000 N/m^3
 - (c) 2000 N/m^3
 - (d) 5000 N/m^3

Section: Discipline 3

1. If the manometric efficiency and mechanical efficiency of a centrifugal pump are 70% and 80%, respectively. Determine the overall efficiency of the pump.
(a) 0.1 (b) 0.56
(c) 0.53 (d) 0.6
2. A Pelton wheel is running at 2000 r.p.m. and it develops 68.67 kW shaft power. The discharge through nozzle is $0.02 \text{ m}^3/\text{s}$ and net head on the Pelton wheel is 500 m. The overall efficiency of the Pelton wheel is:
(a) 0.45 (b) 0.5
(c) 0.7 (d) 0.9
3. Which law of thermodynamics assigns a quality to different form of energy, and also indicates the direction of any spontaneous process?
(a) 1st law of thermodynamics (b) 2nd law of thermodynamics
(c) Zeroth law of thermodynamics (d) 3rd law of thermodynamics
4. A stationary mass of gas is compressed without friction from an initial state of 0.5 m^3 to and 0.2 MPa to a final state of 0.3 m^3 and 0.2 MPa. Determine the workdone by the system.
(a) 40 kJ (b) 30 kJ
(c) 50 kJ (d) 80 kJ
5. Which of the following energy is stored in the system due to transfer of heat to the system and transfer of work from the system?
(a) Entropy (b) Internal energy
(c) Enthalpy (d) Energy
6. The increase in hardness due to cold working is called:
(a) Spheroidising (b) Normalizing
(c) Work-hardening (d) Hot-hardening
7. The rake angle for a cutting tool to turn a work piece is 30° . The cutting ratio for this orthogonal machining is 1 then shear angle for the orthogonal machining will be:
(a) 30° (b) 60°
(c) 65° (d) 45°
8. If the work material for machining operation is brittle, then which type of chip will form during the machining:
(a) Serrated (b) Discontinuous chip
(c) Continuous chip (d) Continuous chip with built-up edge
9. The undeformed chip thickness for orthogonal machining of a steel pipe is 0.5 mm and the thickness of deformed chip produced after machining is 0.2 mm. Determine the cutting ratio.
(a) 1. 0.1 (b) 2. 0.4
(c) 3. 1.5 (d) 4. 2.5

10. The welding process in which filler material is supplied by a metal working electrode is known as:
- (a) Electric arc welding (b) Thermite welding
(c) Forge welding (d) Gas welding
11. The heat transfer in a cyclic process are 20 kJ, -28 kJ, -2 kJ and 40 kJ. Determine the total work for this cycle process.
- (a) 30 kJ (b) 45 kJ
(c) 54 kJ (d) 40 kJ
12. The rate of change of enthalpy with respect to temperature when pressure is held constant is known as:
- (a) Specific entropy at constant pressure
(b) Entropy at constant pressure
(c) Specific heat at constant pressure
(d) Heat at constant pressure
13. The heat input to a heat engine is 40 kJ while the heat output from the heat engine is 20 kJ. Determine the efficiency of the heat engine.
- (a) 0.3 (b) 0.45
(c) 0.35 (d) 0.5
14. The heat engine which violates the Kelvin-Planck statement is known as:
- (a) PMM2 (b) PMM1
(c) IC engine (d) Carnot engine
15. A steel containing carbon above 0.8% is known as:
- (a) Chrome steel anealing (b) Eutectoid steel
(c) Hypoeutectoid steel (d) Hypereutectoid steel
16. The energy consumed per unit volume of the material removed during the orthogonal machining is called:
- (a) Specific gravity (b) Specific cutting force
(c) Specific cutting energy (d) Specific material removal rate
17. The feed rate of single point cutting tool is 3 mm/revolution and the work piece is rotating at 600 r.p.m. Determine the total machining time to turn the cylindrical surface of length 300 mm of the work piece.
- (a) 1.5 sec (b) 15 sec
(c) 20 sec (d) 10 sec
18. Which of the following heat treatment process is carried out to remove the gases trapped in the metal during initial casting?
- (a) Hardening (b) Spheroidising
(c) Annealing (d) Tempering
19. A steel alloys containing 36% of nickel is known as:
- (a) Invar (b) Mild steel
(c) Chrome steel (d) Stainless steel

20. The process where the metal is allowed to flow in some pre-determined shape according to the design of die, by a compressive force or impact, is known as:
- (a) Hot casting
 - (b) Cold casting
 - (c) Hot forging
 - (d) Cold forging

Section: Discipline 4

1. A block of mass $4\sqrt{2}$ kg is at rest on the inclined plane. The inclined plane is inclined at an angle of 135° from horizontal direction in anticlockwise direction. Determine the coefficient of friction so that block can start slide in downward direction, assume the acceleration of gravity as 10 m/s^2 .
- (a) All the options are correct
 - (b) Coefficient of friction must be less than 1
 - (c) Coefficient of friction must be greater than 1
 - (d) Coefficient of friction must be equal to 1
2. A thin cylinder of internal diameter 1 m and thickness 0.02 m contains a gas. The tensile stress in the material is not to exceed 100 MPa then determine the internal pressure of the gas.
- (a) 10 N/mm^2
 - (b) 6 N/mm^2
 - (c) 8 N/mm^2
 - (d) 4 N/mm^2
3. The volume changes from 2 m^3 to 5 m^3 during the process of heat addition in the diesel cycle for an operation of a C.I engine. Determine the cut-off ratio.
- (a) 0.6
 - (b) 1.2
 - (c) 0.4
 - (d) 2.5
4. The masses of vapour and liquid are 3 kg and 2 kg, respectively in the mixture. Determine the dryness fraction of the liquid-vapour mixture.
- (a) 1.5
 - (b) 0.8
 - (c) 0.6
 - (d) 0.34
5. A ball is falling freely from a height of 20 m then the velocity of ball when it reaches the ground at 20 m is (assume the acceleration of gravity as 10 m/s^2)?
- (a) 40 m/s
 - (b) 30 m/s
 - (c) 10 m/s
 - (d) 20 m/s
6. In a Rankine cycle, the work done by turbine during expansion of steam is 8 kJ while the work required for pump to feedback the water into the boiler is 6 kJ. Determine the work ratio.
- (a) 0.9
 - (b) 0.25
 - (c) 0.34
 - (d) 0.75
7. Which of the following is correct for entropy of an isolated system?
- (a) It can never decrease
 - (b) It exists only for irreversible process
 - (c) It is always zero
 - (d) It can decrease

8. The compression ratio is 25 for an air standard diesel cycle. A total heat of 800 kJ/kg is supplied during the reversible constant pressure heat addition process while 400 kJ/kg heat was rejected during reversible constant volume process. The efficiency of the cycle is:
- (a) 0.6 (b) 0.4
(c) 0.3 (d) 0.5
9. A block of mass 10 kg is sliding on the ground with applied external force of 20 N. The coefficient of friction between the block and the ground is 0.1. Determine the linear acceleration of the block. Assume the acceleration due to gravity as 10 m/s^2 .
- (a) 2 m/s^2 (b) 1 m/s^2
(c) 0.5 m/s^2 (d) 3 m/s^2
10. The ambient air temperature is 27°C and a domestic food freezer maintains a temperature of -23°C . If heat leaks into the freezer at the continuous rate of 2.5 kJ/s then determine the least power necessary to pump this heat out continuously.
- (a) 1 kW (b) 1.5 kW
(c) 2 kW (d) 0.5 kW
11. Which of the following air standard cycle contains two reversible adiabatic and two reversible isochores?
- (a) Rankine cycle (b) Diesel cycle
(c) Carnot cycle (d) Otto cycle
12. If the slenderness ratio of a column is small, then the crippling stress will be:
- (a) Low (b) zero
(c) High (d) Constant
13. The radius of gyration of a rigid body is 5 m and the mass of rigid body is 2 kg. Determine the mass moment of inertia of the rigid body.
- (a) 50 kg-m^2 (b) 40 kg-m^2
(c) 30 kg-m^2 (d) 10 kg-m^2
14. The shear stress of a circular shaft is maximum at which of the following point:
- (a) Inner surface of the shaft (b) Outer surface of the shaft
(c) Center of the shaft (d) Axis of the shaft
15. A body of mass 5 kg is rotating with angular velocity 10 rad/s in a circular path of radius 0.1 m. Determine the centrifugal force acting on the body.
- (a) 100 N (b) 50 N
(c) 80 N (d) 60 N
16. The ball A of mass 4 kg moving with velocity 5 m/s is colliding with another ball B of mass 6 kg. Both the balls are moving in the same direction. Determine the velocity of ball B if both the balls start moving with a common velocity of 8 m/s after collision.
- (a) 5 m/s (b) 10 m/s
(c) 8 m/s (d) 12 m/s

- 17. A solid shaft of 2 m diameter is used to transmit torque. The maximum shear stress induced to the shaft is 100 N/m^2 . Determine the maximum torque transmitted by the shaft.
(a) 146 N-m (b) 188 N-m
(c) 165 N-m (d) 157 N-m
- 18. A triple riveted lap joint with zig-zag riveting is to be designed for 16 mm thick plate. Determine the diameter of the rivet hole.
(a) 24 mm (b) 30 mm
(c) 20 mm (d) 4 mm
- 19. The tearing resistance of the plate in single riveted butt joint is 35 kN. The shearing resistance and the crushing resistance of the rivet are 20 kN and 30 kN, respectively. Determine the efficiency of rivet joint and assume the strength of plate as 25 kN.
(a) 0.5 (b) 0.6
(c) 0.8 (d) 0.7
- 20. The flywheel of a steam engine has a radius of gyration 2 m and mass 2000 kg. The starting torque of the steam engine is 4000 N-m and is constant. Determine the angular acceleration of the flywheel:
(a) 0.5 rad/s^2 (b) 0.4 rad/s^2
(c) 0.2 rad/s^2 (d) 0.8 rad/s^2

Section: Discipline 5

- 1. Two rectangular bars of equal area 50 mm^2 are subjected to two different stress of 200 and 400 N/mm^2 , respectively. Determine the total load on the composite bar.
(a) 30 kN (b) 60 kN
(c) 50 kN (d) 80 kN
- 2. The five cells, each of e.m.f. 6 and internal resistance 4Ω are connected in series across an external resistance 10Ω . Determine the circuit current.
(a) 1.5 A (b) 2 A
(c) 1 A (d) 3 A
- 3. A battery supplies 6 joules of energy per coulomb then the e.m.f. of the battery is:
(a) 4 V (b) 6 V
(c) 3 V (d) 5 V
- 4. The average value of alternate current over one cycle is:
(a) 0.5 (b) 0
(c) 1 (d) -1
- 5. The resistance of a conductor is 0.2Ω then the conductance is:
(a) 8 S (b) 5 S
(c) 10 S (d) 4 S

6. If a charge of 2 C is placed at a point and the charge have electrical potential energy of 20 J, then determine the electric potential.
- (a) 30 V (b) 20 V
(c) 5 V (d) 10 V
7. When gases are entrapped on the surface of casting due to solidification of metal then oval cavity is formed. This type of casting defect is known as:
- (a) Cold shut (b) Swell
(c) Blowholes (d) Drop
8. Which of the following condition is correct to get the maximum current in series-parallel grouping of cells?
- (a) The external resistance should be equal to the total internal resistance of the battery
(b) The external resistance should be less than the total internal resistance of the battery
(c) The external resistance should be greater than the total internal resistance of the battery
(d) No condition is required
9. The algebraic sum of the current meeting at a junction in an electrical circuit is zero is known as which of the following law:
- (a) Newton's law (b) Kirchhoff's current law
(c) Kirchhoff's voltage law (d) Faraday's law
10. The efficiency in power system under maximum power transfer conditions is:
- (a) 0.5 (b) 0.3
(c) 0.6 (d) 0.4
11. Which of the following welding process does not uses the consumable electrode?
- (a) Gas metal arc welding
(b) Submerged arc welding
(c) Gas tungsten arc welding
(d) Both gas metal arc and submerged arc welding
12. The welding defect which reduces the cross-sectional thickness of the base metal and which reduces the strength of the welding zone is known as:
- (a) Undercut (b) Inclusions
(c) Distortion (d) Lamellar tearing
13. Which of the following law if obeyed by the linear circuit law?
- (a) Power law (b) Ohm's law
(c) Kirchhoff's law (d) Mohr's law
14. Which of the following device is used to measure the e.m.f. of a cell?
- (a) Potentiometer (b) Voltmeter
(c) Ohmmeter (d) Ammeter
15. The unit for billing of electrical energy is:
- (a) kV (b) kW
(c) kWh (d) kJ

- 16.** Which of the following factors indicates that wave departs from a sinusoidal condition?
- (a) Form factor (b) Current factor
(c) Shape factor (d) Error factor
- 17.** Which of the following is correct for alternate current and alternate voltage?
- (a) Alternate current is vector (b) Alternate voltage is scalar
(c) Both are scalar (d) Both are vector
- 18.** Nodal analysis is based on which of the following law?
- (a) Ohm's law (b) Kirchhoff's voltage law
(c) Kirchhoff's current law (d) Faraday's law
- 19.** The cutting force during machining of a copper alloy is 20 N and the cutting velocity is 5 m/s. Determine the power required for the machining.
- (a) 150 W (b) 100 W
(c) 120 W (d) 180 W
- 20.** The flow of free electron in definite direction is called:
- (a) Voltage (b) Electric current
(c) Free electrons (d) Valence electrons
