

PSPCL Previous Paper AE (OT) MECHANICAL

Roll No.

12

TEST CODE: PPAME SHI

Question Paper

Mechanical Engineering, General Awareness,
Reasoning and English

Time Allowed : 2 Hrs.

Question Booklet No.

1200482

Max. Marks : 100

DO NOT OPEN THE PAPER SEAL OF THE BOOKLET UNTIL YOU ARE TOLD TO DO SO

INSTRUCTIONS FOR CANDIDATE

1. This Question-Booklet contains 100 Questions on the following :-

Section	Subject	Q. No.	Total Ques.
Part-I	Mechanical Engineering	1-60	60
Part-II	General Awareness, Reasoning and English	61-100	40
Total Questions			100

- There are 16 pages in this Booklet out of which Page No. 1 is for instructions to the candidates. Page Nos. 15 and 16 are meant for Rough Work and page nos. from 2 to 14 contain question of all parts. After opening of the Booklet and before you start answering the questions you must check up this booklet and ensure that it contains all the pages (1-16) and see that no page is missing or repeated. If you find any defect in this booklet, you must get it replaced immediately from the Invigilator within first 10 minutes of start of the Examination.
- You must write your Roll Number in the space provided on the top left hand side of Page No. 1 of this Question-Booklet.
- You will be supplied a one-page OMR Answer-Sheet separately by the Invigilator. You must complete all the details at appropriate places in the OMR Answer-sheet carefully, before you actually start answering the questions.
- The instructions as given on the OMR Answer-sheet, must be read carefully by the candidate and action in filling up the desired information in the columns writing a statement and marking the answer to the questions by Pen on Side I and Side-II of the OMR Answer-Sheet should be taken accordingly.
- All questions are compulsory. Each question carries one mark. There is **negative marking**; $1/4$ mark will be deducted for each wrong answer.
- You are required to mark your answers only on the OMR Answer Sheet which has been provided to you separately with **BLACK BALL POINT PEN ONLY**.
- Use of Books, Notes and copying and receiving/giving assistance is not allowed. Further, use of calculator-separate or with watch, Tablets any type of mobile phones, Books, slide rules, foot rules, note books or written notes is also prohibited during the examination. Any candidate who is found either copying or receiving, giving assistance or using unfair means will be disqualified and his/her candidature will accordingly be cancelled.
- The question booklet and OMR Answer Sheet supplied to the candidate must be returned intact to the room invigilator on completion of examination before you leave examination hall. Any candidate trying to tamper, take them away or found in unauthorized possession of booklet or OMR Answer sheet, is liable for cancellation of candidature or any legal action against him/her.

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PPAME SIII

Mechanical Engineering

- Q1) The main aim of compounding steam turbine is to :-
 a) Improve efficiency b) Reduce steam consumption
 c) Reduce motor speed d) Reduce turbine size
- Q2) The deposition of frost on evaporator tubes of an air conditioner will result in :-
 a) Decrease in heat transfer b) Increase in heat transfer
 c) No change in heat transfer d) Increase in capacity of evaporator
- Q3) Governing of steam turbines can be done by the following :-
 1) Nozzle control
 2) Throttle control
 3) Providing additional valve and passage
 The correct answer will be :-
 a) 1, 2 and 3 b) 1 and 2 only
 c) 2 and 3 only d) 1 and 3 only
- Q4) During which of the following process does heat rejection take place in Carnot Vapour Cycle ?
 a) Constant Volume b) Constant Pressure
 c) Constant Temperature d) Constant Entropy
- Q5) Economizer is generally placed between :-
 a) Last superheater / reheater and air preheater
 b) Air preheater and chimney
 c) Electrostatic precipitators
 d) Induced draft fan and forced draft fan
- Q6) The wavelength of the radiation emitted by a body depends upon :-
 a) the nature of the surface b) the area of its surface
 c) the temperature of its surface d) all the above factors
- Q7) The work done during expansion of a gas is independent of pressure if the expansion takes place :-
 a) Isothermally b) Adiabatically
 c) In both the above cases d) In none of the above cases

PPAME SIII

- Q8) A centrifugal pump was manufactured to couple directly to a 15 H.P. electric motor running at 1950 rpm delivering 50 liters per minute against a total head of 20 m. It is desired to replace the pump. The head developed by pump is likely to be :-
- a) 41.4 m b) 29.6 m c) 20 m d) 9.5 m
- Q9) Air vessel is used in a reciprocating pump to obtain :-
- a) Reduction of suction heat
b) Rise in delivery head
c) Continuous supply water at uniform rate
d) Increase in supply of water
- Q10) Hydraulic transmission through fluid coupling is suitable for :-
- a) Unsteady operation and increasing torque
b) Unsteady operation and increasing speed
c) Unsteady operation and low starting torque
d) Increasing torque and low starting load
- Q11) A good refrigerant should have :-
- a) High latent heat of vaporization and low freezing point
b) High operating pressure and low freezing point
c) High specific volume and high latent heat of vaporization
d) Low COP and low freezing point
- Q12) Which of the following refrigerant has the maximum ozone depletion in the stratosphere ?
- a) Ammonia b) Carbon dioxide
c) Sulphur dioxide d) Fluorine
- Q13) A thermostatic expansion valve in a refrigeration system :-
- a) Ensures the evaporator completely filled with refrigerant of the load
b) Is suitable only for constant load system
c) Maintains different temperatures in evaporator in proportion to load
d) None of the above

PPAME SIII

- Q14) By pass factor for a cooling coil :-
 a) increases with increase in velocity of air passing through it
 b) decreases with increase in velocity of air passing through it
 c) remains unchanged with increase in velocity of air passing through it
 d) may increase or decrease with increase in velocity of air passing through it depending upon the condition of air entering
- Q15) During sensible cooling :-
 a) Relative humidity remains constant
 b) Wet bulb temperature increases
 c) Specific humidity increases
 d) Partial pressure of vapour remains constant
- Q16) The Mach number for nitrogen flowing at 195 m/s when the pressure and temperature in the undisturbed flow at 690 kN/m abs and 93°C respectively will be :-
 a) 0.25 b) 0.50 c) 0.66 d) 0.75
- Q17) The Mach number at inlet of gas turbine diffuser is 0.3. The shape of the diffuser would be :-
 a) Converging b) Diverging
 c) Converging – diverging d) Diverging – converging
- Q18) For adiabatic expansion with friction through a nozzle, the following remains constant :-
 a) Entropy b) Static enthalpy
 c) Stagnation enthalpy d) Stagnation pressure
- Q19) The danger of breakage and vibration is maximum :-
 a) Below critical speed b) Near critical speed
 c) Above critical speed d) None of the above
- Q20) fillers are added to plastics to :-
 a) Improve flow
 b) Reduce brittleness
 c) Facilitate processibility
 d) Reduce cost

PPAME III

- Q21) In value engineering the term 'value' refers to :-
 a) Market value
 b) Relation between cost and efficiency
 c) Relation between function and cost
 d) Relation between productibility and cost
- Q22) Goodwill of an enterprise is termed as :-
 a) Liquid asset
 b) Volatile
 c) Fictitious asset
 d) Liability
- Q23) Bending moment M and torque T is applied on a solid circular shaft. If the maximum bending stress equals to maximum shear stress developed, then M is equal to :-
 a) $T/2$
 b) T
 c) $2T$
 d) $4T$
- Q24) Which of the following plans guarantees minimum wage to a works and bonus based on fixed percentage of time saved :-
 a) Gantt Plan
 b) Halsey Plan
 c) Powan Plan
 d) Bedaux Plan
- Q25) The number of slots in a 25 mm castle nut is :-
 a) 2
 b) 4
 c) 6
 d) 8
- Q26) Which key is preferred for the condition where a large amount of impact torque is to be transmitted in both directions of rotation :-
 a) Woodruff key
 b) Feather key
 c) Gib-head key
 d) Tangent key
- Q27) Quenching is not necessary when hardening is done by :-
 a) Case carburizing
 b) Flame hardening
 c) Nitriding
 d) Any of the above processes
- Q28) The most preferred process for casting gas turbine blade is :-
 a) Die moulding
 b) Shell moulding
 c) Investment moulding
 d) Sand casting
- Q29) Machine tool frame should have :-
 a) High rigidity to weight ratio
 b) Graphite in the form of nodules
 c) Low hardness
 d) High work hardness

PPAME SIII

- Q30) Addition of which of the following improves machining of copper?
 a) Sulphur b) Vanadium c) Tin d) Zinc
- Q31) Low helix angle drills are preferred for drilling holes in :-
 a) Plastics b) Copper c) Cast steel d) Carbon steel
- Q32) What is the approximate value of Young's modulus of elasticity of cast iron :-
 a) 100 – 105 GPa b) 200 – 210 GPa
 c) 240 – 250 GPa d) None of these
- Q33) A mild steel bar 1m long, 100 mm in diameter is subjected to an axial tensile load, so that change in its length is 0.1 mm. If Poisson's ratio of mild steel is 0.3, what is the change in its diameter :-
 a) 1 micron b) 0.3 micron
 c) 0.03 micron d) None of these
- Q34) A thin cylindrical shell is subjected to internal pressure, such that hoop strain developed in shell is 850 microstrain. If Young's modulus is 100 GPa and Poisson's ratio is 0.3, what is hoop stress developed in shell :-
 a) 200 MPa b) 100 MPa c) 50 MPa d) None of these
- Q35) A column is fixed at one end and free at the other end, its Euler's Buckling load is 10 kN. If both the ends of column are fixed, what will be its Euler's Buckling load :-
 a) 80 kN b) 40 kN c) 20 kN d) None of these
- Q36) At a point on a plane there is normal stress + 100 MPa and a shear stress 'q', on another plane perpendicular to this plane there is normal stress + 20 MPa and a shear stress 'q'. If the maximum principal stress at the point is 110 MPa, what is maximum shear stress at the point :-
 a) 50 MPa b) 30 MPa c) 10 MPa d) None of these
- Q37) A thick cylindrical shell is subjected to internal pressure 'p', such that maximum hoop stress developed in shell is 100 MPa. If external radius of shell is two times the internal radius, what is the magnitude of 'p' :-
 a) 100 MPa b) 60 MPa c) 40 MPa d) None of these

PPAME SIII

- Q38) The section of a column is circular with diameter D . What is the diameter of its core :-
 a) $D/2$ b) $D/3$ c) $D/4$ d) None of these
- Q39) A beam 10 m long hinged at both the ends is subjected to a clockwise moment of 50 kNm, at a distance of 3 m from one end. What is shear force at the center of the beam :-
 a) 0 kN b) 3 kN c) 5 kN d) None of these
- Q40) A close coiled helical spring absorbs 500 Nmm of strain energy while extending by 10 mm. what is the stiffness of spring :-
 a) 50 N/mm b) 10 N/mm c) 5 N/mm d) None of these
- Q41) The depth of penetration of hardened steel ball in specimen is 0.140 mm. What is HRB of specimen :-
 a) 70 b) 60 c) 50 d) None of these
- Q42) How many atoms are present in HCP crystal structure :-
 a) 8 b) 6 c) 4 d) None of these
- Q43) What is the percentage of nickel in Nimonic 90 alloy (a creep resistant alloy) :-
 a) 25 b) 58 c) 76 d) None of these
- Q44) By what process, maximum hardness is obtained in a steel part :-
 a) carburizing b) nitriding
 c) cyaniding d) Any of these
- Q45) What is the carbon percentage in cementite :-
 a) 0.022 wt % b) 0.8 wt %
 c) 6.67 wt % d) None of these
- Q46) In a spur gear, if t = thickness of tooth at bottom, h = length of tooth as cantilever from bottom to the point of application of load, m = module of tooth, then Lewis form factor is given by :-
 a) $6t^2/hm$ b) $t^2/6hm$
 c) $hm/6t^2$ d) None of these

PPAME SIII

GENERAL KNOWLEDGE

- Q61) Sun Temple is situated at :-
 a) Haridwar
 c) Kanyakumari
 b) Vrindavan
 d) Konark
- Q62) The first Railway line in India was started in :-
 a) 1828
 c) 1853
 b) 1835
 d) 1883
- Q63) Bhopal disaster was the result of :-
 a) Collapsing of a dam
 c) Plague epidemic
 b) Great fire
 d) Leakage of gas
- Q64) Which of the following countries is not a member of the SAARC countries?
 a) Bangladesh
 c) Pakistan
 b) Afghanistan
 d) Nepal
- Q65) Mallika Sarabhai is associated with which of the following fields :-
 a) Social Service
 c) Classical Dance
 b) Classical Music
 d) Sports
- Q66) Who wrote the book "Discovery of India"?
 a) Mahatma Gandhi
 c) Jawaharlal Nehru
 b) Dr. Rajendra Prasad
 d) R.K. Narayan
- Q67) India's first satellite launching station is located at :-
 a) Chennai
 c) Thumba
 b) Ahmedabad
 d) Sriharikota
- Q68) Which of the following is the smallest city (area wise) in the world?
 a) Cuba
 c) Grenoila
 b) Japan
 d) Vatican City State

a) 13 b) 61 c) 97 d) 117

a) Son
b) Father
c) Maternal uncle
d) Grandfather

Q20) Select the one which is different from the other three :-

a) Week	b) Month
c) Fortnight	d) Session

1	16	4
?	256	64
8	32	2

a) 15 b) 52 c) 128 d) 512

ENGLISH

Ranji woke up at dawn. It was Sunday. His examination was only two weeks away. He should have been studying. He had other things on his mind. He wanted to play one or two games of cricket before he sat down for studying. He was in no mood to study history or algebra. "I want to be a cricketer when I grow up. Maths or history will be of no use to me." His mother was a cricket fan. "You will need maths to calculate your batting averages and you may become part of history one day," she said.

Q81) Ranji woke up.....
a) before the sun rose.....

a) before the sun had risen
b) as the sun rose
c) late in the morning
d) when his mother called him

PPAME-SIII

- Q82) He woke up at dawn because
 a) he wanted to study b) he wanted to pray
 c) he had to go to school d) he wanted to play cricket
- Q83) The other thing on his mind was
 a) one or two games of cricket b) to study history
 c) to study algebra d) his mother's love of cricket
- Q84) He did not want to study history because
 a) he loved to study algebra
 b) he had no interest in history
 c) he wanted to become a cricket player
 d) his mother was a cricket fan
- Q85) Even a cricket player needs maths to
 a) calculate his batting averages
 b) calculate the fee he gets for playing
 c) calculate the daily expenses in his life
 d) become part of history

Directions (Q 86 – 90) : Complete the sentences given below with the help of options that follow each sentence.

- Q86) Honesty is best policy.
 a) a b) an c) the d) no article
- Q87) Here is rupee for you.
 a) a b) an c) the d) no article
- Q88) She is very fond me.
 a) on b) of c) in d) the
- Q89) I am unanswerable my officer.
 a) with b) into c) of d) to
- Q90) The car ran an old dog.
 a) on b) into c) over d) up

PPAME SIII

Direction (Q. 91 – 95) : Out of the four alternatives choose the word / phrase that is most nearly the same in meaning as the given word :

Q91) FAITHFUL

- a) disobedient b) loyal c) lawless d) rebellious

Q92) REPLY

- a) answer b) ask c) inquire d) examine

Q93) SOIL

- a) sky b) village c) earth d) sea

Q94) TEACH

- a) guide b) follow c) learn d) imbibe

Q95) UNEASY

- a) disturbed b) calm c) content d) quiet

Direction (Q 96 – 100) : Out of the four alternatives choose the word that is most nearly the opposite to the given word :

Q96) HAPPY

- a) serious b) silent c) bored d) sad

Q97) SMOOTH

- a) risky b) rough c) dangerous d) fatal

Q98) ARRIVAL

- a) return b) coming c) departure d) meet

Q99) REWARD

- a) harmless b) punishment c) coward d) rule

Q100) CHEAP

- a) costly b) less c) enough d) sufficient

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21/7/17

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S.No.	Answers	S.No.	Answers	S.No.	Answers	S.No.	Answers
1	C	26	C	51	C	76	B
2	A	27	D	52	C	77	D
3	A	28	C	53	A	78	C
4	C	29	A	54	A	79	D
5	A	30	B	55	C	80	C
6	C	31	D	56	A	81	B
7	D	32	A	57	B	82	D
8	B	33	D	58	B	83	A
9	C	34	B	59	B	84	C
10	C	35	D	60	C	85	A
11	A	36	A	61	D	86	C
12	D	37	B	62	C	87	A
13	A	38	C	63	D	88	B
14	A	39	C	64	B	89	D
15	D	40	B	65	C	90	C
16	B	41	B	66	C	91	B
17	B	42	B	67	C	92	A
18	C	43	C	68	D	93	C
19	B	44	B	69	C	94	A
20	D	45	C	70	D	95	A
21	C	46	B	71	C	96	D
22	C	47	C	72	D	97	B
23	A	48	B	73	C	98	C
24	C	49	A	74	D	99	B
25	C	50	C	75	C	100	A